DRAFT

ENVIRONMENTAL ASSESSMENT FOR 354TH RANGE SQUADRON RADAR OPERATIONS SITES

PREPARED FOR:

UNITED STATES AIR FORCE
PACIFIC AIR FORCES
ELEVENTH AIR FORCE
354TH FIGHTER WING

MARCH 2024

LETTERS OR OTHER WRITTEN COMMENTS PROVIDED MAY BE PUBLISHED IN THE FINAL EA. AS REQUIRED BY LAW, SUBSTANTIVE COMMENTS WILL BE ADDRESSED IN THE FINAL EA AND MADE AVAILABLE TO THE PUBLIC. ANY PERSONAL INFORMATION PROVIDED WILL BE KEPT CONFIDENTIAL. PRIVATE ADDRESSES WILL BE COMPILED TO DEVELOP A MAILING LIST FOR THOSE REQUESTING COPIES OF THE FINAL EA. HOWEVER, ONLY THE NAMES OF THE INDIVIDUALS MAKING COMMENTS AND THEIR SPECIFIC COMMENTS WILL BE DISCLOSED. PERSONAL HOME ADDRESSES AND PHONE NUMBERS WILL NOT BE PUBLISHED IN THE FINAL EA. ACCOMMODATIONS FOR INDIVIDUALS WITH DISABILITIES WILL BE MADE UPON REQUEST. INDIVIDUALS REQUESTING ACCOMMODATIONS SHOULD CONTACT THE EIELSON AFB PUBLIC AFFAIRS OFFICE AT (907) 377-2116 OR 354FW.PA.PUBLICAFFAIRS@US.AF.MIL.

THIS PAGE IS INTENTIONALLY LEFT BLANK.

PROPOSED
FINDING OF NO SIGNIFICANT IMPACT AND
FINDING OF NO PRACTICABLE ALTERNATIVE

354TH RANGE SQUADRON RADAR OPERATIONS SITES
EIELSON AIR FORCE BASE, ALASKA

Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States Code (USC) Sections 4321 to 4347, implemented by the 2020 version of the Council on Environmental Quality (CEQ) Regulations, Title 40, Code of Federal Regulations (CFR) §1500-1508, and 32 CFR §989, Environmental Impact Analysis Process; the United States Air Force (Air Force) assessed the potential environmental consequences associated with the construction of radar simulator operations sites in Interior Alaska near Eielson Air Force Base (AFB), Alaska.

The purpose of the Proposed Action is to improve F-35 Lightning II Joint Strike Fighter training effectiveness in the North Pacific operational theater. This Proposed Action is needed to modernize the Joint Pacific Alaska Range Complex (JPARC) to support adequate training for 5th and 6th generation aircraft as directed by the Commander of Air Combat Command in the 2020 Enterprise Range Plan.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with the Proposed Action, *354th Range Squadron Radar Operations Sites*, and provides environmental protection measures to avoid and reduce potential adverse environmental impacts.

The EA considers all potential impacts of the Preferred Alternative "Develop Radar Operations Sites on Mixed-Ownership Lands" and the No-Action Alternative. Additionally, the EA also considers cumulative environmental impacts with other projects in the Region of Influence.

PREFERRED ALTERNATIVE – DEVELOP RADAR OPERATIONS SITES ON MIXED-OWNERSHIP LANDS

The Air Force would construct radar operations sites at nine locations in Interior Alaska. Four of the sites are on State of Alaska (SOA) land, three sites are on United States Army Garrison (USAG) Alaska land, one site is on Air Force land, and one site is on FNSB land. These radar operations sites would represent adversary surface-to-air missile (SAM) batteries and utilize modern radars (e.g., the Yukon Enhanced Training Initiative systems) and decoys. Gravel roads connecting gravel radar pads to established roadways would provide the ability to re-arrange the radar and decoys on a regular basis to keep training complex. Each operations site would be approximately 20-acres and require the removal of vegetation and other obstacles to provide unobstructed line-of-sight to the radar from training aircraft. All nine operations sites would have unique features but also share some similar components.

NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the Preferred Alternative would not occur, and the Air Force would take no action towards improving 5th and 6th generation fighter training effectiveness in the North Pacific operational theater. Procured radars would be operated from six temporary operations sites within USAG Alaska's Yukon Training Area. Training would continue to be limited, and the JPARC would remain inadequate to replicate a modern threat environment.

SUMMARY OF FINDINGS

The analyses of the affected environment and environmental consequences of implementing the Preferred Alternative presented in the EA concluded that by implementing standard environmental protection measures and operational planning, the Air Force would be in

compliance with all applicable terms and conditions and reporting requirements of local, State, and Federal resource agencies.

The Air Force has concluded that no significant adverse effects would result to the following resources as a result of the Preferred Alternative: Airspace Management and Use, Land Use, Hazardous and Toxic Materials and Waste, Safety and Occupational Health, Noise, Air Quality, Water Resources, Earth Resources, Biological / Natural Resources, Cultural Resources, Socioeconomic Resources, Transportation, and Utilities. Furthermore, the Preferred Alternative would not lead to significant adverse effects in any of these resources when considered with past, present, or reasonably foreseeable future projects.

FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)

Pursuant to the requirements and objectives of Executive Order (EO) 11990, “Protection of Wetlands;” EO 11988, “Floodplain Management;” and EO 13690, “Federal Flood Risk Management Standard;” the Air Force considered alternatives to its actions within wetlands (EO 11990) and floodplains (EO 11988 and EO 13690) and modified its Proposed Action to the extent feasible, to avoid adverse effects or potential harm. Based on my review of the facts and analyses contained in the EA incorporated by reference, I find that there is no practicable alternative to the Proposed Action outside of the wetlands and the 100-year and 500-year floodplains. Impacts to wetlands may require compensation.

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Based on my review of the facts and analyses contained in the EA incorporated by reference, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR §989, I conclude that the Preferred Alternative, Develop Radar Operations Sites on Mixed-Ownership Lands, would not have a significant environmental impact, either by itself or cumulatively with other known projects. Accordingly, an Environmental Impact Statement is not required. The signing of this FONSI and FONPA completes the environmental impact analysis process.

_____ _____

Signatory Date

THIS PAGE IS INTENTIONALLY LEFT BLANK.

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

11 AF	Eleventh Air Force
354 FW	354th Fighter Wing
AAC	Alaska Administrative Code
AC	Advisory Circular
ACAM	Air Conformity Applicability Model
ACHP	Advisory Council on Historic Preservation
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADH	Alaska Department of Health
ADNR	Alaska Department of Natural Resources
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFFF	Aqueous Film Forming Foam
AFI	Air Force Instruction
AFM	Air Force Manual
AFPD	Air Force Policy Direction
AFS	Alaska Fire Service
AGL	Above Ground Level
AHRS	Alaska Historic Resources Survey
Air Force	Department of the Air Force
AKOSH	Alaska Occupational Safety and Health
ANCSA	Alaska Native Claims Settlement Act
APE	Area of Potential Effect
AP&T	Alaska Power & Telephone
APDES	Alaska Pollutant Discharge Elimination System
ARRC	Alaska Railroad Corporation
ARRL	American Radio Relay League
ARTCC	Air Route Traffic Control Center
AS	Alaska Statute
ASL	Above Sea Level
AST	Aboveground Storage Tank
ATC	Air Traffic Control

ATCAA	Air Traffic Control Assigned Airspace
ATS	Air Traffic System
AWC	Anadromous Waters Catalog
BA	Bachelor of Arts
BE	Bioenvironmental Engineering
BGEPA	Bald and Golden Eagle Protection Act
bgs	Below Ground Surface
BLM	Bureau of Land Management
BMP	Best Management Practice
BS	Bachelor of Science
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
C°	Celsius
CAA	Clean Air Act
CDP	Census Designated Place
CEMML	Center for Environmental Management of Military Lands
CEJST	Climate and Economic Justice Screening Tool
CEQ	Council on Environmental Quality
CFA	Controlled Firing Area
CFR	Code of Federal Regulations
CGP	Construction General Permit
cm	Centimeters
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalent
COC	Contaminant of Concern
COMACC	Commander of Air Combat Command
COMAR	Committee on Man and Radiation
CRC	Cultural Resource Consultants, LLC.
CWA	Clean Water Act
dB	Decibels
dBA	A-weighted Decibels
DBH	Diameter Breast Height
DFP	Defensive Fighting Position
DoD	Department of Defense

DoDI	Department of Defense Instruction
DOF	Division of Forestry & Fire Protection
DOI	Department of the Interior
DOT&PF	Department of Transportation & Public Facilities
DRO	Diesel Range Organics
DTA	Donnelly Training Area
CHPP	Central Heat and Power Plant
EA	Environmental Assessment
EC	Engineering Control
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EJ	Environmental Justice
EJScreen	Environmental Justice Screening and Mapping Tool
EMF	Electromagnetic Field
EMFR	Electromagnetic Field Radiation
EO	Executive Order
EPA	Environmental Protection Agency
EPN	Early Public Notice
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management
FIRM	Flood Insurance Rate Map
FNSB	Fairbanks North Star Borough
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FR	Federal Register
GCR	General Conformity Rule
GHG	Greenhouse Gas
GHz	Gigahertz
GPS	Global Positioning System
GREA	Gerstle River Expansion Area
GRTA	Gerstle River Training Area
GRTS	Gerstle River Test Site

GVEA	Golden Valley Electric Association
HAP	Hazardous Air Pollutant
HAZCOM	Hazard Communication
HFP	Haines-Fairbanks Pipeline
HIRF	High-Intensity Radiated Field
Hp	Horsepower
IBA	Important Bird Area
IC	Institutional Control
IEEE	Institute of Electrical and Electronics Engineers
IFR	Instrument Flight Rules
IICEP	Interagency/Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
IRP	Installation Restoration Program
JPARC	Joint Pacific Alaska Range Complex
LOS	Line-of-Sight
LUC	Land Use Control
MA	Master of Arts
MBTA	Migratory Bird Treaty Act
MEC	Munitions of Concern
mg/m^3	Milligrams per Cubic Meter
MMRP	Military Munitions Response Program
MOA	Military Operations Area
MPE	Maximum Permissible Exposure
MS	Master of Science
MSGP	Multi-Sector General Permit
MSL	Mean Sea Level
mt	Metric Ton
MTR	Military Training Route
MW	Megawatts
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program

NH_3	Ammonia
NHPA	National Historic Preservation Act
NLUR	Northern Land Use Research, Inc.
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NOA	Notice of Availability
NOI	Notice of Intent
NOTAM	Notice to Airmen
NO_x	Nitrogen Oxide and Nitrogen Dioxide
NRHP	National Register of Historic Places
NSR	New Source Review
NTTR	Nevada Test and Training Range
NWI	National Wetland Inventory
O_3	Ozone
OHV	Off-Highway Vehicle
Ops Site	Operations Site
OSHA	Occupational Safety and Health Administration
PACAF	Pacific Air Forces
PAH	Polycyclic Aromatic Hydrocarbon
Pb	Lead
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethylene
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonic Acid
PLO	Public Land Order
PM_{10}	Particulate Matter Less Than or Equal to 10 Microns in Diameter
$PM_{2.5}$	Particulate Matter Less Than or Equal to 2.5 Microns in Diameter
POL	Petroleum, Oil, and Lubricants
ppb	Parts per Billion
PPE	Personal Protective Equipment
ppm	Parts per Million
PSD	Prevention of Significant Deterioration

RCRA	Resource Conservation and Recovery Act
RF	Radio Frequency
RNAV	Area Navigation
ROAA	Record of Air Analysis
ROI	Region of Influence
ROW	Right-of-Way
RPM	Remedial Project Manager
SAAQS	State Ambient Air Quality Standard
SAM	Surface-to-Air Missile
SAP	Sikes Act Permit
SAR	Specific Absorption Rate
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SOA	State of Alaska
SS	Selection Standard
SUA	Special Use Airspace
SUAIS	Special Use Airspace Information Service
SWPPP	Stormwater Pollution Prevention Plan
TCE	Trichloroethylene
TFTA	Tanana Flats Training Area
TNT	Trinitrotoluene
TRACON	Terminal Radar Approach Control
TVOP	Title V Operating Permit
$\mu g/m^3$	Micrograms per Cubic Meter
US	United States
USACE	United States Army Corps of Engineers
USAG	United States Army Garrison
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

UST	Underground Storage Tank
VFR	Visual Flight Rules
VOC	Volatile Organic Compound
W/kg	Watts per Kilogram
W/m^2	Watts per Meter Squared
WHO	World Health Organization
WOTUS	Waters of the United States
WQC	Water Quality Certification
WQS	Water Quality Standard
YETI	Yukon Enhanced Training Initiative System
YTA	Yukon Training Area

1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION AND BACKGROUND

The United States (US) Air Force (Air Force) proposes to construct radar simulator infrastructure in the Joint Pacific Alaska Range Complex (JPARC) near Eielson Air Force Base (AFB), Alaska (Figure 1-1).

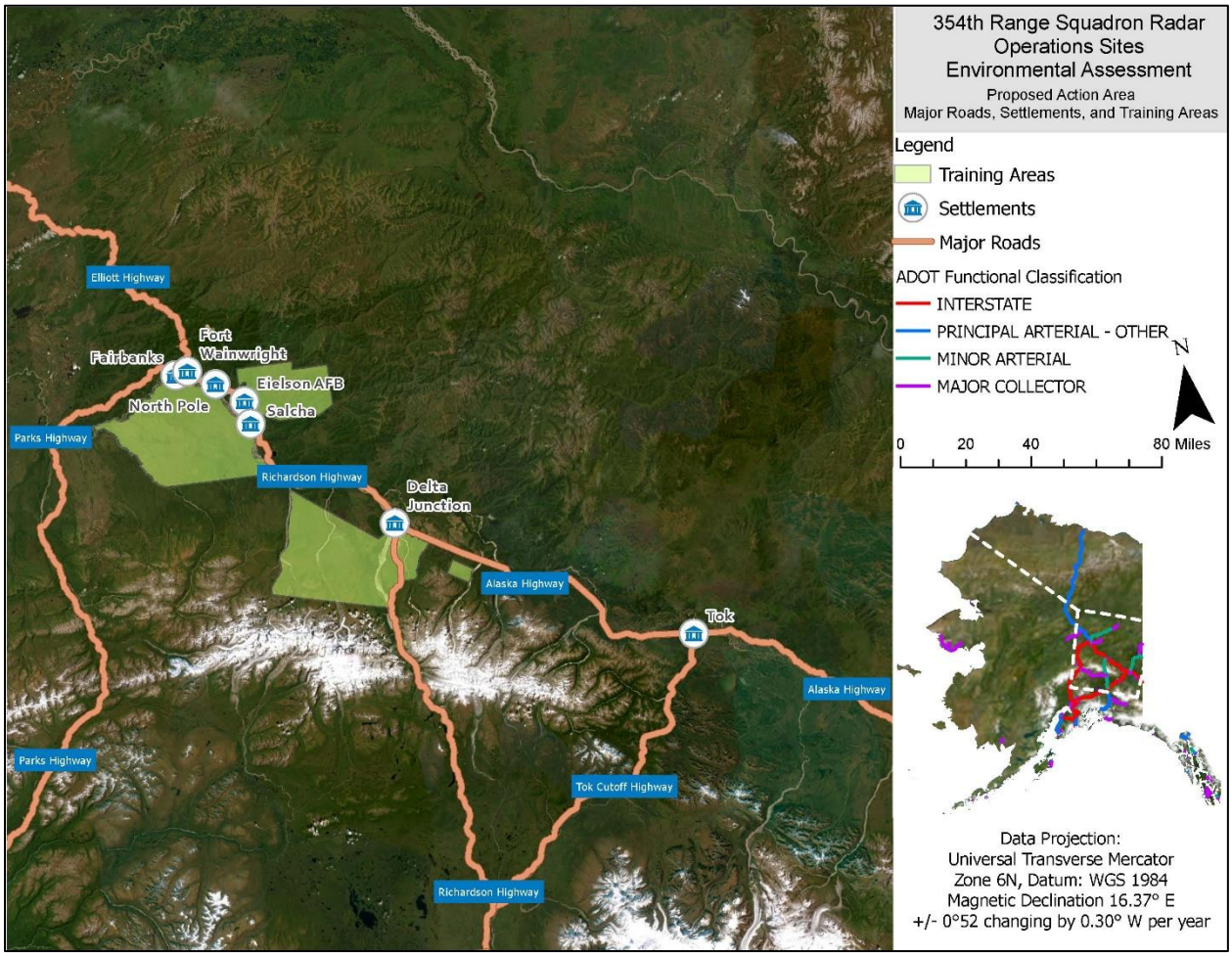


Figure 1-1. Proposed Action Area

The 354th Fighter Wing (354 FW) is the host unit at Eielson AFB with the mission to provide combat ready airpower, advanced integration training, and a strategic Arctic basing option. To accomplish that mission, the 354 FW hosts ten tenant units and implements flying operations, mission support, maintenance, and medical care functions. The 354 FW is assigned to the Eleventh Air Force (11 AF), headquartered at Joint Base Elmendorf-Richardson near Anchorage, Alaska. 11 AF falls under Pacific Air Forces (PACAF) headquartered at Hickam AFB, Hawaii.

Current JPARC threat systems represent adversary Nation systems that are 30 to 40 years old and do not provide adequate or realistic training. Newer radar simulator systems (herein, radars) like the Yukon Enhanced Training Initiative (YETI) system (i.e., a mobile trailer mounted radar system) were chosen to replace older radars to modernize training. The radars require road access for relocation efforts because they are too heavy to airlift. The radars also require

electrical power to operate. Because of the extended range of these new radars, current radar locations in the US Army Garrison (USAG) Alaska's Yukon Training Area (YTA) are too close in proximity to each other to maximize the full capability of these assets. Additionally, more radars are needed south of Eielson AFB to increase the number of training lanes to support concurrent training for over 100 flight crews within the JPARC.

1.2 LOCATION

Eielson AFB is located in Interior Alaska, approximately 20 miles southeast of Fairbanks, within the Fairbanks North Star Borough (FNSB). The proposed radar operations sites (ops sites) are distributed throughout an approximately 360-mile-long by 100-mile-wide corridor that is roughly bisected by the Richardson and Alaska Highways between the Yukon-Tanana Uplands and Alaska Range (Figure 1-1).

1.3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to improve F-35 Lightning II Joint Strike Fighter training effectiveness in the North Pacific operational theater. *Improve* is defined as the Air Force's ability to optimize pilot training opportunities by providing realistic scenarios based on current and projected threat assessments. *Effectiveness* is the Air Force's ability to successfully operate in the modern, contested environment of the Pacific theater. Improved effectiveness would enable the Air Force to posture the theater with appropriate assets, equipment, and readiness.

The need for the Proposed Action is to support and modernize the JPARC radar systems. Existing radar emulators are based on Soviet Union era (1922 through 1991) technology and do not represent the modern threat environment. Current inadequate training effectiveness conditions include:

1) JPARC threat systems lagging the pacing threat by 30 to 40 years;
2) Current threat systems are incapable of providing adequate or realistic training; and,
3) Insufficient threat systems are available to allow simultaneous training in multiple lanes.

Modernization of the JPARC was directed by the Commander of Air Combat Command (COMACC) in the 2020 Enterprise Range Plan. The 2020 Enterprise Range Plan is a 10-year range capabilities development plan requiring realistic, static, multispectral target surrogates to represent real-world complex target sets and realistic full-spectrum electronic warfare emitters intended to replicate an Integrated Air Defense System environment. Air Force directives were established that defined thresholds and objectives required to reach the desired end state: to provide the capability to support high-end advanced flight training for the joint force and its mission partners. These directives included the modernization of the JPARC and the Nevada Test and Training Range (NTTR), which would also make these the only Air Force ranges capable of providing adequate training for 5th and 6th generation aircraft.

1.4 SCOPE OF ENVIRONMENTAL ANALYSIS

The scope of analysis for the National Environmental Policy Act (NEPA) of 1969 (42 US Code [USC] § 4331 et seq.) and environmental compliance evaluations is the impacts associated with the construction of the radar ops sites and the operation of the radars.

The NEPA requires that decision-making proceed with full awareness of the environmental consequences that follow from a major Federal action, especially those consequences that could significantly and adversely affect the environment. Provisions for the Air Force to comply with and implement NEPA are found in the Council on Environmental Quality (CEQ) regulations

(40 Code of Federal Regulations [CFR] § 1500–1508) and the Air Force's Environmental Impact Analysis Process (EIAP; 32 CFR § 989). The Air Force's environmental assessment (EA) process leads to determining whether an environmental impact statement (EIS) or a Finding of No Significant Impact (FONSI) should be prepared.

The following NEPA documents have been prepared for previous JPARC projects:

- 2007. Eielson Air Force Base Infrastructure Development in Support of RED FLAG Alaska, Final Environmental Assessment.
- 2013. Modernization and Enhancement of Ranges, Airspace, and Training Areas in the Joint Pacific Alaska Range Complex in Alaska., Final Environmental Impact Statement.
- 2016. United States Air Force F-35A Operational Beddown – Pacific, Final Environmental Impact Statement.
- 2017. United States Air Force F-35A Operational Beddown – Pacific, Final Supplemental Environmental Impact Statement.

1.5 INTERGOVERNMENTAL COORDINATION, PUBLIC AND AGENCY PARTICIPATION

1.5.1 Interagency Consultations

Local, State, and Federal agencies with jurisdiction over the resources that may be affected by the Proposed Action were notified during the development of this EA.

A list of agencies consulted during EA analysis and copies of correspondence regarding the findings, concurrence, and resolution of any adverse effect are included in Appendix A.

1.5.2 Intergovernmental and Government-to-Government Consultations

Section 106 of the National Historic Preservation Act of 1966 (NHPA) implementing regulations (36 CFR § 800) require Federal agencies to consult with any Federally Recognized Tribes and Alaska Native Claims Settlement Act (ANCSA) corporations that attach religious and cultural significance to historic properties that may be affected by the Proposed Action. This includes Traditional Cultural Properties (TCPs). Consultation with a Federally Recognized Tribe or ANCSA corporation under Section 106 of the NHPA "must recognize the government-to-government relationship between the Federal Government and Indian tribes" (36 CFR § 800.2[c][2][ii][C]). Consistent with the NHPA; Department of Defense Instruction (DoDI) 4710.02, "Interactions with Federally Recognized Tribes;" Air Force Instruction (AFI) 90-2002 "Air Force Interaction with Federally Recognized Tribes;" and Air Force Manual (AFM) 32-7003, Environmental Conservation; the Air Force will consult with Federally-recognized Tribes and ANCSA corporations that are historically affiliated with the geographic region being considered for the Proposed Action regarding the potential to affect properties of cultural, historical, or religious significance to the Tribes.

The Tribal coordination process is distinct from NEPA or NHPA consultation and the Interagency / Intergovernmental Coordination for Environmental Planning (IICEP) processes and requires separate notification to all relevant Tribes. The timelines for Tribal consultation are also distinct from those of intergovernmental consultations. The Eielson AFB point-of-contact for Alaska Native Tribes is the Installation Commander. The Eielson AFB point-of-contact for consultation with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) is the Cultural Resources Manager.

The Alaska Native Tribal governments and ANCSA corporations that were invited to Government-to-Government consultation with Eielson AFB regarding this action are listed in Appendix A.

1.5.3 Public and Agency Participation

Early Public Notice

Pursuant to EO 11988, "Floodplain Management," the Air Force published an Early Public Notice (EPN), because alternatives under consideration would potentially impact the 100-year floodplain of the Tanana River. A 30-day comment period was provided for the public and agencies to provide comments in response to the EPN.

The EPN was published in the following newspapers, both in the physical paper and electronically, and the Eielson AFB Environmental website:

- Fairbanks Daily News Miner, Fairbanks, Alaska
- Delta Wind, Delta Junction, Alaska
- https://www.eielson.af.mil/General-Information/Environmental/

No public or agency comments were received for the EPN.

Notice of Availability of Draft EA and Proposed Finding of No Significant Impact (FONSI) and Finding of No Practicable Alternative (FONPA)

A Notice of Availability (NOA; Appendix D) was published announcing the availability of the Draft EA and Proposed FONSI and FONPA for a 30-day review and comment period. The NOA was published on March X, XXXX (public notice date will be provided in the Final EA) in the following newspapers, both in the physical paper and electronically, and the Eielson AFB Environmental website:

- Fairbanks Daily News Miner, Fairbanks, Alaska
- Delta Wind, Delta Junction, Alaska
- https://www.eielson.af.mil/General-Information/Environmental/

The Draft EA and Proposed FONSI and FONPA were made available electronically on the Eielson AFB Environmental website:

- https://www.eielson.af.mil/General-Information/Environmental/

The Air Force requested agency comments on the Draft EA and FONSI/FONPA concurrently with the public notice. The agencies contacted are listed in Appendix A. Public and agency comments will be included in Appendix A of the Final EA after the public notice period has ended.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Proposed Action would construct radar ops site infrastructure at nine locations on Federal, State, and FNSB land. Each new radar could operate independently. The concurrent operation of each additional simulator increases the variety and effectiveness of training. Infrastructure would include new gravel pads and access roads, powerlines and electrical feeders, generators, and fuel storage tanks. The land use designation for some of the lands selected would be changed from the implementation of the Proposed Action.

2.2 SELECTION STANDARDS AND CRITERIA

NEPA and its implementing regulations mandate the consideration of reasonable alternatives for the Proposed Action. ‘‘Reasonable’’ alternatives (32 CFR § 989.8b) are those that meet the underlying purpose and need for the Proposed Action and that would cause a reasonable person to inquire further before choosing a particular course of action. Reasonable alternatives are not limited to those directly within the power of the Air Force to implement. They may involve another government agency or military service to assist in the project or even to become the lead agency. The Air Force must also consider reasonable alternatives raised during the scoping process (32 CFR § 989.18) or suggested by others, as well as combinations of alternatives. The Air Force need not analyze highly speculative alternatives, such as those requiring a major, unlikely change in law or governmental policy. If the Air Force identifies a large number of reasonable alternatives, it may limit alternatives selected for detailed environmental analysis to a reasonable range or number of alternatives representative of the full spectrum of alternatives. Per the requirements of 32 CFR §989, the Air Force EIAP selection standards (SSs) are used to identify reasonable alternatives for meeting the purpose and need for the Proposed Action.

The Proposed Action alternatives must meet the following SSs:

1. *Maximize capability of the upgraded training system (Radar)*: Radars need to be located approximately 25 miles apart and support clear line-of-sight (LOS) from 10,000-feet above ground level (AGL) and above to enable maximum performance and accurate tactical representation of adversary Nations in the Pacific theater. The radars must also be positioned to simulate a defensive line that would likely be encountered along a coastal region and to support concurrent training for over 100 aircraft and flight crews.
2. *Road accessibility*: The radars are too heavy to airlift and as a result must be located within reasonable proximity of a road system to allow emplacement and maintenance. In the context of this SS, “reasonable” includes the consideration of cost, constructability, and environmental consequences.
3. *Electrical power*: The maximum power required for the operation of the radars are 0.4 megawatts (MW) for lower-draw systems and 0.75 MW for higher-draw systems. For large-scale air training events, the radars may operate for 12 hours per week for 10 weeks. However, average operation is 3 hours per week for 42 weeks. In total, the radars would operate approximately 246 hours per year. Mobile generators can provide the required power for some of the lower-draw systems, but long-term generator operation costs for the higher-draw systems is infeasible. Electrical grids must also be able to support simultaneous operation of connected radars.

Screening of Alternatives

The following potential alternatives that might meet the purpose and need for improving F-35 Lightning II Joint Strike Fighter training effectiveness in the North Pacific operational theater were considered:

- Alternative 1: Develop Radar Operations Sites on Mixed-Ownership Lands
- Alternative 2: Develop Five Radar Operations Sites Exclusively on Military Training Lands
- Alternative 3: Improve Eight Operations Sites in the YTA
- Alternative 4: Conduct Level 4 Training at NTTR
- Alternative 5: Make Improvements and Operate Radars from Previously Disturbed Sites in YTA
- Alternative 6: Construct Flight Simulators on Eielson AFB

The SSs were applied to the alternatives to determine which alternative(s) could improve 5th and 6th generation fighter training effectiveness in the North Pacific operational theater and would fulfill the purpose and need of the Proposed Action (Table 2-1).

Table 2-1. Applicability of Selection Standards

Alternative Descriptions	Selection Standards		
	Maximize Capability	Road Accessibility	Electrical Power
	(1)	(2)	(3)
Alternative 1	Yes	Yes	Yes
Alternative 2	No	Yes	Yes
Alternative 3	No	Yes	Yes
Alternative 4	No	Yes	Yes
Alternative 5	No	Yes	Yes
Alternative 6	No	Yes	Yes

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

Based on the application of the SSs, the following alternatives have been eliminated from further consideration and are not carried forward for analysis in this environmental analysis:

- Alternative 2: Develop Five Radar Operations Sites Exclusively on Military Training Lands
- Alternative 3: Improve Eight Operations Sites in the YTA
- Alternative 4: Conduct Level 4 Training at NTTR
- Alternative 5: Make Improvements and Operate Radars from Previously Disturbed Sites in YTA
- Alternative 6: Construct Flight Simulators on Eielson AFB

2.3.1 Alternative 2 (Develop Five Radar Operations Sites Exclusively on Military Training Lands)

The Air Force would construct radar ops sites at five locations in Interior Alaska, exclusively on military training lands. These sites would consist of one site on Air Force land (Engineer Hill site) and four sites on USAG Alaska training land that includes one YTA site (South Pole Hill

Ops Site), one Tanana Flats Training Area (TFTA) site (Bridge to Terabithia Ops Site), and two Donnelly Training Area (DTA) sites (Gerstle River and Gerstle River 2 Ops Sites). These ops sites would represent adversary surface-to-air missile (SAM) batteries and utilize radar and decoy target systems. Gravel operating pads linked by gravel roads would provide the ability to re-arrange the ops sites on a regular basis to keep training fresh. Each ops site would be approximately 20-acres and require the removal of vegetation and other obstacles to provide unobstructed LOS for the radar. The ops sites are shown in Figure 2-1.

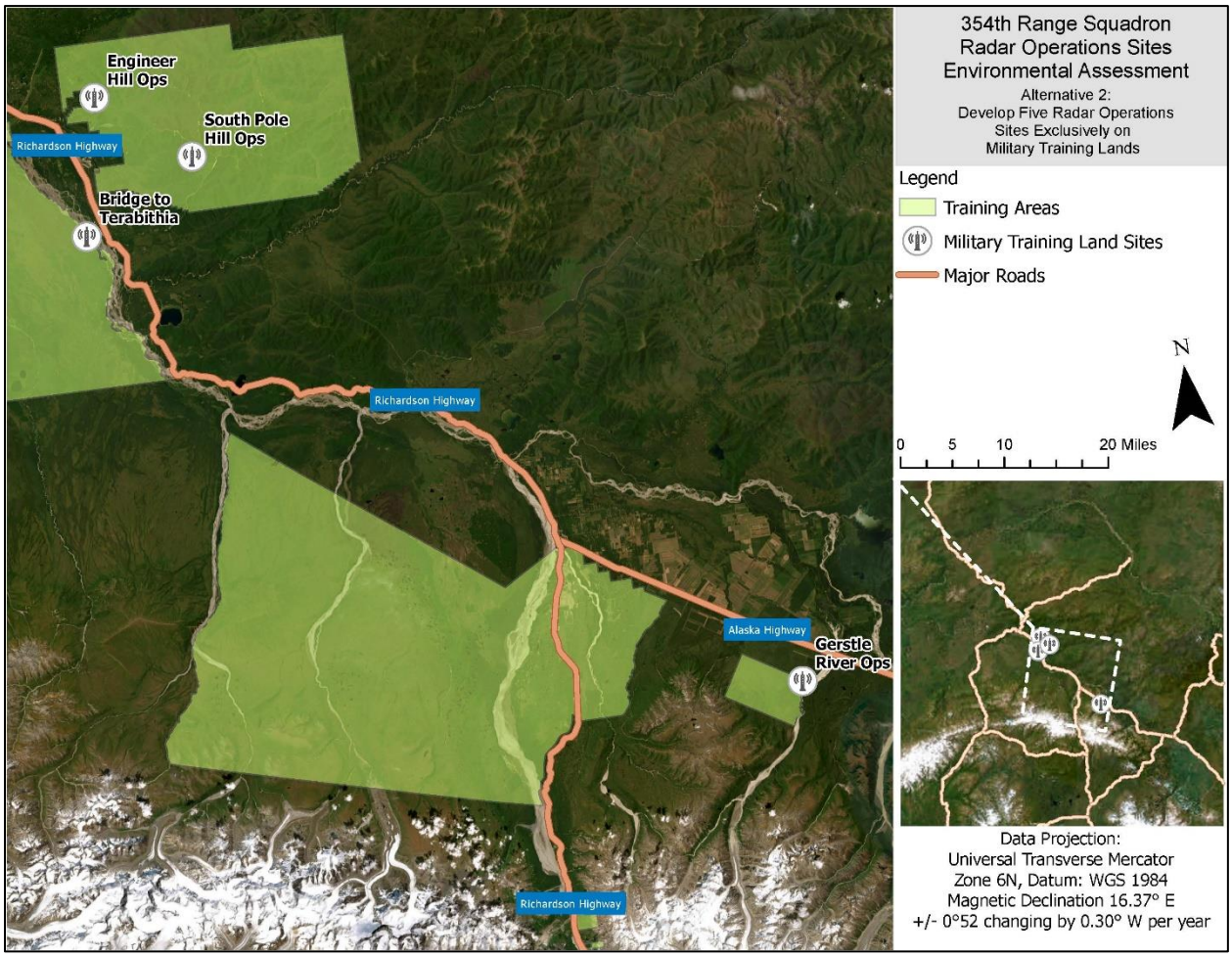


Figure 2-1. Alternative 2: Develop Five Radar Operations Sites Exclusively on Military Training Lands

All five ops sites would share features like those described in Section 2.4.2., and the unique features from the respective ops sites' descriptions. The Gerstle River 2 Ops Site would be located on USAG Alaska training lands within 6.5 miles of the defined Gerstle River Ops Site and would feature the same operating pad configuration.

SS Applicability: Alternative 2 does not satisfy SS #1. The geographic distribution of the systems fielded under Alternative 2 would not resemble the coast of potential adversary Nations in the Pacific theater, and the concentration of the systems would not allow for over 100 flight crews to train concurrently, violating SS #1.

2.3.2 Alternative 3 (Improve Eight Operations Sites in YTA)

The Air Force would improve eight existing radar ops sites on currently leased sites in the YTA to satisfy the requirements of the radar. One of these sites has the necessary electrical infrastructure to support the new radars. Electrical feeders and powerlines would be constructed to provide power to the remaining seven ops sites. Sites 1 and Site 3 have enough space to locate the inert decoy targets and the remaining six ops sites (Site 2 and Sites 4 through 8) would require improvements substantially similar to those described in Alternative 1 (Section 2.4.1.). The YTA sites are shown in Figure 2-2.

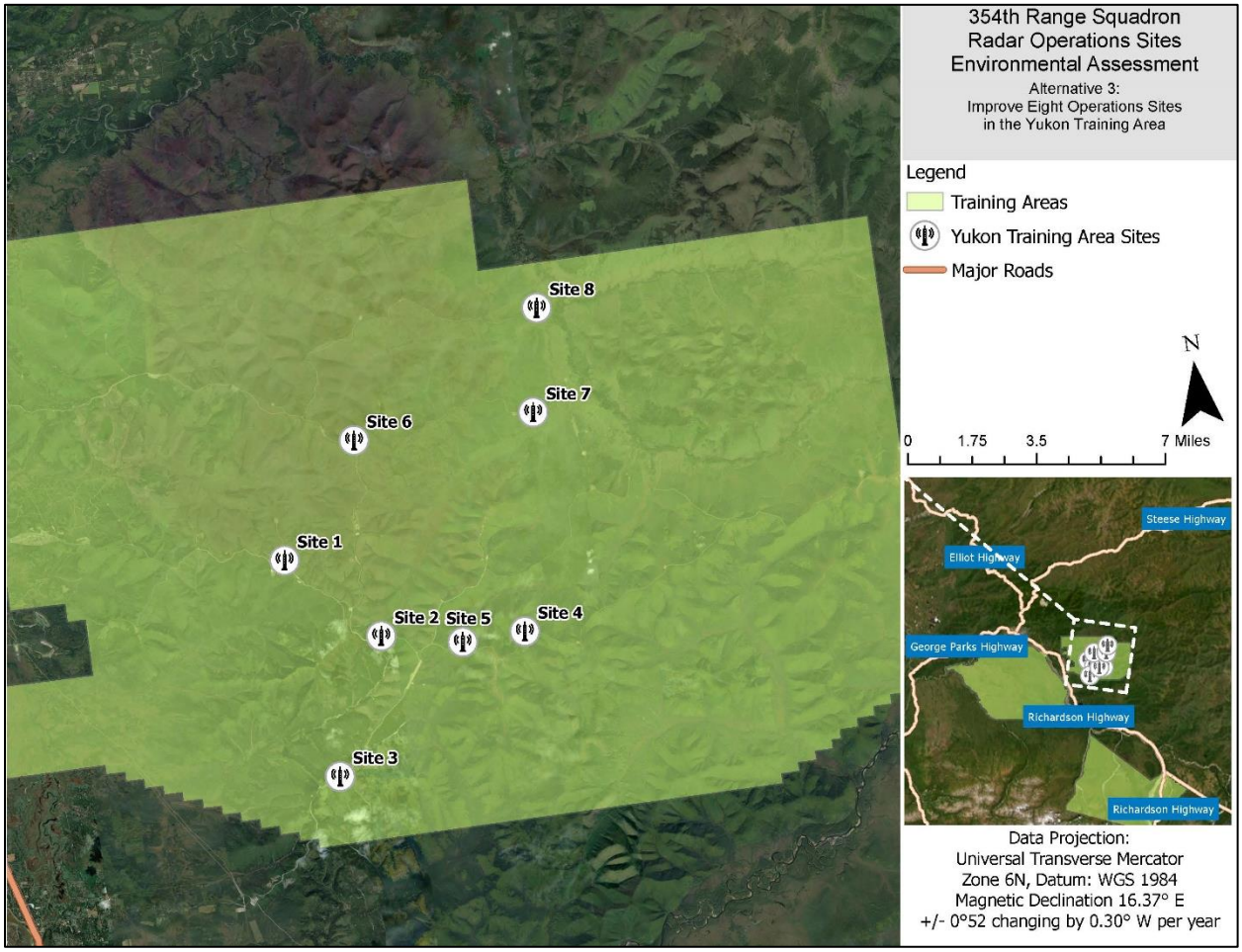


Figure 2-2. Alternative 3: Improve Eight Operations Sites in the YTA

SS Applicability: Alternative 3 does not satisfy SS #1. The geographic distribution of the systems that would be fielded under Alternative 3 would not resemble the coast of potential adversary Nations in the Pacific theater, and the concentration of the systems would not allow for over 100 flight crews to train concurrently. The greatest distance between ops sites would be nine miles, substantially less than the 25-miles between ops sites required by SS #1.

2.3.3 Alternative 4 (Conduct Level 4 Training at NTTR)

The Air Force would conduct the required training at the NTTR at Nellis AFB, Nevada. Pilots would travel to the NTTR and conduct training at the existing range facilities. The Air Force would not construct any new ops sites in Alaska.

SS Applicability: Alternative 4 would violate SS #1. The NTTR is a third of the size of the JPARC and is unable to support the requirement to train over 100 flight crews concurrently. The NTTR is surrounded by commercial airspace and does not allow for effective use of 5th Generation fighter tactics nor can the NTTR support the large joint force exercises of the JPARC.

2.3.4 Alternative 5 (Make Improvements and Operate Radars from Previously Disturbed Sites in YTA)

The Air Force would construct improvements at four permanent ops sites in YTA to attain the capability to temporarily operate radars. The improvements at the four permanent ops sites would resemble those described in Section 2.4.1. The temporary ops sites in YTA would be unimproved and electrical power would be provided by generators. Army training requirements would dictate the availability of the temporary ops sites, so the capability of Alternative 5 would vary between four to nine ops sites. The distribution of the ops sites is shown in Figure 2-3.

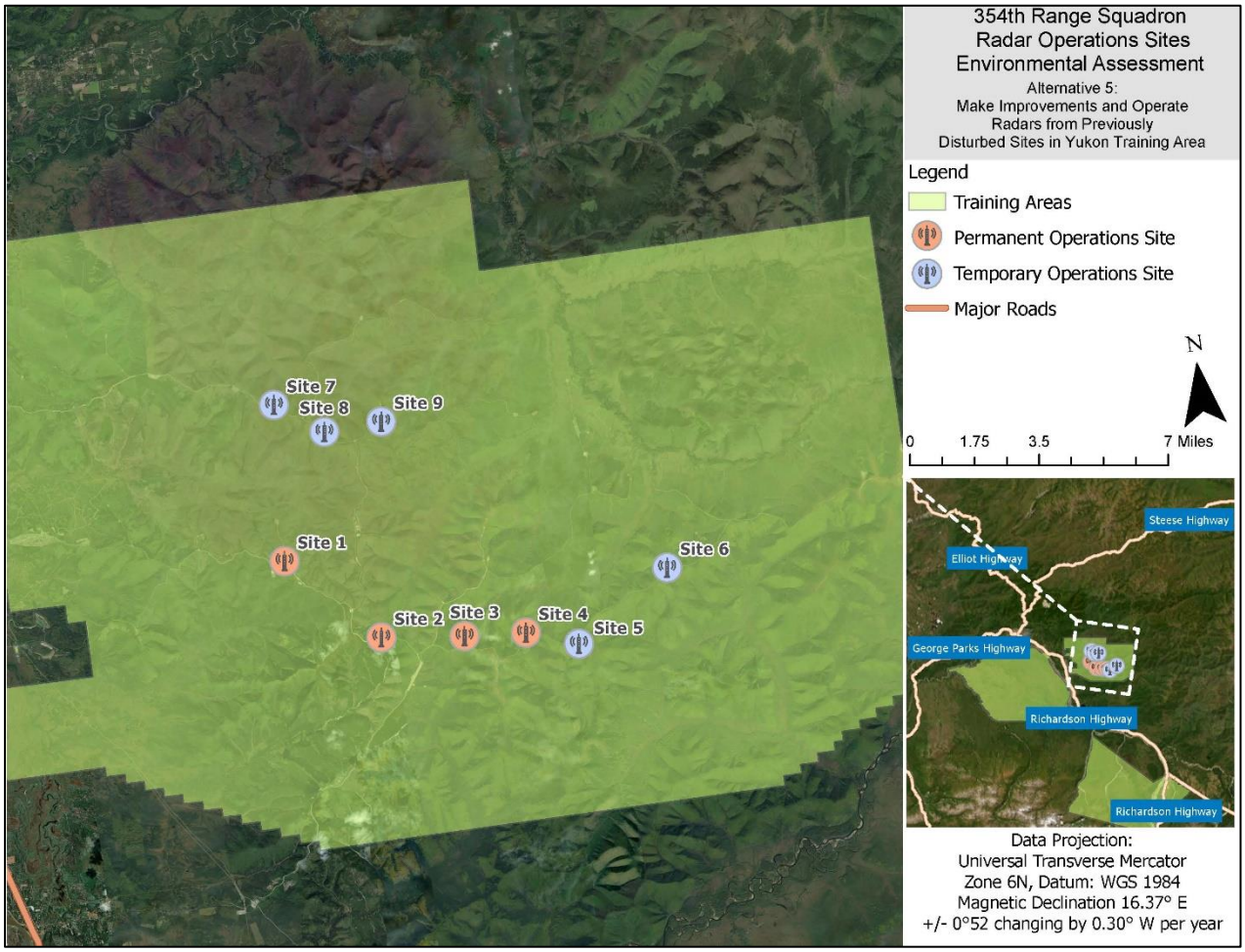


Figure 2-3. Alternative 5: Make Improvements and Operate Radars from Previously Disturbed Sites

SS Applicability: Alternative 5 does not satisfy SS #1. The geographic distribution of the radars that would be fielded under Alternative 5 would not resemble the coast of potential adversary Nations in the Pacific theater and the concentration of the systems would not allow for over 100 flight crews to train concurrently. The greatest distance between ops sites would be 11 miles, substantially less than the 25-miles between ops sites required by SS #1.

2.3.5 Alternative 6 (Construct Flight Simulators on Eielson AFB)

The Air Force would construct additional radar simulators at Eielson AFB to provide training to air crews. Currently Eielson AFB operates six F-35 simulators. Approximately 24 additional F-35 simulators would be needed, as well as simulators to support exercise aircraft including F-15's, F-16's, F-18's, and other allied aircraft. Software would be developed to link the simulators to provide a realistic joint exercise training experience.

SS Applicability: Alternative 5 would violate SS #1. The cost to construct the number of simulators required to enable over 100 flight crews to train simultaneously would be approximately $300 million, considering the cost of F-35 simulators and support exercise aircraft. The necessary funding and software are unavailable, so Alternative 5 would violate SS #1 because it would not allow the concurrent training of over 100 flight crews.

2.4 ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

2.4.1 Alternative 1 / Preferred Alternative (Develop Radar Operations Sites on Mixed-Ownership Lands)

Herein, this alternative will be referred to as the Preferred Alternative. The Air Force would construct radar ops sites at nine locations in Interior Alaska (Figure 2-4).

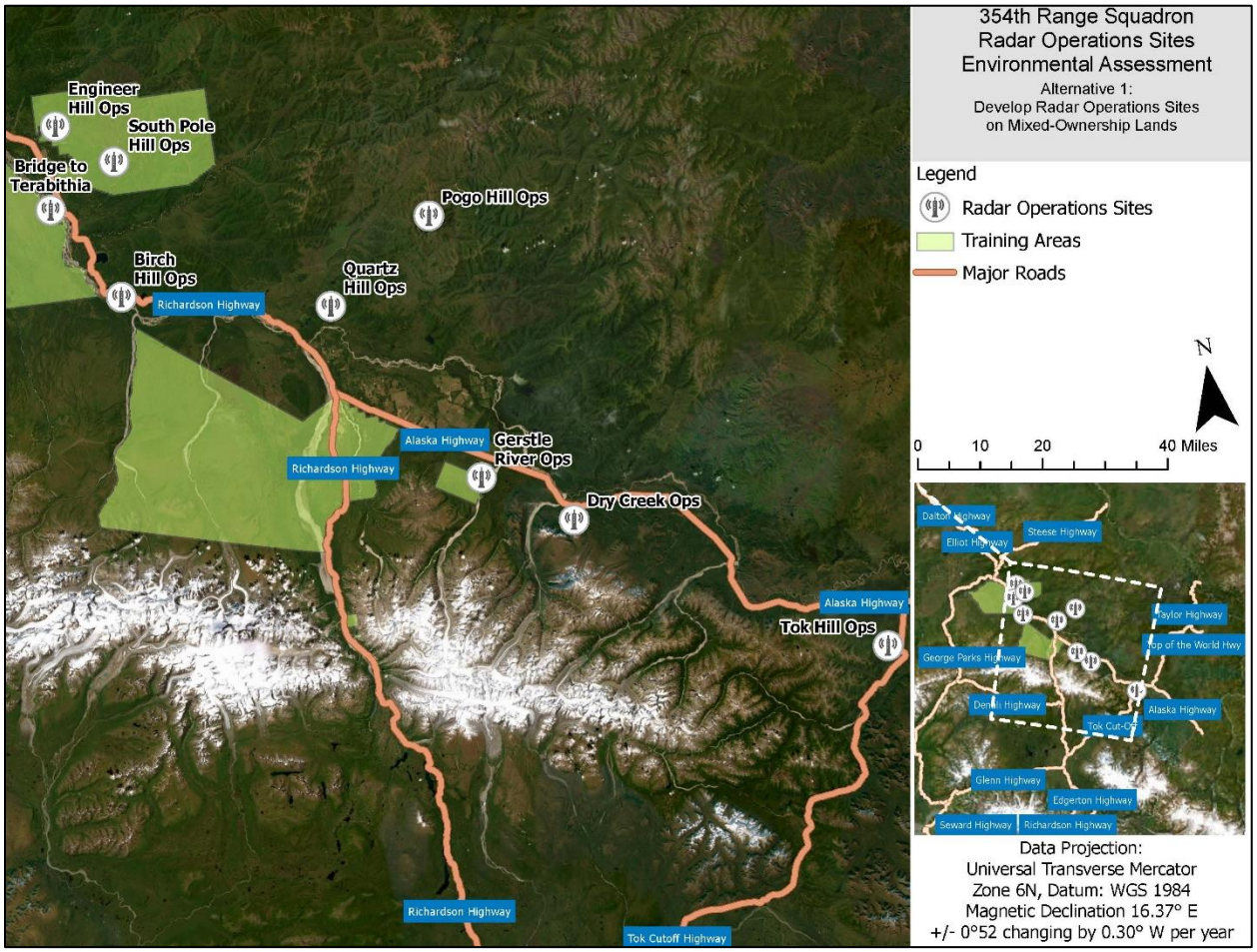


Figure 2-4. Alternative 1 / Preferred Alternative: Develop Radar Operations Sites on Mixed-Ownership Lands

Four of the ops sites would be located on State of Alaska (SOA) land, three ops sites would be on USAG Alaska land, one ops site would be on Air Force land, and one ops site would be on FNSB land (Table 2-2).

Table 2-2. Radar Ops Sites on Mixed-Ownership Lands

Landowner	Ops Site
Air Force	Engineer Hill
USAG Alaska	South Pole Hill
USAG Alaska	Bridge to Terabithia
FNSB	Birch Hill
SOA	Pogo Hill
SOA	Quartz Hill
USAG Alaska	Gerstle River
SOA	Dry Creek
SOA	Tok Hill

These ops sites would represent adversary SAM batteries and utilize radars and decoys. Gravel operating pads linked by gravel roads to established roadways would provide the ability to rearrange the radar and decoys on a regular basis to diversify training. Each ops site would be approximately 20-acres and would require the removal of vegetation and other obstacles to provide unobstructed LOS for the radar. The new access roads and electrical feeders would require additional clearing, dictated by the distance of vegetation to existing roads and power grids. All nine ops sites would share some similar components:

- Equipment used for construction would include hydro-axes, bulldozers, rock trucks, loaders, graders, and compactors;
- All roads and pads would be built with gravel from existing, established material sites;
- Gravel excavation and hauling equipment would be stored at the material sites when not in use;
- New access roads would be single lane with a 12-foot-wide surface and 2:1 side slope, resulting in 20-foot-wide toe-to-toe embankments;
- Roads would be 2 feet of compacted pit run gravel with a 6-inch E1 surface course;
- Roads would be built to accommodate a 40,000-pound trailer and a 30,000-pound tow vehicle;
- All transformer pads and utility vaults would be precast concrete;
- Vegetation would be cleared at the ops sites to the minimum extent required to achieve LOS requirements;
- Vegetation would be cleared up to approximately 15-feet on both sides of the electrical alignment to provide a 30-foot-wide corridor;
- Staging areas are not anticipated;
- Up to two radars would be operated at each ops site;
- Up to four inert decoy targets (wheeled vehicles about 8.5-feet wide and 53-feet long and about 24,000 pounds) would be staged at each ops site to mimic real-world targets;
- The inert decoy targets would be positioned on the gravel pads or ring-road between 100 to 200 feet from the radar and periodically repositioned within their respective site.

Unique features will be described for each ops site.

Engineer Hill Ops Site

This site is approximately located at 64.7353 °N., -147.0112 °W. on land owned by the Air Force. A new access road approximately 2-miles long would be constructed on existing road (i.e., paved and unpaved paths intended to support on-highway vehicle traffic) and trail (i.e., a path not necessarily intended to support on-highway vehicle traffic) alignments. Approximately 0.7-miles of the distal end of the new access road is aligned with an existing trail and would require vegetation clearing for the 50-foot-wide right-of-way (ROW). Approximately 26.2-acres of vegetation would be cleared to satisfy LOS requirements, and salvaged timber would be temporarily stockpiled near the terminus of the new access road. Three operating pads connected by the new access road would be constructed at the site: two 40-foot by 100-foot pads and one 200-foot by 200-foot pad. Electricity would be provided by a new electrical feeder and 0.7-miles of installed aerial powerline along the distal end of the new access road in the same ROW that tie into the existing power grid.

The Engineer Hill Ops Site layout, new access road, powerline alignment, cleared area, and attendant features are shown in Figure 2-5.

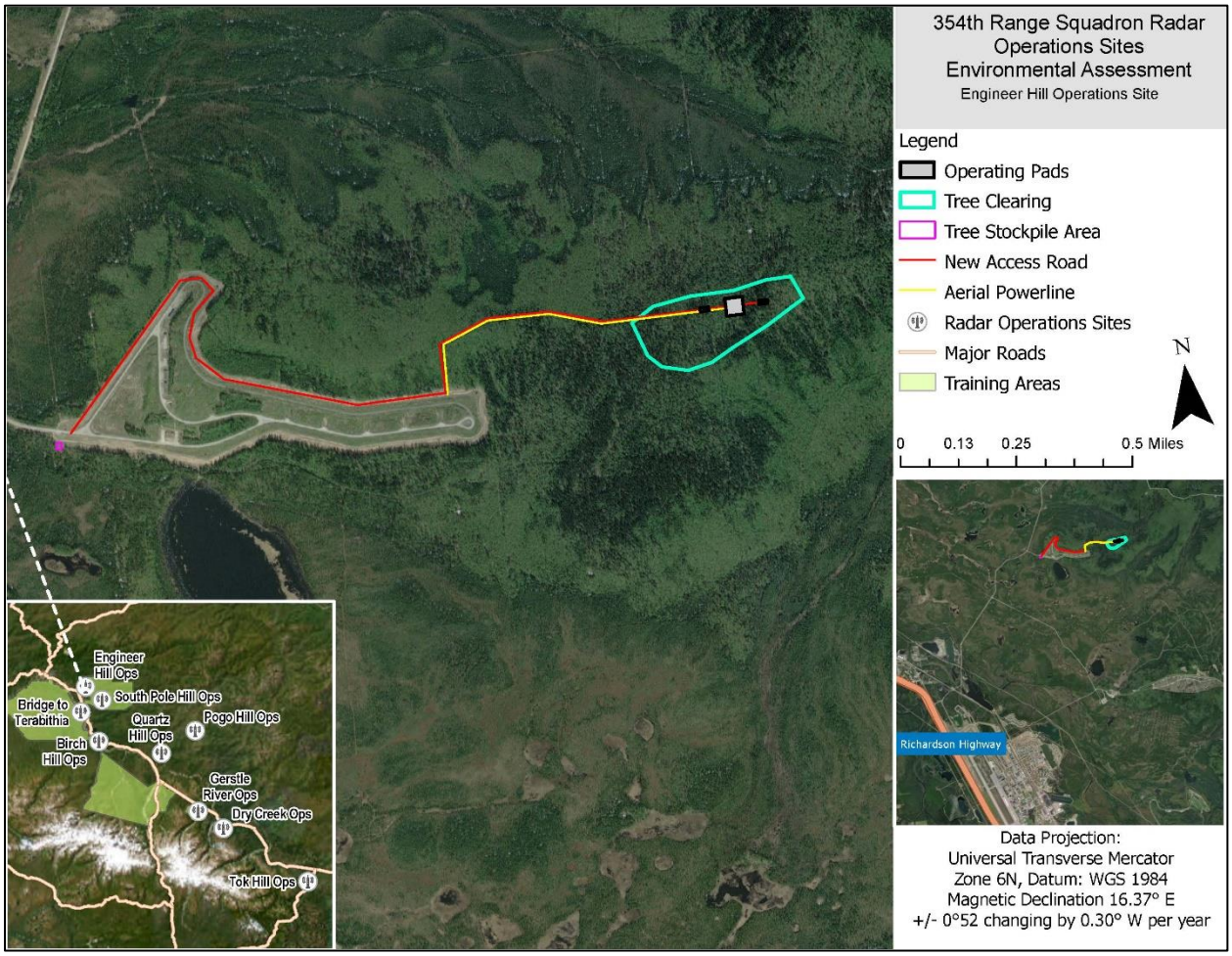


Figure 2-5. Engineer Hill Ops Site

South Pole Hill Ops Site

This site is located approximately at 64.6400 °N., -146.7112 °W. on USAG Alaska training land. A 0.5-mile-long new access road would be constructed along an existing trail. Approximately 17.4-acres of vegetation clearing would be required to satisfy LOS requirements, and salvaged timber would be temporarily stockpiled at an existing location along Quarry Road, approximately 2.5-miles north of the ops site. Three 100-foot by 100-foot operating pads connected by new access roads would be constructed at the site. Electricity would be provided by a new electrical feeder and 0.5-miles of installed aerial powerline in the new access road ROW that tie into the existing power grid.

The South Pole Hill Ops Site layout, new access road, powerline alignment, cleared area, and attendant features are shown in Figure 2-6.

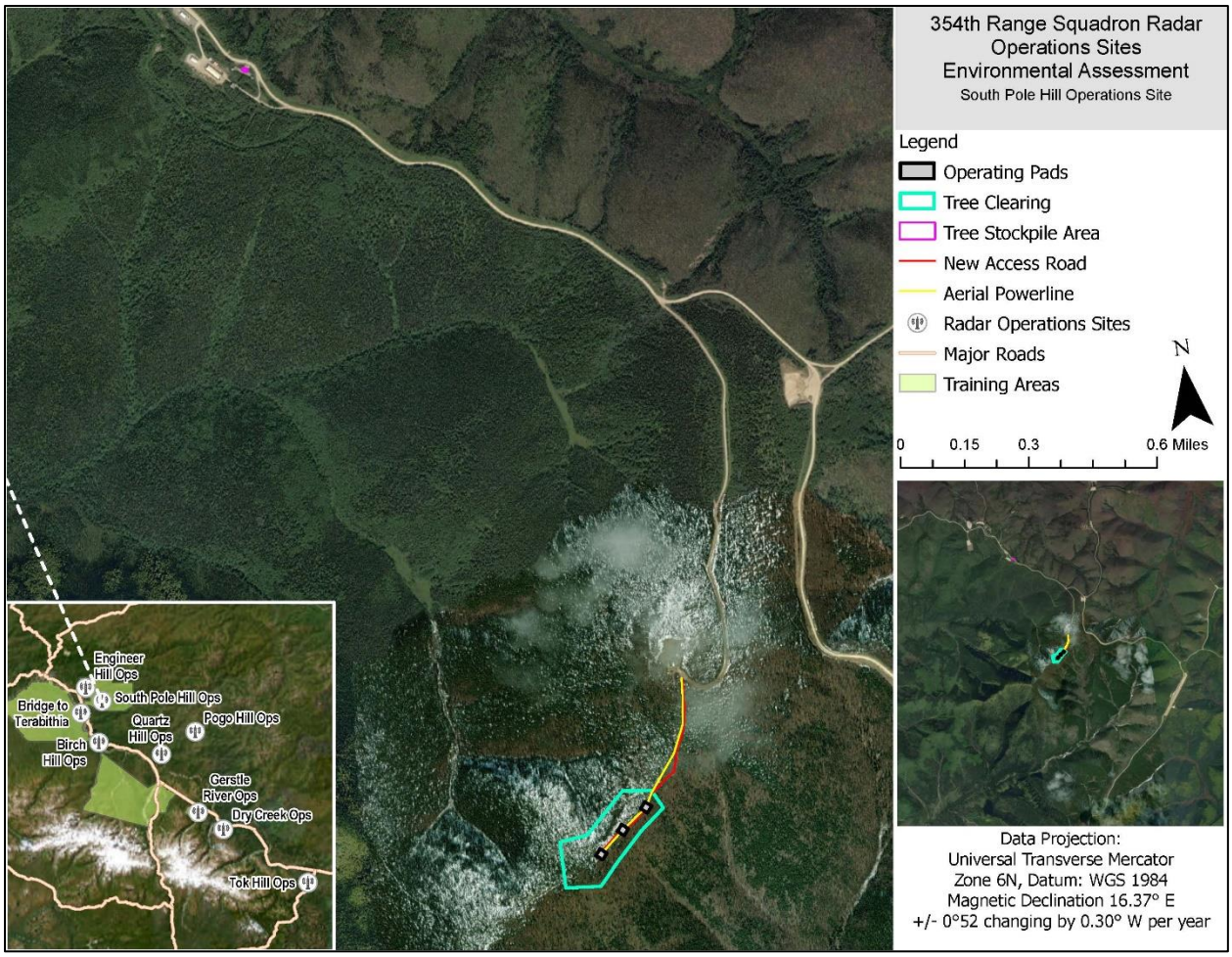


Figure 2-6. South Pole Hill Ops Site

Bridge to Terabithia Ops Site

This site is approximately located at 64.5435 °N., -147.0868 °W. on USAG Alaska training lands. A new 250-foot-long (approximately 0.05-miles) gravel access road would be constructed, tying into the existing road extending from the Tanana River Rail Bridge into the TFTA. Approximately 13.9-acres of vegetation clearing would be required to satisfy the LOS requirements, and salvaged timber would be temporarily stockpiled onsite in the eastern corner of the cleared area. The operating pad would consist of a 16-foot-wide road with 24-foot basal cross section that forms a 400-foot by 400-foot square with an additional 16-foot-wide road running from the northern corner to the southern corner. Electricity would be provided by a new electrical feeder and 2.1-miles of installed aerial powerline in the new access road ROW that would tie into the existing power grid in Salcha, Alaska. The powerlines would cross the existing bridge.

The Bridge to Terabithia Ops Site layout, new access road, powerline alignment, cleared area, and attendant features are shown in Figure 2-7.

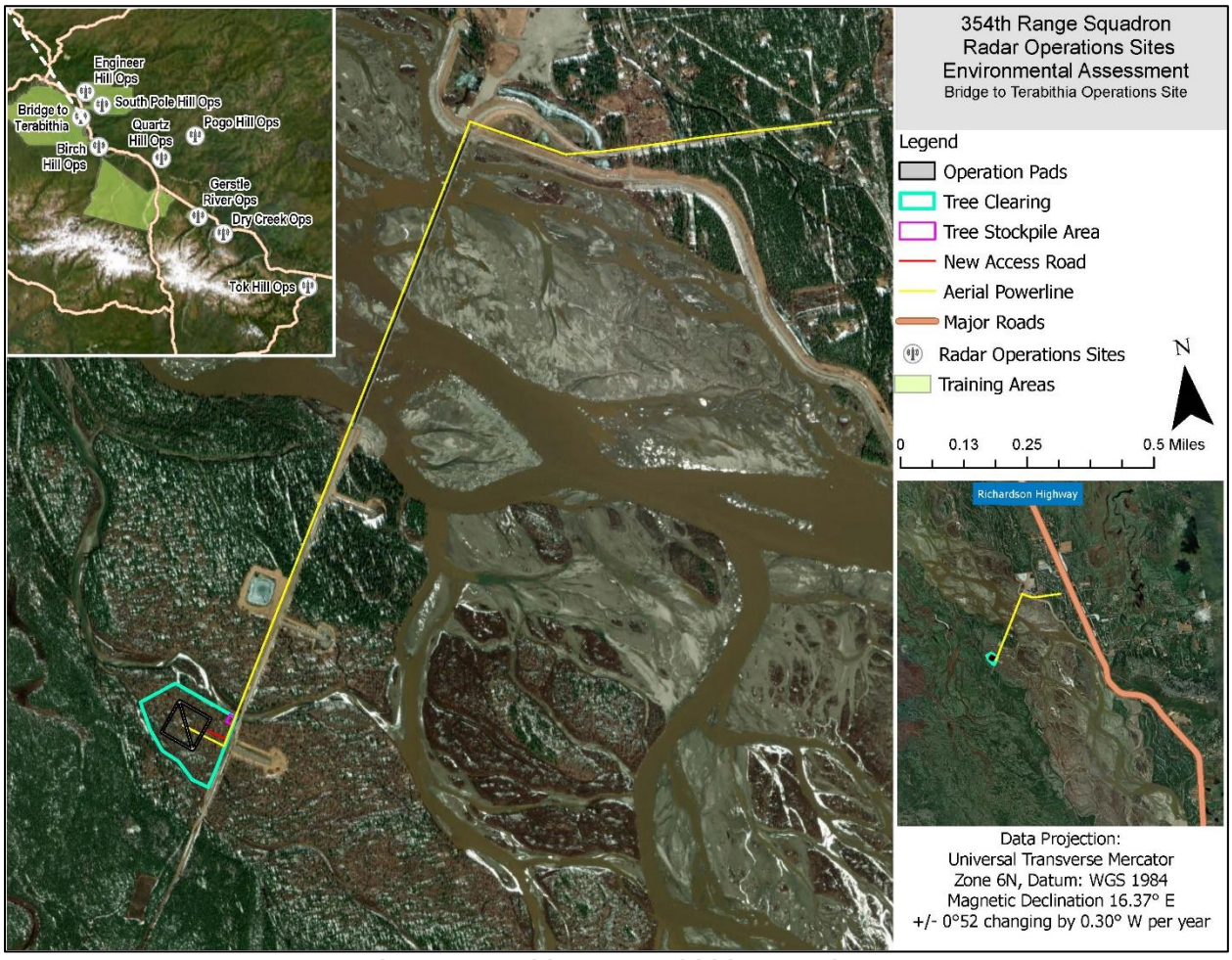


Figure 2-7. Bridge to Terabithia Ops Site

Birch Hill Ops Site

This site is approximately located at 64.3258 °N., -146.7757 °W. on land owned by the FNSB. A new access road approximately 0.76-miles long, tying into the Richardson Highway, would be constructed north of the ops site. Vegetation along the alignment is intact and a 30-foot-wide ROW would be cleared prior to road development. Approximately 28.9-acres of vegetation would be cleared to satisfy LOS requirements, and salvaged timber would be temporarily stockpiled onsite within the cleared area. The site would include three 100-foot by 100-foot operating pads connected by the new access road. Electricity would be provided by a new electrical feeder and 0.5-miles of installed aerial powerline that tie into the existing power grid to the north of the site. The powerline alignment is separate from the new access road and would follow the most direct route to the existing power grid.

The Birch Hill Ops Site layout, new access road, powerline alignment, cleared area, and attendant features are shown in Figure 2-8.

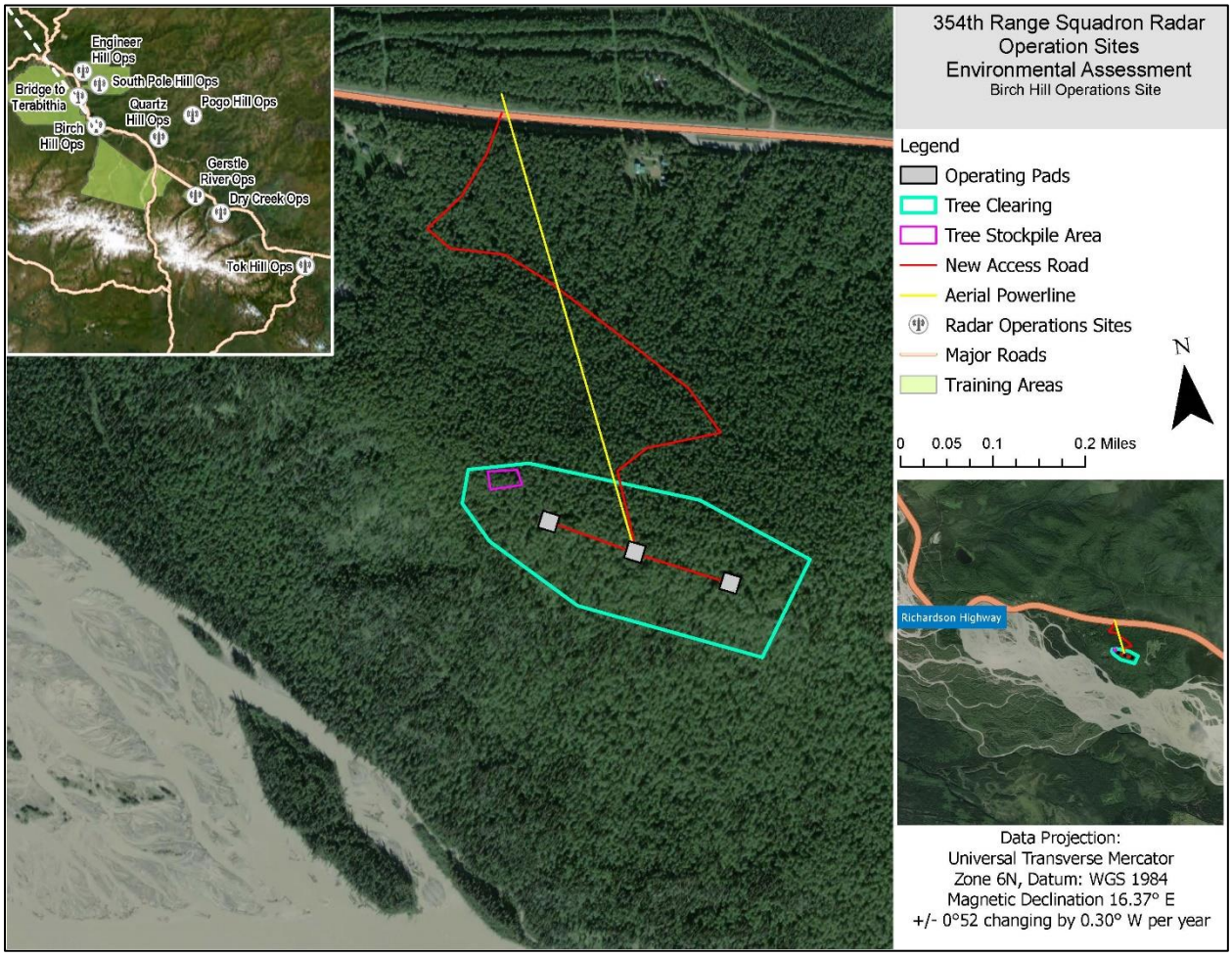


Figure 2-8. Birch Hill Ops Site

Pogo Hill Ops Site

This site is approximately located at 64.4065 °N., -145.0888 °W. on land owned by the SOA. A new access road approximately 1.4-miles long would be constructed along an existing unimproved road alignment. *Unimproved road* is defined as a road that can at most support Off-Highway Vehicle (OHV) traffic due to inadequate aggregate surface material. Potentially up to 14.1-acres of vegetation would be cleared at the site to satisfy LOS requirements, and salvaged timber is not expected to be generated from site clearing. One 150-foot by 150-foot operating pad would be constructed at the site. Electricity would be provided by a new electrical feeder and 1.6-miles of installed aerial powerline that tie into the existing power grid southwest of the ops site. The powerline alignment extends from the existing power grid west of Pogo Mine Access Road before following the alignment of an unnamed unimproved road to the op site.

The Pogo Hill Ops Site layout, new access road, powerline alignment, cleared area, and attendant features are shown in Figure 2-9.

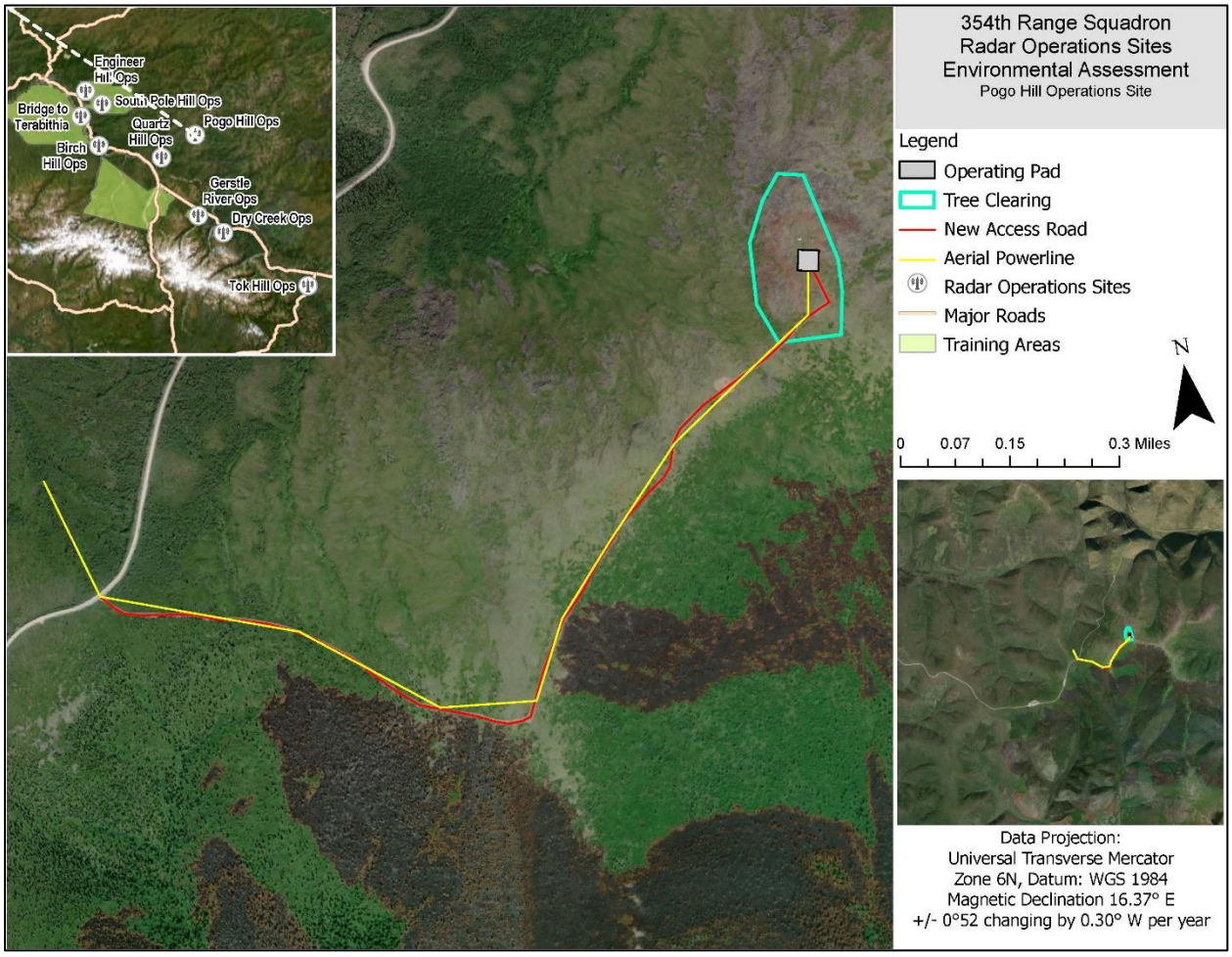


Figure 2-9. Pogo Hill Ops Site

Quartz Hill Ops Site

This site is approximately located at 64.2363 °N., -145.6720 °W. on land owned by the SOA. A 6.3-mile-long new access road would be constructed along the unimproved Quartz Lake Extension Forest Road with the last portion spanning across a previously undisturbed alignment that was minimize to the extent practicable. Approximately 17-acres of vegetation clearing would be required to satisfy LOS requirements and salvaged timber would be temporarily stockpiled in the southern part of the cleared area. A single 150-foot by 150-foot operating pad would be constructed. A diesel generator supplied by a 5,000-gallon aboveground storage tank (AST) would produce the electricity required to operate the radar. During winter, when necessitated by low temperatures, a small gasoline generator would be used to warm up the diesel generator prior to operations.

The Quartz Hill Ops Site layout, new access road, cleared area, and attendant features are shown in Figure 2-10.

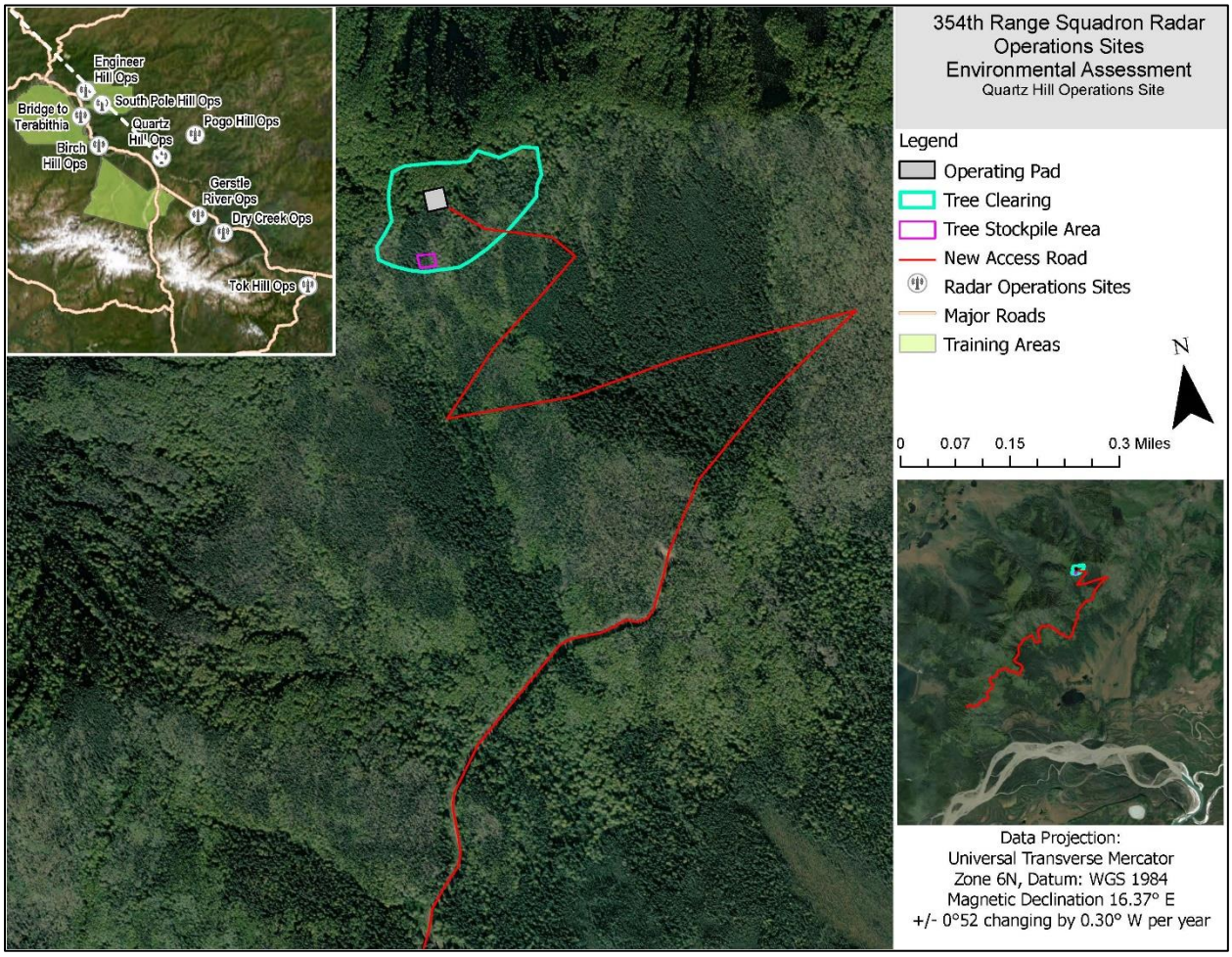


Figure 2-10. Quartz Hill Ops Site

Gerstle River Ops Site

This site is located approximately at 63.7901 °N., -145.0362 °W. on USAG Alaska training land. A 0.2-mile-long new access road would be constructed, tying into the existing Tower Road. Approximately 20.5-acres of vegetation would be cleared to satisfy the LOS requirements, and salvaged timber would be temporarily stockpiled at an existing location adjacent to the new access road. The operating pad would consist of a 16-foot-wide road with 24-foot basal cross section in a 400-foot by 400-foot square configuration with an additional 16-foot-wide road running from its northern corner to the southern corner. Electricity would be provided by a new electrical feeder and approximately 1.1-miles of installed powerline (0.9 miles aerial powerline and 0.2 miles of underground powerline) in the new access road ROW that tie into the existing power grid northeast of the ops site. The underground segment of the powerline would extend across a helicopter landing zone from the western end of the aerial powerline to complete the link to the ops site.

The Gerstle River Ops Site layout, new access road, powerline alignment, cleared area, and attendant features are shown in Figure 2-11.

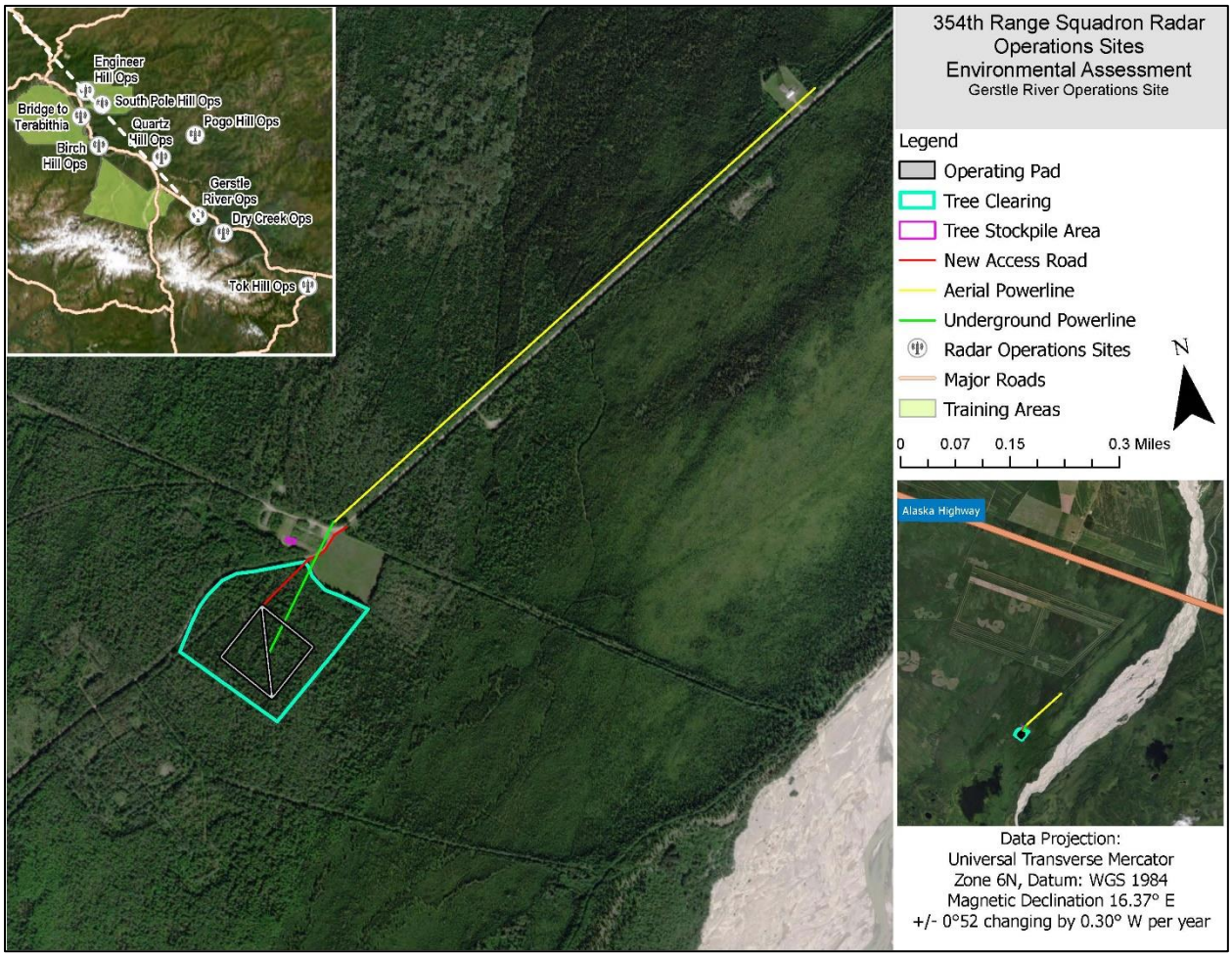


Figure 2-11. Gerstle River Ops Site

Dry Creek Ops Site

This site is approximately located at 63.6554 °N., -144.6032 °W. on land owned by the SOA. A 2.9-mile-long new access road would be constructed along a previously undisturbed alignment and a 50-foot-wide ROW would be cleared along the new access road alignment. Approximately 4.8-acres of vegetation clearing would be required to satisfy LOS requirements, and salvaged timber would be temporarily stockpiled in the southern part of the cleared area. Three operating pads connected by the new access road would be constructed at the site: two 40-foot by 100-foot pads and one 200-foot by 200-foot pad. A diesel generator supplied by a 10,000-gallon AST would produce the electricity required to operate the radar. During winter, when necessitated by low temperatures, a small gasoline generator would be used to warm up the diesel generator prior to operations.

The Dry Creek Ops Site layout, new access road, cleared area, and attendant features are shown in Figure 2-12.

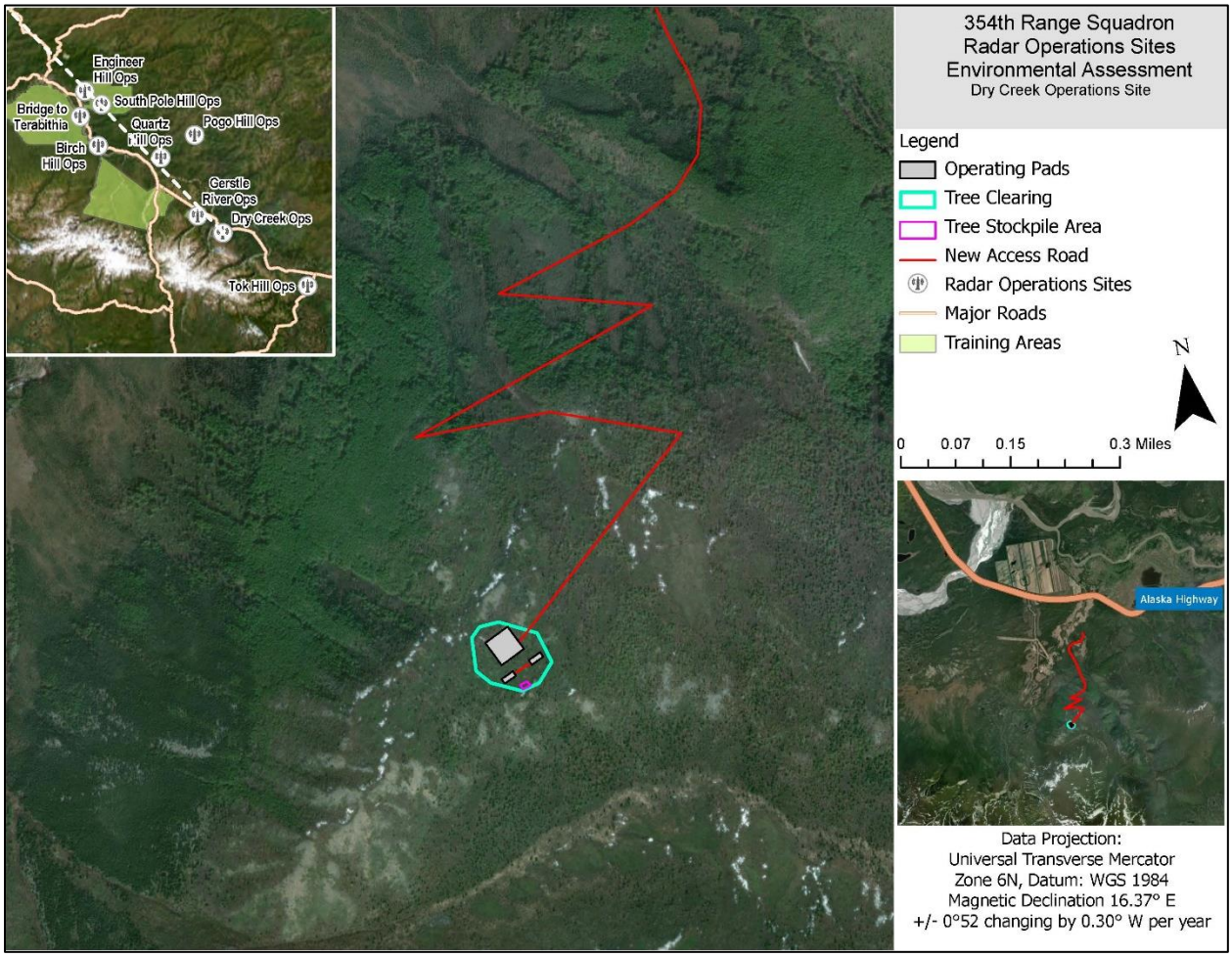


Figure 2-12. Dry Creek Ops Site

Tok Hill Ops Site

This site is approximately located at 63.2423 °N, -143.1156 °W. on land owned by the SOA. A new access road approximately 3.9-miles long would be constructed along an existing trail alignment. Approximately 10.2-acres of vegetation would be cleared to satisfy LOS requirements. Salvaged timber, including timber salvaged for electrical and road development, would be temporarily stockpiled in the southern part of the cleared area. Three ops pads connected by the new access road would be constructed at the site: two 40-foot by 100-foot pads and one 200-foot by 200-foot pad. Electricity would be provided by a new electrical feeder and 3.1-miles of installed aerial powerline that tie into the existing power grid northeast of the ops site. The powerline alignment is separate from the new access road and would follow the most direct route between the ops site and existing power grid. A diesel generator may temporarily power the radar until the powerline would be installed. There would be no permanent fuel storage.

The Tok Hill Ops Site layout, new access road, powerline alignment, cleared area, and attendant features are shown in Figure 2-13.

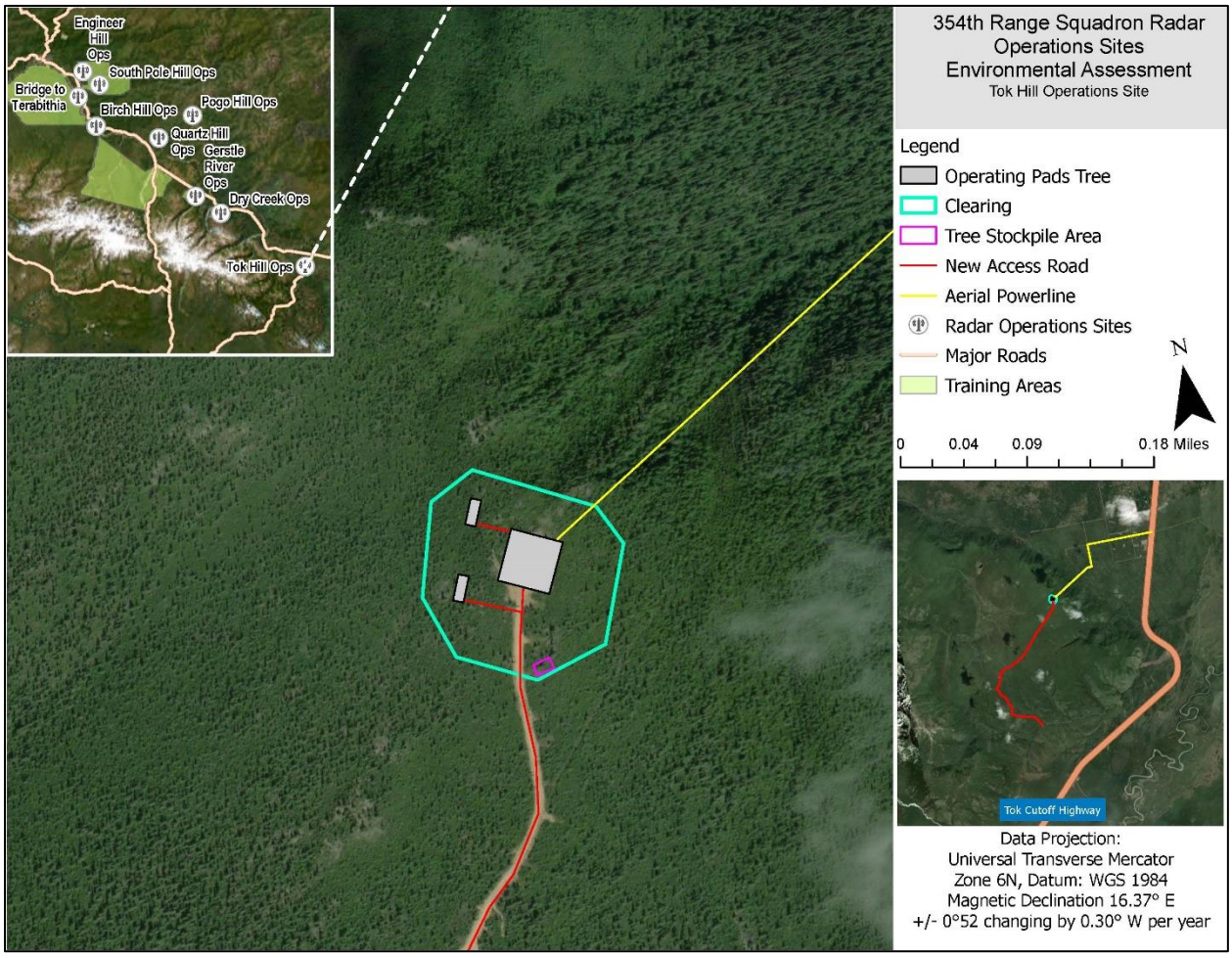


Figure 2-13. Tok Hill Ops Site

2.4.2 No-Action Alternative

The Air Force would take no action towards improving 5th and 6th generation fighter training effectiveness in the North Pacific operational theater. The Air Force would continue to operate two radars from six temporary ops sites in the YTA. Training would continue to be limited and inadequate to replicate a modern threat environment.

2.5 SUMMARY OF ALTERNATIVES AND RESOURCES

For the Proposed Action to be accomplished, the Preferred Alternative would be implemented. No other alternatives would support adequate, realistic training for 5th and 6th generation aircraft as directed by the COMACC in the 2020 *Enterprise Range Plan* to meet the Air Force's unique mission of national security.

This section will summarize the Preferred Alternative and No-Action Alternative resource impact determinations (Table 2-3) and the Preferred Alternative unavoidable adverse effects, relationship, relationship of short-term uses and long-term productivity, and irreversible and irretrievable commitments of resources.

Table 2-3. Summary of Air Force Resource Impact Determinations

Resource Area	Preferred Alternative – Develop Radar Operations Sites on Mixed-Ownership Lands	No-Action Alternative
Airspace Management and Use	Minor permanent adverse impacts	No impact to airspace management and use
Land Use	Minor permanent adverse and beneficial impacts	Negligible impacts
Hazardous Materials and Waste	Minor permanent adverse impacts	Minor permanent adverse impacts
Safety and Occupational Health	Minor temporary and permanent adverse impacts	Minor permanent adverse impacts
Noise	Minor temporary and permanent adverse impacts	Minor permanent adverse impacts
Air Quality	Minor temporary and permanent adverse impacts	Minor permanent adverse impacts
Water Resources	Minor temporary and permanent adverse impacts	Minor permanent adverse impacts
Earth Resources	Minor temporary and permanent adverse impacts	Negligible impacts
Biological / Natural Resources	Minor temporary and permanent adverse impacts	Minor permanent adverse impacts
Cultural Resources	No adverse effect on historic properties	No impact to cultural resources
Socioeconomic Resources and Environmental Justice	Minor temporary and permanent adverse impacts and minor temporary and permanent beneficial impacts	Negligible impacts
Transportation	Minor temporary adverse and permanent beneficial impacts	Negligible impacts
Utilities	Minor permanent adverse impacts	Minor permanent adverse impacts

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Per revised CEQ regulations (July 2020), this EA will include the discussion of both the Affected Environment and Environmental Consequences for succinctness and clarity. The Region of Influence (ROI) for the Proposed Action is the portion of Interior Alaska shown in Figure 1-1 unless otherwise specified.

This chapter describes the current conditions of the environmental resources, both anthropogenic and natural, that would be affected by alternatives of the Proposed Action. The alternatives being considered and analyzed are the Preferred Alternative and the No-Action Alternative. The potential environmental consequences described in this chapter that are likely to occur from the implementation of the alternatives are evaluated in terms of:

- Type (Positive/Beneficial or Adverse);
- Context (Setting or Location);
- Intensity (None, Negligible, Minor, Moderate, Severe); and,
- Duration (Short-term/Temporary or Long-term/Permanent).

The type, context, and intensity of an impact are explained under each resource area. Unless otherwise noted, short-term/temporary impacts are those that would result from the activities associated with construction activities that would end upon the completion of that phase. Long-term impacts are generally those resulting from the operation associated with an alternative.

3.1 AIRSPACE MANAGEMENT AND USE

3.1.1 Affected Environment

Airspace within the ROI supports military, commercial, personal, and general aviation activities. These activities have been reasonably compatible due to airspace structuring and management through the Air Traffic Control (ATC) system and coordination between the military and the Federal Aviation Administration (FAA). Airspace within a region is identified on FAA Visual Flight Rules (VFR) charts. The Anchorage (FAA 2023a) and Fairbanks (FAA 2023c) Sectional Aeronautical VFR Raster Charts inform the airspace within the ROI and are updated every 56 days. The specific types of airspace relevant to the Proposed Action are described in Table 3-1.

Table 3-1. Airspace Applicable to the Proposed Action

ATS Classification	Type	Class	Altitude (Feet MSL)	Description
Regulatory	ATCAA	A	18,000 – 600,000	Extends over terrain and coastal waters within 12 nautical miles of the continental US and beyond within where domestic procedures apply.
	ATCAA	D	Up to 2,500	Generally, surrounds airports with an operational control tower.
	ATCAA	E	14,500 – 17,999	Serves various terminal or en route purposes.
	SUA	Restricted Area	Varies[1]	Confines an activity to a specific area and/or imposes limitations on aircraft operations.
Non-Regulatory	SUA	MOA	Up to 17,999	Separates non-hazardous military activities from IFR air traffic to minimize impacts and meet mission training requirements.
	SUA	MTR	Up to 10,000	Specifically, represents a flight corridor that supports high speed, low altitude DoD flight training.

ATS Classification	Type	Class	Altitude (Feet MSL)	Description
	SUA	Alert Area	Varies[1]	Informs pilots of an area where there is a high volume of pilot training or an unusual type of aeronautical activity.
	SUA	CFA[2]	Varies[1]	Contains activities considered hazardous to other aircraft and that require a controlled environment.

Sources: (FAA 2023b)
Notes:
[1] Designated altitude of the airspace is determined by the type(s) of activities within the area.
[2] Controlled Firing Areas (CFAs) are not depicted on aeronautical charts since activities are suspended and/or terminated when other aircraft are within range (e.g., a live fire range would suspend operations if an aircraft was approaching the surface danger zone). Nonparticipating aircraft do not need to modify operations.
Key: ATCAA = Air Traffic Control Assigned Airspace; ATS = Air Traffic System; CFA = Controlled Firing Area; DoD = Department of Defense; IFR = Instrument Flight Rules; MOA = Military Operations Area; MSL = Mean Sea Level; MTR = Military Training Route; SUA = Special Use Airspace

Air Traffic Control Assigned Airspace (ATCAA) is vertically and laterally assigned by the ATC and controlled by applicable Air Route Traffic Control Center (ARTCC). ATCAAs provide air traffic segregation between the activities being conducted within the assigned airspace and other traffic. Special Use Airspace (SUA) is assigned based on the need to confine or limit certain aircraft operations due to certain hazardous activities (e.g., military training). ATCAA generally overlies and extends beyond SUA. The SUA Information Service (SUAIS), an Alaska-specific resource, provides daily status of the Alaska SUAs. It is operated by the military and provides 24-hour service to civilian pilots flying VFR with information regarding military flight operations in a Military Operations Area (MOA) and/or Restricted Area.

The Eielson AFB airfield is where based aircraft and other participating aircraft using the Proposed Action ops sites would arrive and depart. *Based aircraft* are aircraft home stationed at Eielson AFB. This airfield is within the Eielson AFB MOAs and Class A and D airspace, and it has a control tower with Instrument Flight Rules (IFR) operation capabilities but is strictly used for military purposes. The ATCAA of Eielson AFB airfield is controlled by the Anchorage ARTCC, and Eielson AFB approach and departure services are supported by the Fairbanks Terminal Radar Approach Control (TRACON) facility. Air Force operations, to include joint Air Force military operations, are exempted from 14 CFR § 91 by the FAA for conducting lights-out air operations training. These operations require a prior Notice to Airmen (NOTAM).

Eielson AFB airfield supports approximately 45,059 annual air operations each year, and air traffic is typically highest during April through October due to major flying exercises. The number of annual air operations varies year to year due to various circumstances including but not limited to, (1) the number of major flying exercises and combat and training aircraft deployments, and (2) annual fiscal constraints (Air Force 2016). The term *air operations* applies to activities that take place at an airfield and within the airspace. Total air operations includes based and transient aircraft at Eielson AFB. *Transient aircraft* are aircraft that visit on a temporary basis (e.g., to participate in a major flying exercise or travel through the area).

3.1.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would develop new radar ops sites and replace JPARC training radar systems with modern radars to implement a long-term modernization of the JPARC in accordance with direction received from the COMACC. This would improve the effectiveness of Air Force training operations within the JPARC. The impacts on airspace management and use

from the Preferred Alternative are consistent with the consequences assessed for "Airfield and Airspace Operations and Management" in the *United States Air Force F-35A Operational Beddown – Pacific, Final Environmental Impact Statement*, dated February 2016. Thus, the Air Force determined that the Preferred Alternative would, at most, have minor permanent adverse impacts to airspace management and use.

The radars would replicate the modern threat environment, and the new ops sites would expand training scenarios by optimizing use of existing airspace, predominately airspace within the JPARC, at the current operating pace (i.e., number and frequency of air operations). The Preferred Alternative aligns with the purpose of the JPARC airspace, and it is not anticipated to exceed its capability. Rather, it would enhance the JPARC capabilities by enabling concurrent training for over a 100 flight crews. The structure and management of JPARC restricted areas, MOAs, overlying ATCAAs, and other designated airspaces would not be modified under this alternative. Although, it would change the scheduling frequency of a particular airspace due to the development of the proposed ops sites. However, this would be consistent with yearly variation in air operations as the Air Force develops new training scenarios to maintain force readiness. Thus, impacts to the current airspace would generally relate to the change in the frequency of use for a particular airspace.

Each ops site underlies Class A airspace, and, aside from the Tok Hill Ops Site, beneath an MOA. Military air operations are prioritized over other air operations in an MOA unless airspace is needed to support an emergency operation (e.g., firefighting aircraft employed to fight a wildfire). The MOAs above the ops sites are also Alert Areas due to the high volume of military air training and operations. Military Training Routes (MTRs) and Class E airspace Federal airways and low−altitude air area navigation (RNAV) routes run throughout the ROI near the ops sites. Class E RNAV routes T 232 and T 417 run near the Tok Hill Ops Site that is adjacent to the Tok Airport's Class E airspace. The Engineer Hill Ops Site is within Eielson AFB airfield Class E airspace. The Engineer Hill and South Pole Hill Ops Sites are beneath Restricted Area airspace, specifically R-2205 B & G, which only allows military training and operations (e.g., artillery and mortar live fire and air operations) and as necessary, emergency operations.

Under the Preferred Alternative, the Air Force would continue to coordinate air operations with the appropriate entities like the FAA, public, and local and regional airspace users. This will ensure safe air operations within the ROI multi-user airspaces. Coordination would include notification to other airspace users, as appropriate, and may include the Air Force issuing a NOTAM or updating the SUAIS.

No-Action Alternative

The No-Action Alternative would have no impact on existing airspace management and use. Under the No-Action Alternative, air operations would continue to use the established, outdated JPARC training radar systems and two radars that would rotate between six temporary ops sites within the YTA. The Air Force would coordinate with and notify the appropriate entities when conducting air operations to ensure safe use of the established MOA and restricted airspace at the current training pace. Although, training would continue to be limited and inadequate to replicate a modern threat environment.

3.2 LAND USE

3.2.1 Affected Environment

Land uses are discussed by ops site in this section. Each ops site township, range, section, meridian and nearest census designated place (CDP) is described in Table 3-2.

Table 3-2. Ops Site Location Information

Ops Site	Section	Township	Range	Meridian	Nearest CDP	
					Name (Population[1])	Approximate Distance & Direction from Ops Site
Engineer Hill	18	2 South	4 East	Fairbanks	Eielson AFB (2,610)	Occurs within CDP
South Pole Hill	22	3 South	5 East	Fairbanks		
Bridge to Terabithia	26	4 South	3 East	Fairbanks	Salcha (977)	~1.5 miles East
Birch Hill	9	7 South	5 East	Fairbanks	Harding-Birch Lakes (253)	Occurs within CDP
Pogo Hill	12	6 South	13 East	Fairbanks	Big Delta (444)	~23.3 miles Southwest
Quartz Hill	12	8 South	10 East	Fairbanks		~2.5 miles Southwest
Gerstle River	16	13 South	14 East	Fairbanks	Deltana (2,359)	Occurs within CDP
Dry Creek	35	14 South	16 East	Fairbanks	Dry Creek (61)	Occurs within CDP
Tok Hill	21	17 North	12 East	Copper River	Tok (1,243)	Occurs within CDP

Notes:
[1] Population data was retrieved data collected for the 2020 Decennial Census (USCB 2020).

Engineer Hill Ops Site

The Engineer Hill Ops Site is located near the Engineer Hill munitions storage and maintenance area at Eielson AFB on an isolated hill in the Yukon-Tanana Uplands. An individual must have access to Eielson AFB to reach this site. Engineer Hill Road extends into the gated munition storage and maintenance area from Transmitter Road. An unnamed, dirt unimproved road surrounds the perimeter of the fenced area. An unnamed trail on the northeast side of the Engineer Hill storage and maintenance area extends from the unnamed unimproved road to the proposed Engineer Hill Ops Site at a trail crossroads.

The site is on military land where military training and operations are prioritized over other land uses. However, the Engineer Hill Ops Site is a multi-user site that supports recreational activities like hiking and hunting as well as fishing in nearby streams. Each year, Eielson AFB allows only one individual to trap within the area. Bait stations, martin (*Martes americana*) traps, and trapping signs were observed along the trail during a July 2023 survey. The hunting and fishing activities are subject to State and Eielson AFB regulations. Furthermore, natural resources (e.g., land use) are managed in accordance with the Eielson AFB's Integrated Natural Resources Management Plan (INRMP; Eielson AFB 2017). An INRMP is an installation-specific plan developed in cooperation with applicable stakeholders pursuant to the Sikes Act.

South Pole Hill Ops Site

The South Pole Hill Ops Site is located within the Yukon-Tanana Uplands in YTA. Quarry Road, a gravel road, extends from Eielson AFB to the ops site. Quarry Road is gated at the boundary of Eielson AFB to restrict access onto the base. Johnson Road, a gravel road, extends to the ops site from the Richardson Highway. YTA is a controlled-access area: only military personnel, contractors, and permitted individuals are allowed entry. When used to describe a roadway or ground-based area, *controlled-access* means user access is limited but not prevented by a physical barrier (e.g., gate). An unnamed gravel road diverges from Quarry Road and extends to an unnamed trail that follows a narrow ridgeline to the South Pole Hill Ops Site. During a July 2023 survey, the trail lacked evidence of frequent use, indicating low usage of the area for recreational purposes.

The site is on military land where military training and operations are prioritized over other land uses. However, the South Pole Hill Ops Site is within a multi-user area that supports recreational land uses. A Sikes Act Permit (SAP) is required for individuals of the general public

that are 16 years old or older to access the YTA for recreational purposes. The most likely recreational activities to occur in this area are hiking and hunting. Bear baiting is not allowed at the South Pole Hill Ops Site and the adjacent areas to its north, east, and southeast. However, it is allowed southwest of the site (DPW-ENV 2023). Hunting and fishing activities within YTA are subject to State and USAG Alaska regulations. Furthermore, natural resources (e.g., land use) are managed in accordance with the USAG Fort Wainwright's INRMP (FWA USAG 2013).

Bridge to Terabithia Ops Site

The Bridge to Terabithia Ops Site is located within the USAG Alaska TFTA. The ops site is adjacent to an unnamed gravel road that extends west from the Richardson Highway across from Tom Bear Trail and crosses the Tanana River Rail Bridge into the TFTA, a controlled-access area. A Tanana River Rail Bridge Permit from the Alaska Railroad Corporation (ARRC) is required to cross the Tanana River Rail Bridge. This bridge was constructed to serve as a crossing for the ARRC and provide year-round military access to the TFTA. This bridge has an established ARRC private easement.

A SAP is also required for individuals of the general public who are 16-year-old or older to recreate at the TFTA. Although the TFTA is a multi-user area that supports recreational land uses, it is military land, and military training and operations are prioritized over other land uses. Hunting and fishing in the TFTA are subject to both State and USAG Alaska regulations. Furthermore, natural resources (e.g., land use) are managed in accordance with the USAG Fort Wainwright's INRMP (FWA USAG 2013).

Birch Hill Ops Site

The Birch Lake Ops Site is situated on top of a hill near Milepost 310 between Birch and Harding Lakes within the Yukon-Tanana Uplands. The Richardson Highway extends along the northern side of the hill whereas the Tanana River spans the southern side. The new access road alignment avoids two private property parcels on the south side of the Richardson Highway. During a July 2023 survey, a faint trail to and through the proposed ops site location was observed and indicates hiking and small-motorized vehicle recreational activities occur within the area.

Pogo Hill Ops Site

The Pogo Hill Ops Site is located within the Yukon-Tanana Uplands near the Pogo Mine. The predominant land uses within the proximity of the Pogo Hill Ops Site are associated with mining. There are numerous active mines and mining claims in the area (ADNR 2023). Specifically, at the proposed ops site there is a Pogo Mine telecommunications facility that signals to Delta Junction, Alaska.

The new access road to the Pogo Hill Ops Site would extend from the Pogo Mine Access Road and align with an existing unimproved road to the site. The Pogo Mine Access Road is a single lane, gravel road under a private easement (ADNR 2023). Access along this road is restricted by a gate due to road and mining hazards. To access the road, permission must be attained from the Northern Star Resources Limited.

Although the Pogo Mine Access Road has access restrictions, there are various recreational activities that may occur in or near the area. The North Fork of Fortymile-Big Delta and Goodpaster River Trails are approximately 5 miles east of the site. Nearby the trails are the Goodpaster River and its tributaries that are open to certain kinds of fishing. State regulations apply to hunting and fishing activities in this area.

Quartz Hill Ops Site

The Quartz Lake Ops Site is located within the Yukon-Tanana Uplands in an area designated as Tanana Valley State Forest by Alaska Statute (AS) 41.17.400. From the Richardson Highway, Quartz Lake Access Road connects with the Quartz Lake Extension Forest Road. Both are gravel roads, and a portion of the Quartz Lake Extension Forest Road is unimproved. The access route aligns with the unimproved portion of the Quartz Lake Extension Forest Road before extending to the ops site via switchbacks on undeveloped terrain. Quartz Lake Access Road and a portion of the Quartz Lake Extension Forest Road are under an Alaska Department of Transportation and Public Facilities (DOT&PF) public easement (ADNR 2023). The Quartz Lake Extension Forest Road was constructed for logging truck access to timber in the area.

The Quartz Lake State Recreation Area is about 5 miles southwest of the ops site and supports various recreational activities (e.g., hiking, hunting, fishing, kayaking, camping, etc). Goodpaster River Trail and the North Fork of Fortymile-Big Delta Trail are near this site. State regulations apply to hunting and fishing activities in this area.

During a July 2023 survey, cut wood, sawmills, and trucks along Quartz Lake Access Road and the Quartz Lake Extension Forest Road were observed. This was likely related to the Alaska Department of Natural Resources (ADNR) Division of Forestry & Fire Protection (DOF) sale of white spruce sawtimber from State lands in the Quartz Lake area (DOF 2022).

Gerstle River Ops Site

The Gerstle River Ops Site is located within an area designated as Tanana Valley State Forest and the Gerstle River Training Area (GRTA) of USAG Alaska DTA, a controlled-access area. The Delta Junction Bison fields are immediately to the north with agricultural land further north of the area on the other side of the Alaska Highway. Tower Road extends to the site south from the Alaska Highway. There is a public easement on Tower Road, which is popular with sheep hunters accessing the Alaska Department of Fish and Game (ADF&G) Delta Controlled Use Area (ADNR 2023).

On August 13, 1953, the Federal Register (FR) Volume 18, Number 158, published and enacted Public Land Order (PLO) 910 that withdrew approximately 20,000 acres from public lands for military purposes (i.e., the GRTA). Army chemical warfare testing occurred in the GRTA, previously called the Gerstle River Test Site (GRTS), from 1954 through 1967, but the area has since been used for military training and recreational purposes. The GRTA is surrounded by the Gerstle River Expansion Area (GREA) except on the eastside where the Gerstle River flows (Brice 2022). The GREA, approximately 80,000 acres, is a Formerly Used Defense Site that was reverted back to SOA land once clean-up was completed.

A SAP is required for individuals of the general public 16 years old and older to access and recreate at the DTA. Hunting is authorized within the area, which falls within both the ADF&G Gerstle Field Bison Range Controlled Use Area and Delta Controlled Use Area. Other recreational activities (e.g., hiking, hunting, fishing, etc) may occur within the area as well. During a July 2023 survey, there was extensive evidence of frequent moose occurrence. State and, as applicable, USAG Alaska regulations apply to hunting and fishing activities in this area. Furthermore, natural resources (e.g., land use) are managed in accordance with the USAG Fort Wainwright's INRMP (FWA USAG 2013).

Dry Creek Ops Site

The Dry Creek Ops Site is located on top of the Macomb Plateau plain within the Alaska Range. The Dry Creek Airstrip and the Dry Creek residential area are over 1 mile north of the proposed

ops site. Furthermore, there is a small expanse of agricultural land on the other side of the Alaska Highway (ADNR 2023).

The new access road to the ops site aligns with an unnamed gravel road with a public easement (ADNR 2023). This road extends south from the Alaska Highway near Milepost 1378 and was crossed by the military aboveground Haines-Fairbanks Pipeline (HFP). The HFP segment between Tok and Eielson was deactivated in 1973 and has been removed and/or salvaged since (Hollinger 2003). The new access road lies outside of privately-owned real estate and crosses a Dry Creek tributary (ADNR 2023).

Potential recreational activities near the site include hunting, fishing, and hiking. Hunting and fishing are allowed in surrounding areas pursuant to State hunting and fishing regulations. The Dry Creek Ops Site is within the ADF&G Macomb Plateau Controlled Use Area. Fishing would most likely occur in nearby rivers or creeks. For hiking, the Hajdukovich-Macomb Plateau Trail is west of the site at the base of the plateau.

Tok Hill Ops Site

The Tok Hill Ops Site is located within an area designated as Tanana Valley State Forest in the Alaska Range. Tok, Alaska, is the nearest community. An unnamed unimproved road extends west from the Glenn Highway Tok Cutoff between Mileposts 116 and 117 that can support OHV traffic. This road was previously part of the original Tok Cutoff Highway (discussed in Section 3.10.1. An unnamed trail diverges north from this road and Eagle Trail to the proposed ops site location. Further south on the Eagle Trail is the Eagle Trail State Recreation Site. During a July 2023 survey, degraded infrastructure, debris, and other evidence of camping were present along the unnamed trail and at the proposed site location. It appeared that site visitors may also use the proposed ops site for parking. This indicates the site may serve as a camping location for site users. To the west of the ops site are various active State mining claims and Native allotment areas. From the ops site, the closest State mining claim is approximately 2.7 miles and Native allotment area is 1.7 miles (ADNR 2023). The Tok Hill Ops Site is also located within the Alaska Highway Formerly Used Defense Site that has no known sites of contamination.

Although subject to State regulations, hunting is allowed in the area that is part of the ADF&G Tok Management Area, and open to sheep hunting by permit only. Along the route to the site during the July 2023 survey, there was evidence of frequent moose occurrence.

3.2.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have permanent minor beneficial impacts by providing improved vehicular access to remote sites within Interior Alaska, but it would also have permanent minor adverse impacts to land uses on SOA and FNSB lands due to installation of barriers at the ops sites. Except for the Engineer Hill Ops Site, which is on Air Force-owned land, other ops site landowners would be consulted with to evaluate impacts to natural and biological resources, to include other land uses, and to ensure compliance with applicable landowner policies. Authorization (e.g., a lease) would be attained from the applicable landowner prior to construction for an ops site.

The proposed ops sites are generally in remote areas far away from residential and industrialized areas. In remote areas of the ROI, military, recreational, and mining activities are the predominant land uses. The ops sites would be used to facilitate military training and operations using the radars and would not change existing Federal land use designations on military lands (Engineer Hill, South Pole Hill, Bridge to Terabithia, and Gerstle River Ops Sites)

wherein such actions would be prioritized over other land uses. However, the ops sites on SOA and FNSB lands (Birch Hill, Pogo Hill, Quartz Hill, Dry Creek, and Tok Hill Ops Sites) would permanently change existing land use designations. Ops sites on SOA and FNSB lands would become a Federal land use. The Air Force has consulted landowners (i.e., SOA, USAG Alaska, and FNSB) about the land use compatibility of the Preferred Alternative with other land uses. It was determined that the development and operation of the ops sites on SOA and USAG Alaska land would likely be compatible with allowable land uses, pursuant to all applicable site-specific management plans, closure requirements, and other specifications. The FNSB did not provide an initial determination in the scoping process for the EA. However, the lease agreement would be finalized by the Air Force and FNSB Real Estate Offices prior to the construction of the Birch Hill Ops Site, and the completion of the lease agreement would confirm land use compatibility.

The Preferred Alternative would establish new infrastructure (e.g., gravel roads, powerlines, and gravel operating pad(s) and objects (e.g., barrier and gates as appropriate, decoys, generators, and radars). New gravel access roads would enable and/or improve accessibility to the remote ops sites' locations and generally enhance other land uses associated with these sites like recreational activities (e.g., hiking, fishing, hunting, and wildlife viewing) along new access roads. Powerlines would also improve accessibility to the power grid in these remote areas. Conversely, the barriers installed around the operating pads may limit the movement of site users at and around these ops sites. Access around and through the proposed ops sites would be considered to minimize adverse impacts to potential site user movement and enhance compatibility with other existing and future land uses to the extent practicable. A few potential considerations and topics for consultation with applicable landowners would be (1) vehicle access around and/or through the Pogo Hill Ops Site due to the collocated Pogo Mine telecommunications infrastructure, (2) vehicle access around and/or through the South Pole Hill Ops Site to allow access to undeveloped YTA training areas, and (3) establishing an area for parking and camping area outside the Tok Hill Ops Site.

No-Action Alternative

Under the No-Action Alternative, land uses would be compatible. The YTA temporary ops sites are on military land where military training takes priority over other land uses. The Air Force would continue to coordinate its activities with the USAG Alaska when operating sites on USAG Alaska land to ensure no conflicts with Army training and other activities. Thus, the No-Action Alternative would be consistent with current land uses and impacts would be negligible.

3.3 HAZARDOUS MATERIALS AND WASTE

3.3.1 Affected Environment

This section focuses on the types of hazardous materials and hazardous waste with potential to be associated with the Proposed Action. The Air Force manages hazardous materials in accordance with AFI 32-7086 "Hazardous Materials Management" and hazardous waste in accordance with AFI 32-7042 "Waste Management." For the purposes of this EA, the definitions for hazardous materials and waste are as follows:

- *Hazardous material* is any material or substance in the form or quantity that is capable of posing an unreasonable risk to life, property, or the environment.
- *Hazardous waste* is a solid waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment and not specifically excluded as a solid or hazardous waste by regulation.

Spill and leak reporting, per- and polyfluoroalkyl substances (PFAS), ASTs, and contaminated sites will be further discussed under this resource.

Spill and Leak Reporting

Leaks and/or spills of a hazardous material or waste, to include Petroleum, Oil, and Lubricants (POL), that occur within the ROI should be reported to the appropriate emergency services and, if applicable, military base wherein it took place to initiate proper response actions with the appropriate agencies (e.g., Alaska Department of Environmental Conservation [ADEC], Environmental Protection Agency [EPA], and others). This includes reporting spills of hazardous material or waste by calling 1-800-478-9300 or online at ReportSpills.alaska.gov.

PFAS

An emerging environmental issue at many Air Force installations is the past release of PFAS. PFAS is a large class of human-made chemical compounds used since the 1950s in various products, to include Aqueous Film Forming Foam (AFFF), a firefighting agent, used by the Air Force and others. AFFF contains two PFAS compounds, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) and is highly efficient at extinguishing petroleum-based fires. Air Force AFFF stocks are being replaced and use is limited for actual firefighting when other means are insufficient (AFCEC 2021a and 2021b). The water-soluble PFAS components can infiltrate groundwater from outdoor release.

The Air Force began a comprehensive evaluation process in 2010 to identify locations at installations where PFAS may have been released due to the growing evidence of its toxicity and persistence in the environment. Current ADEC regulations (18 Alaska Administrative Code [AAC] 75) include risk-based soil and groundwater cleanup levels for PFAS.

ASTs

ASTs are commonly used to store the fuels required to efficiently operate certain equipment and/or support infrastructure. ASTs may develop leaks and/or be involved in spills that result in POL-contamination of soil or water. Routine maintenance, monthly and annual inspections, and periodic third-party inspection of ASTs are required to prevent leaks and/or spills, and when necessary, ensure prompt response actions.

ASTs must comply with Federal and State regulations. Facilities and/or single ASTs holding 10,000 pounds of product (e.g., 1,200 gallons of diesel) must send a complete Tier II Emergency and Hazardous Chemical Inventory to the Alaska's State Emergency Response Commission. AST facilities with an effective storage capacity of 420,000 gallons (10,000, 55-gallon barrels) or greater of refined petroleum product, or over 210,000 gallons of crude oil are regulated by ADEC under 18 AAC 75, "Oil, and Hazardous Substances Pollution Control." Furthermore, an AST with a storage capacity of 1,000 gallons and above must be included in a facility's plan and storage capacity determination. Eielson AFB records additions or removals of ASTs and other oil-filled equipment with a capacity of 55 gallons or more in its Oil Discharge Prevention and Contingency Plan and revises its Spill Prevention and Countermeasure Plan as appropriate. These plans focus on spill and leak prevention and response actions.

Contaminated Sites

This section will focus on contaminated sites that are (1) within approximately 1,500 feet of ops site infrastructure (i.e., new access roads, operating pads, and powerlines) and (2) are designated as active or clean-up complete with land use controls (LUCs), institutional controls (ICs), and/or engineering controls (ECs). Engineer Hill and Gerstle River Ops Sites are the only ops sites within 1,500 feet of applicable contaminated sites.

Engineer Hill Ops Site

Ten of the contaminated sites (Table 3-3) within 1,500 feet of the Engineer Hill Ops Site infrastructure are part of the Engineer Hill munitions storage and maintenance area located to the northwest of Eielson AFB's industrial and residential area. They were designated as contaminated sites due to historic and current site activities and infrastructure initiated POL contamination investigations. The other site is a Military Munitions Response Program (MMRP) Site named at Lily Lake just south of the Engineer Hill munitions storage and maintenance area.

Table 3-3. Active Contaminated Sites within 1,500 feet of the Engineer Hill Ops Site

AFCEC Site ID, ADEC Hazard ID	Site Descriptions	COC / Potential MEC
CG505, 1658	Eielson AFB Building 6128 T–133 R[1]: Assumed contamination sources were a former UST that contained unregulated heating oil and its piping. No POL contamination exceeding applicable cleanup levels are present. Site closure for POL has been recommended.	PAHs
MB954/TM973b, 26596	Eielson AFB Lily Lake MMRP[2]: This site is located at Lily Lake, south of the Engineer Hill munitions storage and maintenance area. Initially designated an MMRP site based off anecdotal evidence, there were 310-anomalies identified in 2.4 acres of the lake during 2019 site remedial investigations. Munition debris and small arms ammunition were found. It was determined no further action was required for site.	Munition debris
SO065, 26492	Eielson AFB Building 6126 Igloo[3]: Assumed contamination sources were a former AST and a condensate drain. No POL-related contamination exceeding applicable cleanup levels are present. Site closure for POL has been recommended.	PAHs and metals
SO066, 26493	Eielson AFB Building 6132 Igloo[1]: Assumed contamination sources are a former UST containing unregulated heating oil and its piping. No POL-related contamination exceeding applicable cleanup levels are present. Site closure for POL has been recommended.	Metals
SO069, 26507	Eielson AFB Building 6134 Igloo[3]: Assumed contamination sources are a former UST and a condensate drain. No POL-related contamination exceeding applicable cleanup levels are present. Site closure for POL has been recommended.	PAHs and metals
SO070, 26508	Eielson AFB Building 6154 Vehicle Op Heated Parking[3]: This site is adjacent to ST056. Assumed contamination sources are vehicle exhaust, a diesel AST, and a condensate drain. No POL-related contamination exceeding applicable cleanup levels are present. Site closure for POL has been recommended.	PAHs and metals
SO071, 26509	Eielson AFB Building 6162 Igloo[3]: Assumed contamination sources are former USTs, ASTs, tank piping, and a condensate drain. POL contamination exceeding cleanup levels present at site. Interim LUCs are in place until remedial actions are completed to remove DRO contaminated soil to the extent practicable.	1-methylnaphthalene, 2-methylnaphthalene, DRO, PAHs, and metals
SO072, 26510	Eielson AFB Building 6163 Igloo[4]: Assumed contamination sources are a former AST and IRP Site ST056, north of this site. Interim LUCs are in place until remedial actions are completed to remove DRO contaminated soil to the extent practicable.	PAHs, PCE, metals

AFCEC Site ID, ADEC Hazard ID	Site Descriptions	COC / Potential MEC
SO073, 26516	Eielson AFB Building 6164 Igloo[3]: Assumed contamination sources are floor drains, former ASTs, and IRP Site ST056. No POL-related contamination exceeding applicable cleanup levels are present. Site closure for POL has been recommended.	PAHs and metals
SER-2/ST056, 384	Eielson AFB Engineer Hill[4]: Assumed contamination sources are from a diesel fuel spill at the boiler plant and contamination was identified in the old and new water-supply wells from an unknown source. There are active LUCs and site groundwater monitoring to prevent use of contaminated groundwater.	PCE, TCE, and BTEX
TU506, 26965	Eielson AFB Building 6136 Engineer Hill[3]: Assumed contamination source is a former UST. Interim LUCs are in place until remedial actions are completed to remove DRO contaminated soil to the extent practicable.	1-methylnaphthalene, 2-methylnaphthalene, dibenzofuran, and PAHs and metals

Sources: (ADEC 2023a)
Notes:
The groundwater at the Engineer Hill site is more than 100 feet below ground surface (bgs).
[1] (Air Force IRP 2019)
[2] (Air Force 2022)
[3] (Air Force IRP 2021)
[4] (EA EST 2021)
Key: AFCEC = Air Force Civil Engineer Center; BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes; COC = Contaminant of Concern; DRO = Diesel Range Organics; IRP = Installation Restoration Program; MEC = Munitions and Explosives of Concern; PCE = Tetrachloroethylene; TCE = Trichloroethylene; PAH = Polycyclic Aromatic Hydrocarbons; UST = Underground Storage Tank.

Although polycyclic aromatic hydrocarbons (PAHs) and metals are listed as potential contaminants of concern (COCs) for eight of these contaminated sites, the sites themselves were determined not to be the source. Further, base-wide investigations and remedial actions for these COCs are being addressed through the *Eielson Air Force Base, Federal Facility Agreement under CERCLA Section 120*. The metals concentrations at the active contaminated sites are attributed to natural soil background concentrations (Air Force IRP 2021). None of the known contaminated sites are within the footprint of the Proposed Action.

Gerstle River Ops Site

Extensive remedial actions have been completed at the GRTA and have led to the closure of numerous contaminated sites. However, there is an active contaminated site and a cleanup complete contaminated site with ICs within 1,500 feet of the Gerstle River Ops Site (Table 3-4).

Table 3-4. Contaminated Sites within 1,500 feet of the Gerstle River Ops Site

ADEC Hazard ID	Site Descriptions	COC
866	Gerstle River Test Site[1]: This includes the GRTA Administrative Area and fifteen areas of concern that fall under one of three categories: test grids, debris burial areas outside of the Administration Area, and other miscellaneous sites. The contamination source for the Administrative Area of the GRTA was chemical warfare material testing at the chemical testing facility, which tested various chemical and conventional munitions and chemical agents, to include but not limited to, riot control munitions and agents, nerve agent munitions, flame munitions, and bulk fuel kits. All munitions were made inert or removed from GRTA, and equipment was decontaminated and removed or disposed in on-site landfills by the 1970s. In place LUCs include ICs and ECs.	*See ADEC Hazard ID 24980 COCs*

ADEC Hazard ID	Site Descriptions	COC
24980	Gerstle River Test Site-UST #450 and #451[2,3]: Two 500-gallon USTs, #450 and #451, were associated with a GRTA fueling station. One UST contained gasoline, and the other contained diesel. Both were removed in 1994. Contaminated soil remains between 11 to 15 feet bgs that does not pose a risk to human and ecological health if it remains in place and is not exposed. Spread of contamination to groundwater (at approximately 458 feet bgs) is not suspected. USAG Alaska has implemented a long-term management plan that established ICs to eliminate potential exposure of these contaminants.	1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, xylenes, and PAHs

Sources: (ADEC 2023a)
Notes:
[1] (Brice 2022)
[2] (ADEC 2014)
[3] (FES 2015)

3.3.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have minor permanent impacts to hazardous materials and waste due to the installation of ASTs at two ops sites and potential for leaks and/or spill associated with this alternative. The Preferred Alternative would adhere to the applicable landowner, local, State, and Federal regulations and management plans pertaining to the use, management, and disposal of hazardous materials and waste for each ops site. There are also no activities anticipated to take place within direct soil or groundwater contamination footprints.

Potential PFAS contamination is linked to areas where past AFFF use occurred on Eielson AFB (e.g., airfield and/or fire suppressed areas) and contaminated groundwater. AFFF use is not suspected to have occurred at or near any of the proposed ops sites. Furthermore, groundwater is unlikely to be impacted by the Preferred Alternative.

An AST would be installed to support permanent diesel generator operation at the Quartz Hill and Dry Creek Ops Site to provide an onsite fuel source. ASTs would comply with Federal and State regulations. Eielson AFB would submit a Tier II Emergency and Hazardous Chemical Inventory to Alaska's State Emergency Response Commission for the installation of the ASTs and would also update its Oil Discharge Prevention and Contingency Plan and Spill Prevention and Countermeasure Plan accordingly.

Regular inspections and maintenance would occur to prevent and minimize leaks and/or spills associated with the construction (e.g., construction equipment and fueling operations) and operations (e.g., radar, generator, and ASTs) under the Preferred Alternative. This would include required routine maintenance, monthly and annual inspections, and periodic third-party inspection of ASTs to ensure prompt leak and spill response to limit the extent of potential contamination. A tank custodian would be appointed to perform required inspections and coordinate third-party inspections. A leak and/or spill of hazardous material or waste would be reported to emergency services at 911 and the Eielson AFB Fire Dispatch at 907-377-2216. The Eielson AFB Spills Program Manager would then report to and coordinate with the appropriate agencies (e.g., ADEC, EPA, and others) for proper response actions.

Minimal hazardous waste is expected to be generated during Preferred Alternative construction and operations, and there would be minimal change to existing waste streams when construction is completed. Generated waste would be disposed of in accordance with applicable regulations, laws, and landowner policies. A Hazardous Waste Determination would be

completed to assess if Resource Conservation and Recovery Act (RCRA) hazardous waste would be produced from maintenance activities. If such waste is produced, the quantity is expected to be consistent with the designation of a "Very Small Quantity Generator" and be brought back to Eielson AFB prior to transportation to a proper disposal facility.

The Engineer Hill and Gerstle River Ops Sites are within 1,500 feet of known contaminated sites that are either active and/or have active LUCs, ICs, or ECs. The two ops sites and their associated infrastructure are located outside of and generally on ground higher than the contaminated soil footprints of the contaminated sites. A portion of the Engineer Hill Ops Site new access road would be “downhill” from contaminated sites at the Engineer Hill munitions storage and maintenance area, most of which have been recommended POL-contamination site closure. Prior to construction activities at the Engineer Hill Ops Site, coordination would be completed with the Air Force Civil Engineer Center (AFCEC) Remedial Project Manager (RPM) and ADEC contaminated site remedial manager for the Engineer Hill munitions storage and maintenance area to ensure there is no unintentional exposure or spread of contaminated soils. The Gerstle River Ops Site installation of the underground powerlines within the GRTA would require coordination with the contaminated site’s ADEC remedial manager and USAG Alaska Environmental Office prior to construction efforts at the Gerstle River Ops Site to avoid spreading and/or exposing contaminated soil. Furthermore, potential contaminated groundwater at the Engineer Hill and Gerstle River Ops Sites is unlikely to be encountered during ground disturbing activities. Both ops sites have groundwater at depths of more than 100 feet, well below the potential depths of ground disturbing activities (discussed in Section 3.8).

No-Action Alternative

No ground disturbing activities within a known contaminated site would occur under the No-Action Alternative. However, radars operated at the temporary YTA ops sites would continue to require diesel generators for power. Gasoline generators would also be used to warm the diesel generator in winter when required due to low temperatures. Generator fueling operations would be a potential source of contamination. Proper handling and protocols (e.g., Oil Discharge Prevention and Contingency Plan and Spill Prevention and Countermeasure Plan) for fueling operations and reporting minimize the potential leak and/or spill risk. Thus, the No-Action Alternative would have minor permanent adverse impacts to Hazardous Materials and Waste.

3.4 SAFETY AND OCCUPATIONAL HEALTH

3.4.1 Affected Environment

In accordance with EO 12196, “Occupational Safety and Health Programs for Federal Employees” issued February 26, 1980, and 29 CFR § 1960, “Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters,” military personnel and uniquely military equipment systems and operations are specifically excluded from OSHA coverage. However, the Air Force often implements OSHA-equivalent or more stringent safety and health protocols. In accordance with the Air Force Policy Direction (AFPD) 91-2, the Air Force has robust safety program that establishes policy, assigns responsibilities, and provides procedures and guidance for protecting protect working personnel from various potential work hazards. Furthermore, Alaskan employers under the jurisdiction of Alaska Occupational Safety and Health (AKOSH) jurisdiction must comply with State occupational safety and health laws and regulations.

This section will describe the medical care available to address potential injuries to working personnel and the general public within the ROI. Thus, this section will also include a description of the hazards associated with the ROI and Proposed Action. The hazards assessed

will include excavation activities, COC and/or munitions and explosives of concern (MEC) exposure, military activity, electromagnetic field radiation (EMFR), Pogo Mine Access Road, natural disaster, and wildlife encounter.

Medical Care

Personal injuries during construction activities can result from increased noise levels, operation of heavy equipment, vehicle collisions, fueling operations, and more. Should an individual need medical care, the nearest Level IV trauma centers are the Fairbanks Memorial Hospital and Bassett Army Community Hospital (Figure 3-1). The Fairbanks Memorial Hospital is a civilian hospital that services the public. Whereas the Bassett Army Community Hospital is an Army hospital that provides services to military service members at Fort Wainwright but may provide treatment to civilians requiring urgent care when no other feasible options are available.

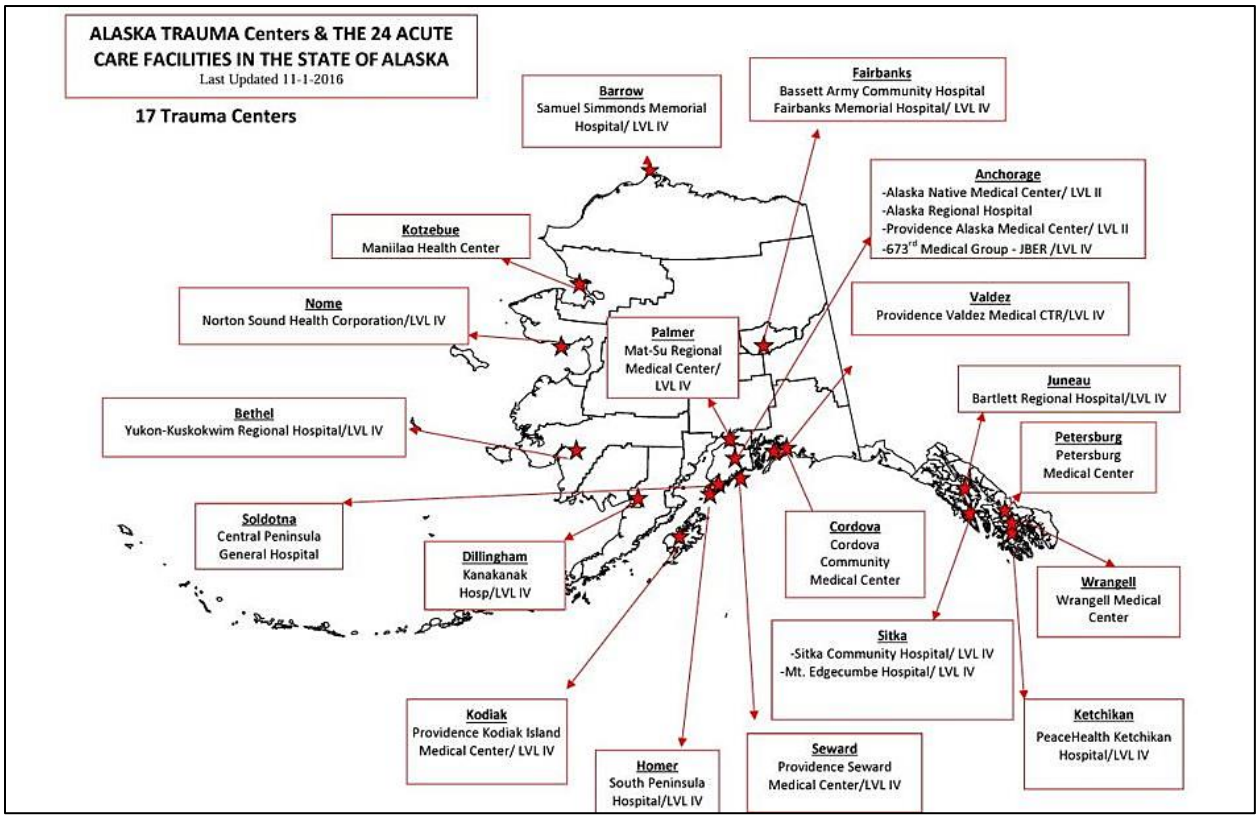


Figure 3-1. Alaska Trauma Centers (DPH 2016)

Both hospitals are approximately 20 miles straight-line distance from the Engineer Hill Ops Site, the nearest site, and 175 miles from the Tok Hill Ops Site, the furthest site. The Alaska Department of Health (ADH) defines a Level IV trauma center as a (DPH 2023):

> *"small rural facilit[y] that provide[s] initial evaluation and assessment of injured patients prior to transfer to a larger referral facility."*

Patients requiring higher level care than a Level IV trauma center would be transferred to a Level II trauma center in Anchorage, Alaska, approximately 255 miles straight-line distance southwest of Fairbanks . The ADH defines a Level II trauma center as a center that (DPH 2023):

> *"provides comprehensive trauma care and serves as a lead trauma facility for a geographical area."*

Excavation Activity

Agency coordination and permits to protect the health and safety of working personnel and the general public and safeguard the property of others during excavation activities is described in Section 3.8.

Cave-ins are of particular concern during excavations. Other potential safety hazards associated with excavation include falling loads, equipment operation, and air pollutant emissions (OSHA 2015). Working personnel must wear and utilize applicable personal protective equipment (PPE) and adequate worker protections are required to prevent and minimize potential cave-ins. Furthermore, for an excavation equal to or greater than 4 feet in depth, personnel protections must be provided to working personnel in accordance with OSHA excavation safety standards (29 CFR 1926, Subpart P).

COC and/or MEC Exposure

The Engineer Hill and Gerstle River Ops Sites that occur within 1,500 feet of contaminated sites is described in Section 3.3. When an action is within 1,500 feet of a contaminated site, there is an increased risk of COC or MEC exposure. LUCs, ICs, and ECs would apply to any activities occurring within the boundaries of contaminated sites. Furthermore, coordination with the contaminated site's ADEC Remedial Manager and the landowner would be required.

Military Activity

Military activities take priority on military land (e.g., Eielson AFB, DTA, TFTA, and YTA) and within military airspace (e.g., MOAs, MTRs, and certain Controlled Firing Areas [CFAs], alert areas, and restricted areas) within the ROI, except under specific cases of emergency. However, all military activities adhere to applicable military base, local, State, and Federal laws and regulations. This includes coordination and notification with the public and/or other local, State, and Federal agencies for military activities as required by the type of activity. The military unit conducting the activity is responsible for ensuring their actions are compliant with applicable laws and regulations relating to the safety and health of working personnel and the general public.

Electromagnetic Field Radiation

AFPD 91-2 addresses electromagnetic field (EMF) hazards by implementing DoDI 6050.05, "DoD Hazard Communication (HAZCOM) Program" and DoDI 6055.11, "Protecting Personnel from Electromagnetic Fields." In accordance with DoDI 6055.11 and AFI 48-109, "Electromagnetic Field Radiation (EMFR) Occupational and Environmental Health Program," the Air Force adheres to the US Institute of Electrical and Electronics Engineers (IEEE) Standard C95-1-2345 for maximum permissible exposure (MPE) limits. C95-1-2345 is the IEEE Standard for military workplaces wherein force health protection is required due to personnel exposure to electric, magnetic, and EMFs ranging 0 to 300 gigahertz (GHz). If there is a validated operational need, the Department of Defense (DoD) or IEEE standards may be modified for military-unique EMF systems. The microwaves emitted by the radars are short wavelength frequencies within the S-band (2 to 4 GHz) and C-band (4 to 8 GHz) ranges in accordance with IEEE C95-1-2345 Standard (Belov *et al*. 2012).

Radio frequency (RF) radiation poses a safety and health risk to living organisms and can interfere with electronic devices and signals. The high-intensity radiated field (HIRF) of the radar is the area where emitted microwaves have the strength to adversely affect living organisms or electronic devices and signals. The Air Force coordinates with relevant agencies and

implements EMF mitigations through its RF and Microwave Safety Program to reduce and/or eliminate RF radiation impacts to living organisms and electronic devices and signals.

Health and Safety

The radars emit high frequency radio waves termed microwaves, a type of non-ionizing RF radiation, into the environment. Non-ionizing radiation does not have enough energy to break chemical bonds. RF radiation effects on health occurs when it is absorbed and varies based on the wavelength, frequency, intensity, and duration. Absorbed RF radiation has the potential to cause localized heating within body tissues that can damage the tissue (AKOSH 2023). The World Health Organization (WHO) states that to produce an adverse health effect, RF radiation exposure must occur above a threshold level that can increase tissue temperature above at least 1 degree Celsius (°C; WHO 1999 and 2007). RF frequencies ranging from 0.001 to 10 GHz have potential to penetrate exposed tissues and produce heating due to energy absorption (WHO 2007).

The Air Force MPE limits defined in AFI 48-109 for operators is 100 watts per meter squared (W/m^2) for frequencies between 0.01 to 100 GHz over a 6-minute averaging time. This is consistent with AKOSH (AKOSH 2023) and OSHA (29 CFR 1910.97) standards. The MPE limit for non-operators (i.e., the general public) in accordance with AFI 48-109 is 10 W/m^2 for frequencies between 2 to 100 GHz over a 30-minute averaging time (ARRL 2021). The Specific Absorption Rate (SAR) measures the absorption of RF radiation within tissue in watts per kilogram (W/kg) and is used to measure the dose of RF radiation within the frequency range of 0.001 to 10 GHz.

Heat damage to tissues is caused by high level RF radiation exposure over short periods of time. Research on the health effects from low-level microwave exposure over long periods of time is limited. Although available scientific information does not indicate that (1) multiple exposures to RF radiation below threshold levels causes any adverse health effects or (2) damage to tissues accumulates from repeated low level RF exposure, the WHO has concluded that further studies are required (WHO 1999 and 2007). Nonetheless, suspected health effects that may occur and/or be worsened from RF radiation exposure include, but are not limited to psychological changes, headaches, nervous system abnormalities, hormonal changes, miscarriage, birth defects, male infertility, altered immunity, and leukemia. These include relatively common ailments that occur in individuals who have not had excessive exposure to RF radiation as well (AKOSH 2023).

EMF site surveys are conducted to quantify the RF radiation extending from a radar and determine a protective stand-off distance. Within this EA, *stand-off distance* is the distance beyond which an individual would receive no more than applicable MPE limits for radar RF radiation (i.e., the boundary of the HIRF for living organisms). Other protective measures implemented to eliminate or reduce human RF radiation exposure below acceptable thresholds (i.e., MPE limits) were also based on EMF site surveys results. In public areas where measurements are not easily attained, ECs (e.g., interlocks, shielding, and the orientation of the system) and administrative controls (e.g., audible or visual alarms, warning signs, and use of physical barriers) are generally implemented to prevent both working personnel and the general public from entering areas where RF radiation levels are above applicable MPE limits. PPE (e.g., conductive suits, gloves, and safety shoes) may also be required to reduce exposure and ensure compliance with exposure standards. Emplacing RF radiation sources away from areas with permanent populace(s) and/or heavy traffic of non-operators also would assist in reducing potential and duration of exposure.

The American Radio Relay League (ARRL) indicated the simplest means of controlling exposure to high RF radiation is by restricting access through fencing, posting signage, and/or by locking out unauthorized individuals when practical (Hare 1998). AKOSH also requires posting signage to ensure non-operators stay away from radiation sources. Air Force DoDI 6050.05 requires adherence to 29 CFR 1910.1200, "Hazard Communication." Based on 29 CFR 1910.1200 and 8 AAC 61.1110, "Additional Hazard Communication Standards," the following must be implemented to address a RF radiation hazard:

- Posting at the worksite and making readily accessible the most recent Safety Data Sheet of a physical agent (i.e., the RF radiation hazard);
- Displaying the provisions of Alaska Statute 18.60.065 - 18.60.068 at the worksite; and,
- Providing operators with information and training on the RF radiation hazard in their work area at the time of their initial assignment.

Electronic Device and Signal Interference

The IEEE Committee on Man and Radiation (COMAR) identified that high levels of RFs can interfere with other electronic equipment and signals like those associated with aircrafts, radios, televisions, medical devices, and cellular communications. Such interference may interrupt, obstruct, or degrade the effective performance of the other electrical devices and signals and is more likely to occur with pulsed energy (COMAR 2000). Electronic devices and signals that operate within the ROI within S-band frequencies include but are not limited to current JPARC radar simulators, airport air traffic control radars and weather radars. ROI C-band frequency electronic devices and signals include but are not limited to various communication services like the Pogo Mine communication infrastructure and other cellular towers (MDA 2020).

The FAA has HIRF certification standards for aircraft electrical and electronic systems. The FAA's HIRF certification standards for aircraft are in 14 CFR, "Aeronautics and Space," and the FAA Advisory Circular (AC) 20-158A, "The Certification of Aircraft Electrical and Electronic Systems for Operation in the High-intensity Radiated Fields (HIRF) Environment." Aircraft and airfield radio and radar capabilities are essential to ensure flight safety of all aircraft and military operations within the ROI.

Pogo Mine Access Road

Pogo Mine Access Road is a single-lane, gravel road associated with the proposed Pogo Hill Ops Site. Safety hazards related to this road are (1) two-way traffic on a single-lane road and (2) mining-associated activities throughout the area. Due to these hazards, a security gate is used to restrict road access and permission must be granted by Northern Star Resources Limited to use the road. Northern Star Resources Limited provides a briefing and requires drivers pass a test to ensure road safety protocols are fully understood and implemented accordingly. This includes drivers maintaining radio contact and announcing their position about every 5 miles. A radio, strobe, and other safety protocol materials are supplied to the drivers.

Natural Disaster

Potential natural disasters within the ROI are earthquakes, wildfires, and flooding.

Earthquakes

Earthquakes result from tectonic plate movement along fault lines. The Tintina Fault is north of the ROI, and the Denali Fault is south of the ROI (Figure 3-2). Both these faults are strike-slip faults where tectonic plates are parallel to one another and move in opposite directions. The largest earthquake to date from the movement at either of these faults occurred in 2002. A 7.9

magnitude earthquake resulted from slippage of the Denali Fault at approximately 2.6 miles below ground surface (bgs; AEC 2002) that caused landslides, damaged roads, and more.

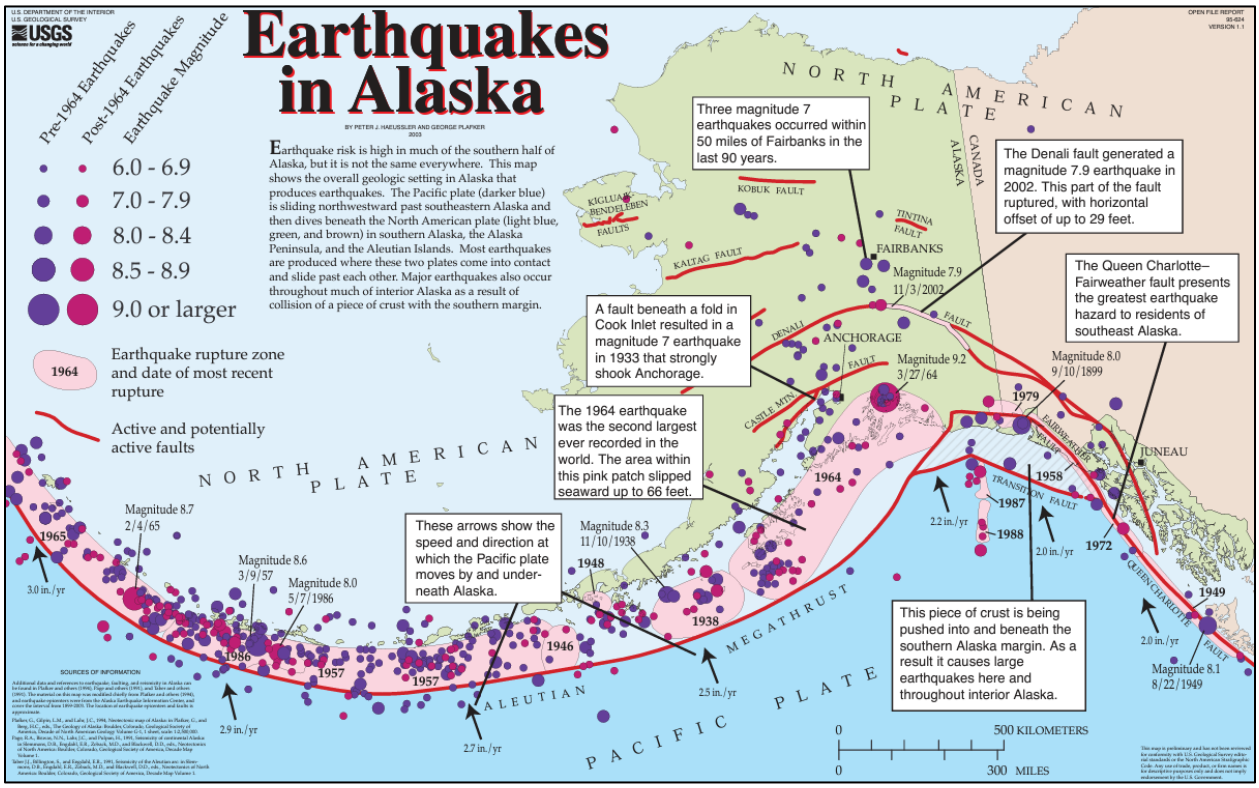


Figure 3-2. Alaska Active Faults with Earthquake Information (USGS 2003)

Wildfires

Interior Alaska is characterized by frequent and extensive wildfires, including stand-replacing ground, surface, and crown fires (Abrahamson 2014). A *wildfire* is an unplanned fire and triggers may include natural forces (e.g., lightning), human accidents (e.g., escaped fires from prescribed burn projects), or human intention (e.g., arson; CRS 2023).

In 2013 to 2022, 3.1 million acres were burned in Alaska from wildfires (CRS 2023). Prescribed burns are sometimes used in Alaska to reduce the number and severity of potential wildfires. Although human-caused wildfires occur in Alaska, wildfires are a natural process in Interior Alaska, where they occur frequently and impact vast areas. The fire season in Alaska typically begins in late May, peaks in late June, and ends in late July (Moore *et al*. 2020). Due to the extent of wildfires throughout Alaska, wildfire suppression efforts focus on areas where the most lives, infrastructure, and valuable cultural and natural resources reside. Section 3.9 describes wildfire impacts specific to wildlife.

The *Alaska Master Cooperative Wildland Fire Management and Stafford Act Response Agreement* was signed between the SOA and agencies of the US Department of the Interior (DOI) and US Department of Agriculture (USDA). This agreement defines the management strategy for wildfire management between the agencies responsible for suppressing wildfires (herein, suppression agency) within Alaska (Figure 3-3).

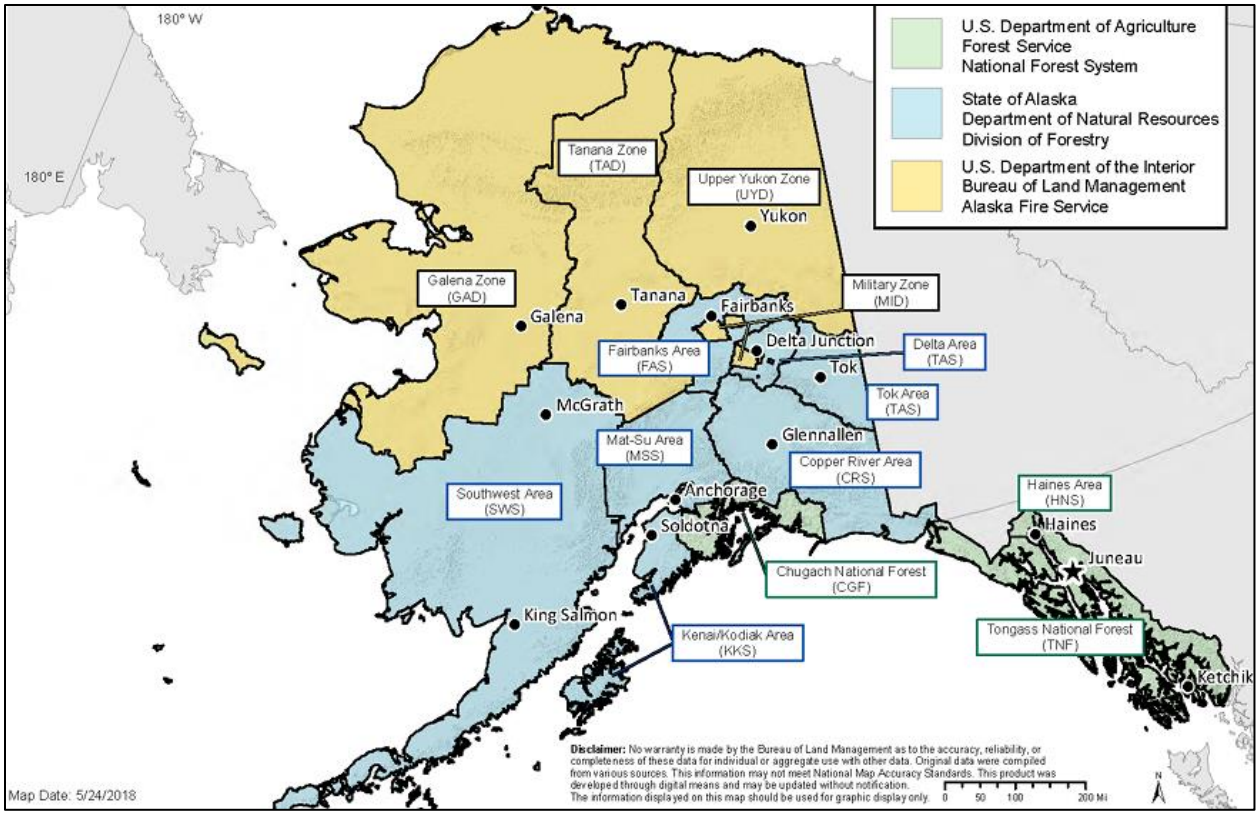


Figure 3-3. Wildfire Protection Area Jurisdictions (DOI, USDA, and SOA 2023)

Suppression agencies support wildfire jurisdictional agencies to implement the 2021 Alaska Statewide Operating Plan (DOI, USDA, SOA 2023) and wildfire response plans. Where the wildfire begins determines the jurisdictional and suppression agency responsible for suppressing it. The Air Force and USAG Alaska are not part of this agreement. However, the USAG Alaska co-manages the Military Zone (includes the DTA, TFTA, and YTA) with the DOI Bureau of Land Management (BLM) Alaska Fire Service (AFS) under a Memorandum of Agreement (DOI, USDA, and SOA 2023). Thus, wildfires beginning on Eielson AFB would be managed by the Air Force, and potential wildfires that begin on USAG Alaska land in the Military Zone would be co-managed by the BLM AFS and USAG Alaska. Although co-managed BLM AFS and USAG Alaska, the GRTA is a "Limited" designated area for fire management options, and the BLM AFS would not suppress a wildfire at GRTA. Rather, a wildfire in the GRTA would be only monitored. Wildfires within the ROI and not within the Military Zone are managed by the SOA.

Flooding

Various types of flooding may occur within the ROI. The Bridge to Terabithia Ops Site is the within a mapped floodplain (discussed further in Section 3.7). The potential flood hazards within the ROI are flash floods, river floods, burn scar and debris flows, snowmelt, and/or ice and debris jams.

Wildlife Encounter

Wildlife within the ROI could pose a threat to working personnel and the general public if encountered. Of particular concern are black bear (*Ursus americanus*), brown bears (*Ursus*

arctos), and moose (*Alces alces*). Vigilance and precautions are necessary when operating in more remote locations, and attractants (e.g., food) should be sealed and disposed of properly. Barriers, bear spray, and other means can provide protection if avoidance and safe retreat are not possible.

3.4.2 Environmental Consequences

Preferred Alternative

An adverse impact would occur if the Preferred Alternative were to appreciably increase the risk to workers and general public health and safety beyond the regulatory standards and/or acceptable limits. However, with the implementation of protective best management measures, the Preferred Alternative would have temporary and permanent minor adverse impacts to safety and occupational health. The impacts from construction of the ops sites would be localized, temporary impacts generally contained within the construction footprints. Post-construction impacts would be localized, permanent impacts related to the operation of the radars.

The available medical care and the hazards associated with the construction and operations of the Preferred Alternative were considered when assessing the impacts to safety and occupational health. During and post-construction, site safety and health hazards would be properly communicated (e.g., briefed and documented in sites plans or signage) and coordinated (e.g., permitted and providing the proper notification) to working personal and the general public. Specific to construction, working personnel would be required to wear and utilize PPE and implement best management practices that are required and/or appropriate for the type of activity taking place. Construction health and safety hazards would be temporary and cease when construction is completed.

The radars are designed to emit RFs that simulate potential adversary radars. Thus, the radars would increase the EMFR hazard within the ROI in both controlled (ops sites on military lands and within military airspace) and uncontrolled (ops sites on SOA and FNSB land and outside military airspace) environments. Existing JPARC operational system requirements and procedures would be adapted to include the radar operations at the various locations throughout the ROI. Furthermore, the EMFR hazard would be addressed by the Air Force RF and Microwave Safety Program. This program would compel the Air Force to coordinate with the relevant agencies (e.g., the FAA) to implement protective measures and mitigations under the Preferred Alternative to reduce and/or eliminate the RF radiation impacts to living organisms and electronic devices to the greatest extent practicable.

The EMFR of the radars would be the predominant health hazard during post-construction operations. Safety guidelines and standards for non-ionizing EMFR in IEEE Standard C95.1 considers the potential hazards of EMFR to all personnel, including pilots, in both controlled and uncontrolled environments. Although these standards may not be fully protective with respect to individuals using medical devices. The remote nature of the ops sites would generally minimize the potential and duration of exposure to the general public. Protective measures and mitigations to address the EMFR hazard of the Preferred Alternative would include:

- Installation of a physical barrier that would prevent unauthorized access of non-operators within the radar's HIRF;
- Implementation of requirements specified by communication standards stipulated by 29 CFR 1910.1200 and 8 AAC 61.1110;
- Routine RF radiation monitoring and assessment of the radars; and,
- Operators that are properly trained, informed of site hazards, and wear appropriate PPE.

Identifying the boundary of the HIRF (i.e., the protective stand-off distance) and compliance with all applicable RF radiation safety standards for DoD and Air Force land-based radars is standard operating procedure for Air Force actions. The Air Force Bioenvironmental Engineering (BE) performed Electromagnetic Frequency Surveys for the radars to determine operator and general public protective stand-off distances. The radars' S- and C-band frequency range extends from 2 to 8 GHz. Subsequently, the MPE limits applied were 100 W/m^2 over a 6-minute averaging time for operators and 10 W/m^2 over a 30-minute averaging time for the general public. Electromagnetic Frequency Surveys applied normal and worst-case scenario analysis to determine adequate stand-off distance based on applicable MPE limits defined in AFI 48-109, which is consistent with AKOSH and OSHA Standards for operators. The identified protective stand-off distance was 89 feet for operators and 200 feet for the general public. Thus, the physical barrier (e.g., fence and/or gates) to prevent non-operator access within the radar HIRF would be installed 200 feet from the perimeter of the operating pads, as allowed by the terrain.

The EMFR within the radar HIRF could interfere with other electronic devices and signals. The heights of most ground-based telecommunication infrastructure within the ROI are generally below the floor of the radar HIRF. The Air Force would coordinate with owners of telecommunication infrastructure above the floor of the HIRF to avoid interference. This would apply to the Pogo Hill Ops Site where the radar would be co-located with the Pogo Mine telecommunication infrastructure. The Air Force would coordinate with Northern Star Resources Limited to identify appropriate measures to avoid signal interference issues.

The radars also have potential to interfere with aircraft communication devices and signals. To ensure safe flight operations within the ROI, the Air Force would provide proper notification via the SUAIS and coordinate with the ATC when necessary to issue a NOTAM. The Air Force would also ensure potential aircraft within the ROI do not encounter the HIRF of the radars that exceeds the FAA's HIRF certification standards for aircraft electrical and electronic systems. The adaption of existing safety policies implemented for the current JPARC would predominately impact radar operators and other military personnel within existing, restricted, and/or controlled-access military lands and airspace.

No-Action Alternative

The main safety and health hazard under the No-Action Alternative would be potential operator exposure to radar RF radiation. The operators and other military personnel would be trained on how to limit exposure and safety and health concerns as it relates to this hazard, and marking standards (e.g., fencing and signage) would be applied in accordance with applicable State and Air Force regulations, policies, and standards. Thus, the No-Action Alternative would have permanent minor adverse impacts to operators and other military site users.

3.5 NOISE

3.5.1 Affected Environment

The EPA recommended a 70 A-weighted decibels (dBA) over 24-hour or 75 dBA over 8-hour average exposure limit for environmental noise in 1974. These thresholds represent sound exposure limits that are protective of 96% of the general population from developing hearing loss and the public's health and welfare (EPA 1974). Such sound level exposure is unlikely to occur at the ops sites where ambient background sound levels are expected to be relatively low.

Noise is a sound that may disturb human and/or wildlife. The predominant noise sources throughout the ROI caused by nature (e.g., wind and wildlife). However, anthropogenic noise from military and commercial sources (e.g., aircraft, or vehicle traffic) can temporarily increase

sound levels within this area. The locations of the proposed ops sites that are located closer to anthropogenic infrastructure (e.g., airfields), populations (e.g., cities and communities), and/or activities (e.g., military training and recreation) would typically have higher ambient background sound level and be more likely to experience temporary increases in sound levels from existing sources.

3.5.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would cause minor temporary and permanent adverse impacts due to the addition of new noise sources during and post construction to include transient noise from aircraft using the radars for training.

Generally, the greatest impacts would occur at the more remote sites due to their greater distance from anthropogenic noise sources leading to lower ambient background sound levels. associated with greater distance from anthropogenic sources. Construction activities at all the ops sites and the use of a temporary diesel generator at the Tok Hill Ops Site would be new noise sources that persist only for the duration of the construction phase, and lead to temporary, higher than ambient background sound levels at the ops sites. Post-construction, the operation of the radars at all the ops sites and generators at the Quartz Hill and Dry Creek Ops Sites would be new permanent anthropogenic noise sources. The greatest source of noise after construction would be the diesel generators, which would likely produce a sound level of approximately 75 dBA or less 23 feet away. 75 dBA is equivalent to the noise produced by a vacuum cleaner (EHS 2023). The sound level would attenuate with distance from the generator, and the potential generator noise heard beyond the physical barrier (a minimum of 200 feet away from the operating pad perimeter) would unlikely extend more than 8 hours in any single day (electrical power selection standard description in Section 2.2). Thus, the Preferred Alternative would not cause sound exposure that would cause hearing loss, temporary area displacement, or permanent area abandonment of site users and wildlife.

Training aircraft overflight using existing airspace would also temporarily increase sound levels but would very unlikely reach a level and duration that would cause hearing loss. Furthermore, within the ROI, this would not be a new source of noise and the frequency of Air Force air operations would be consistent with previously assessed Air Force actions (see Section 1.4) due to the Preferred Alternative (Section 3.1).

No-Action Alternative

Under the No-Action Alternative, the operation of generators, aircraft, and radars would cause temporary local noise level increases within the YTA during radar operations. Although, other site users and wildlife may be temporarily disturbed during active operation of the generators at these temporary ops sites, they would unlikely permanently abandon the area. Thus, noise impacts under the No-Action Alternative would be permanent minor adverse impacts.

3.6 AIR QUALITY

3.6.1 Affected Environment

Air pollutant emissions can occur because of anthropogenic activities and natural processes. Impacts of such emissions vary depending on a pollutant source's emission rate, type, and proximity to other emission sources as well as the local and regional weather and climate characteristics. Inert pollutants (e.g., fugitive dust and carbon monoxide [CO]) generally lead to localized impacts that may extend a few miles downwind from a source while reactive (e.g., ozone [O_3]) pollutants may extend much further.

National and State Air Quality Standards

The ops sites are within the Northern Alaska Intrastate Air Quality Control Region. National Ambient Air Quality Standards (NAAQSs) and State Ambient Air Quality Standards (SAAQSs) are used to assess if there are significant concentrations of air pollutants that decrease air quality and are used to protect public health and welfare by managing air pollutants. These standards include a reasonable margins of safety to protect the more sensitive individuals within the population. The EPA established NAAQSs regulate air pollutants. Alaska State Ambient Air Quality Standards (SAAQSs) also apply to regulate air quality within Alaska.

Air pollutant concentrations are compared to NAAQS and SAAQS (Table 3-5) to determine if an area is in "attainment" or "nonattainment." If air quality is better than air quality standards, the area is designated as an attainment area. If air quality is worse than air quality standards, the area is designated a nonattainment area. Former nonattainment areas that have attained air quality standards are designated as maintenance areas. None of the ops sites are within a nonattainment or maintenance area. The nearest nonattainment and maintenance areas are the FNSB "Particulate Matter Less than or Equal to 2.5 Microns in Diameter ($PM_{2.5}$) Nonattainment Area" and "CO Maintenance Area." The FNSB $PM_{2.5}$ Nonattainment Area was established in 2009 (ADEC 2023c). The two State Implementation Plans (SIPs) for this area are (1) the Moderate SIP established in 2015 and amended in 2016 and 2017, and (2) the Serious SIP adopted in 2019 and amended in 2020. There was a FNSB CO Non-attainment Area established in 1990, but it was re-designated as the FNSB CO Maintenance Area in 2004. The Limited Maintenance SIP for this area was adopted in 2013 (ADEC 2023b).

Table 3-5. NAAQS and Alaska SAAQS

Pollutant	Averaging Time	SAAQS	NAAQS	
			Primary	Secondary
CO	8-hour[1]	10 mg/m^3	9 ppm (10 mg/m^3)	---
	1-hour[1]	40 mg/m^3	35 ppm (40 mg/m^3)	---
NH_3	8-hour[1]	2.1 mg/m^3	---	---
NO_2	Annual (Arithmetic Average)	100 µg/m^3	53 ppb (100 µg/m^3)	Same as Primary
	1-hour[2]	188 µg/m^3	100 ppb (188 µg/m^3)	---
O_3	8-hour[3]	0.070 ppm	0.070 ppm	Same as Primary
PM_{10}	24-hour[4]	150 µg/m^3	150 µg/m^3	Same as Primary
$PM_{2.5}$	Annual (Arithmetic Average)[5]	15 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
	24-hour[6]	35 µg/m^3	35 µg/m^3	Same as Primary
Pb	Rolling 3-month Average[7]	0.15 µg/m^3	0.15 µg/m^3	Same as Primary
SO_2	Annual (Arithmetic Average)[7]	80.0 µg/m^3	---	---
	24-hour[1]	365 µg/m^3	---	---
	3-hour[1]	1,300 µg/m^3	---	0.5 ppm (1,300 µg/m^3)
	1-hour[8]	196 µg/m^3	75 ppb (196 µg/m^3)	---

Sources: 18 AAC 50.010(4) and (EPA 2023)
Notes: *Applies to annotations in column "Averaging Times."*
[1] Standard not to be exceeded more than once per year.
[2] 3-year average of the 98th percentile of the daily maximum 1-hour average not to exceed standard.
[3] Annual fourth-highest daily maximum 8-hour concentration averaged over 3 years not to exceed standard.
[4] Standard not to be exceeded more than once per year on average over 3 years.
[5] Annual mean averaged over 3 years not to exceed standard.
[6] 98th percentile, averaged over 3 years not to exceed standard.
[7] Standard not to be exceeded.
[8] 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years not to exceed standard.
Key: NH_3 = Ammonia; NO_2 = Nitrogen Dioxide; ppm = parts per million; Pb = Lead; ppb = parts per billion; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter; SO_2 = Sulfur Dioxide.

Existing Emissions Sources

Prevention of Significant Deterioration (PSD) applies to new major sources or modifications to existing pollutant sources within attainment areas or when NAAQS are unclassifiable. The nearest PSD Class I area is the Denali National Park and Preserve, located approximately 75 miles or more westerly from the ops sites. The ops sites are designated as PSD Class II areas that allow moderate deterioration of air quality.

The Air Force would be the owner and operator of the ops sites and associated operations. Thus, the Proposed Action would contribute to the total emissions of Eielson AFB emissions. Eielson AFB is a stationary emission source that requires a Title V Operating Permit (TVOP). Currently, Eielson AFB is operating under a Permit Shield in accordance with AS 46.14.275. Modifications to Eielson AFB air emissions would require a New Source Review (NSR) under Clean Air Act (CAA) Title I Parts C and Section 110(a)(2)(C) to ensure good air quality is maintained.

Four ops sites; Engineer Hill, South Pole Hill, Bridge to Terabithia, and Birch Hill; are within the FNSB. The remaining five ops sites; Pogo Hill, Quartz Hill, Gerstle River, Dry Creek, and Tok Hill; are within the Southeast Fairbanks Census Area. Table 3-6 summarizes the 2020 estimates of the annual emissions generated from stationary and mobile sources within the FNSB and Southeast Fairbanks Census Area (EPA 2020). The anthropogenic emission sources within the two boroughs generally include: (1) on-road vehicles, non-road equipment, and locomotive mobile sources, (2) prescribed fires, (3) residential wood fuel combustion, (4) waste disposal, (5) fugitive dust (i.e., Particulate Matter Less than or Equal to 10 Microns [PM_{10}]), and (6) solvent/surface coating usages. The predominant anthropogenic emission sources are (1), (2) and (3). Wildfires and vegetation and soil biogenics are major existing natural emission sources.

Table 3-6. FNSB and Southeast Fairbanks Census Area 2020 Emissions

Source Category	Criteria Air Pollutant (Tons)								GHG (mt)	HAP[1] (Tons)
	CO	NH_3	NO_X	PM_{10}	$PM_{2.5}$	Pb[1]	SO_2	VOCs	CO_2e	---
Fairbanks North Star Borough										
Non-Mobile	1,284,861	19,861	11,911	131,031	110,292	0.266	6,902	321,225	11,041,375	56,168
Mobile	11,910	29	966	107	63	--	3	1,105	563,346	333
Total	1,296,771	19,890	12,877	131,138	110,355	0.266	6,905	322,330	11,604,721	56,501
Southeast Fairbanks Census Area										
Non-Mobile	19,737	51	3727	2,173	1,211	0.001	40	57,704	26,739	5,794
Mobile	1,582	5	145	10	7	--	0.260	122	70,316	36
Total	21,320	56	3,872	2,183	1,217	0.001	41	57,826	97,055	5,830

Sources: (EPA 2020)
Notes:
Quantity values were rounded to the nearest whole number except for values less than one. Values less than one were rounded to the nearest thousandth.
[1] Includes Lead Compounds.
Key: CO_2e = Carbon Dioxide Equivalent; GHG = Greenhouse Gas; HAP = Hazardous Air Pollutant; mt = Metric Ton; NO_x = Nitrogen Oxide and Nitrogen Dioxide; VOC = Volatile Organic Compound.

In rural Alaska, elevated PM_{10} (fugitive dust) is of particular concern based on monitoring data throughout rural Alaska. There is also anecdotal local information indicating health problems and medical visits increase during reported periods of heavy dust conditions (Sierra 2006). The predominant source of fugitive dust in rural Alaska is unpaved (e.g., gravel) roads.

Climate and Climate Change

An ecoregion is an ecologically distinct area based on holistic results of interactions between geologic, landform, soil, vegetative, climatic, wildlife, water, and human factors present within an area. Each ops site is within one or more ecoregions (Figure 3-4 and Table 3-7. These ecoregions express a continental climate and extreme seasonal variation that is typical within Interior Alaska (Table 3-8). Summers are short and warm while winters are long and very cold within the ROI. This leads to short growing seasons and long-lasting snow. Although impacted by terrain, winds tend to be highest in May and June with an average speed of 7 to 8 miles per hour.

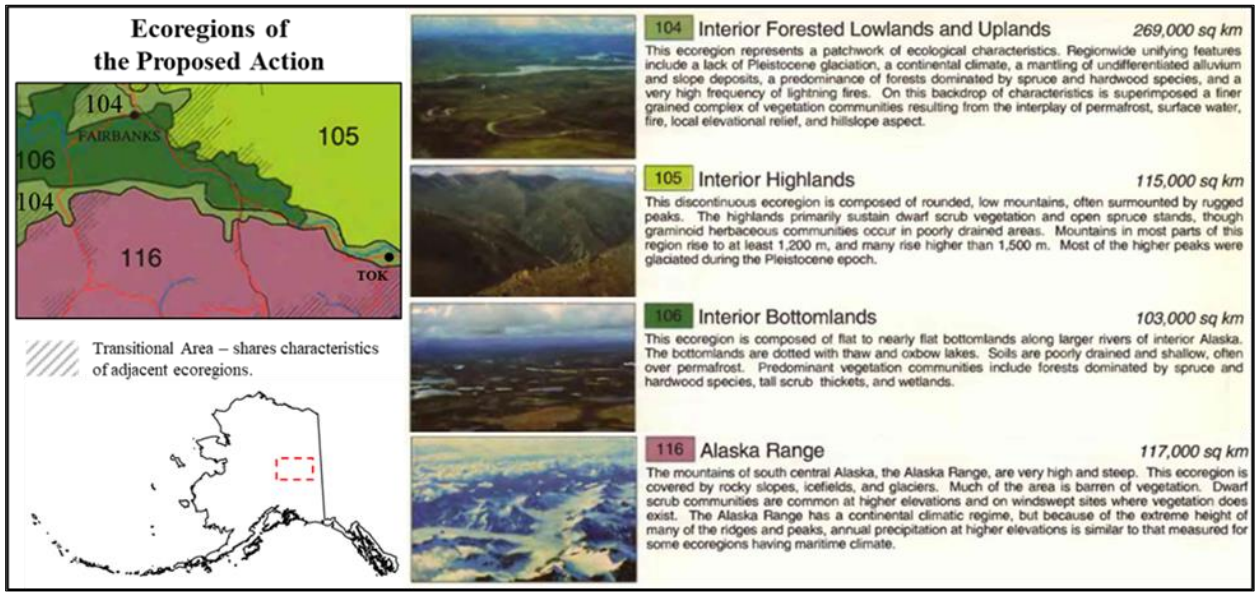


Figure 3-4. Proposed Action Ecoregions (Developed using Plate 1 in USGS 1995)

Table 3-7. Ops Site Ecoregion(s)

Ops Site	Transitional Area?	Interior Forested Lowlands and Uplands	Interior Highlands	Interior Bottomlands	Alaska Range
Engineer Hill	Yes		X	X	
South Pole Hill	Yes		X	X	
Bridge to Terabithia	No			X	
Birch Hill	No			X	
Pogo Hill	No		X		
Quartz Hill	Yes		X	X	
Gerstle River	No	X			
Dry Creek	No				X
Tok Hill	No				X

Table 3-8. Ecoregion Annual Weather Parameters

Ecoregion	Annual Weather Parameters
Interior Forested Lowlands and Uplands	**Summer Temperatures:** Averages lows of 8 to 11 °C to highs of 11 to 17 °C. **Winter Temperatures:** Averages low of -35 °C to a high of -22 °C. Inversions occur due to low sun angle and corresponding long-wave radiation cooling. **Precipitation:** Ranges from 250 to 550 mm and increases with elevation. Most precipitation occurs during summer due to convective storms. **Snowfall:** Ranges from 125 to 205 cm and increases with elevation. Will tend to linger in the higher altitudes, on the north-facing slopes, and shaded features.
Interior Highlands	**Summer Temperatures:** Decreases with elevation. **Winter Temperatures:** Steep and persistent temperature inversions at lower elevations. **Precipitation:** Orographic effect - highlands receive more precipitation than lower elevation areas. **Snowfall:** Likely receives snow in similar ranges as the Alaska Range.
Interior Bottomlands	**Summer Temperatures:** Lows of 7 °C and highs of 22 °C that remain above freezing. **Winter Temperatures:** Average lows of -33 to -26 °C with range from -22 to -17 °C. **Precipitation:** Ranges from 280 mm to 400 mm. **Snowfall:** Ranges from 95 cm to 205 cm.
Alaska Range	**Sumer Temperatures:** Lows average about 2 °C and highs average about 18 °C **Winter Temperatures:** Lows average about -25 °C and daily highs about -3 °C. **Precipitation:** 380 mm at lower elevations and 2030 mm for higher mountain peaks. **Snowfall:** 150 to 306 cm at lower elevations and 1015 cm for higher mountain.

Sources: (USGS 1995)
Key: °F = Fahrenheit; cm = centimeter; mm = millimeter.

Scientific evidence has indicated a correlation between increasing global temperatures and worldwide proliferation of greenhouse gas (GHG) emissions. GHGs trap heat in the atmosphere by absorbing infrared radiation and occur from natural processes and anthropogenic activities. Total GHG emissions from a source are often expressed as carbon dioxide equivalent (CO_2e) and measured in metric tons (mt). Table 3-6 summarized the most recent estimates of annual GHG emissions generated from stationary and mobile sources within the FNSB and Southeast Fairbanks Census Area in 2020.

The accelerated rate of warming at high latitudes is causing climate change in Alaska. This climate change may lead to various impacts on various ecoregions to include, but not limited to expanded periods of drought, lengthened fire season, increased frequency and severity of wildfires, shifted species and vegetation composition, and altered carbon budget (Foster *et al*. 2019).

3.6.2 Environmental Consequences

Preferred Alternative

Air quality would be reduced by the Preferred Alternative that would cause temporary and permanent minor adverse impacts. The air pollutant emissions from the Preferred Alternative were below Insignificant Indicators meaning the action is unlikely to cause or contribute to an exceedance of one or more NAAQSs and unlikely to have significant impacts to air quality. Furthermore, the increase in GHG emissions from the Preferred Alternative would be minor and unlikely to measurably contribute to climate change.

The construction activities of the Preferred Alternative and the operation of a temporary generator at the Tok Hill Ops Site would have localized, temporary adverse impacts to air quality. Air quality would be temporarily impacted by the Preferred Alternative's construction activities due to the use and operation of heavy equipment, vehicles, and generators. The effects to air quality would be highly localized during construction activities and generally dissipate and return to ambient air quality condition after such activities are completed. Air pollutant emissions from the temporary generator utilization at the Tok Hill Ops Site would also cease once the radars are connected to the existing power grid via installed powerlines.

For post-construction radar operations, permanent generators (i.e., the two permanent diesel generators and their associated gasoline generators) at the Quartz Lake and Dry Creek Ops Sites would be new sources of air pollutant emissions, and would have localized, permanent adverse impacts to air quality. The Air Force conducts an Air Conformity Applicability Model (ACAM) that estimates air pollutant increases of new source(s) from an Air Force action (e.g., newly installed permanent generators). An ACAM based on concept-level data was conducted for the temporary generator at the Tok Hill Ops Site, although this would not be a permanent new source of air pollutant emissions. Air pollutant emissions from the new sources of the Preferred Alternative were determined to be minor based on the ACAM Report (Appendix B) results. A NSR and an update to the Eielson AFB TVOP would be required under the CAA for the permanent generators, and any deviations from the concept-level data used to conduct previous modeling.

The Preferred Alternative ACAM Report and Record of Air Analysis (ROAA) estimated the total net direct and indirect emissions associated with the Preferred Alternative. Estimations were based on a calendar-year and begun from the start of the action through the "steady state" (i.e., when the emissions are stabilized). The Preferred Alternative ACAM Report compared air pollutant emissions from the permanent generators against the following Insignificance Indicators:

- PSD major source threshold within "Clearly Attainment" areas of 250 tons per year; and,
- General Conformity Rule (GCR, 40 CFR 93 Subpart B) *de minimis* values of 25 tons per year for lead and 100 tons per year for all other criteria pollutants

The Insignificance Indicators provide a threshold to identify actions that are insignificant or that may cause and/or contribute to an exceedance of one or more NAAQSs. The results of the ACAM Report demonstrated that the Preferred Alternative air pollutant emissions from the operations of the temporary diesel generator and permanent generators would not cause an exceedance of any air pollutant Insignificance Indicator.

Fugitive dust caused by the Preferred Alternative would predominantly be generated by construction activities; dust from vehicles operating on existing and newly constructed unpaved surfaces; and the transfer, transport, or stockpiling of dust-producing materials. This would reduce local air quality. However, increases in fugitive dust would be minimized to the greatest extent practicable, highly localized, and generally dissipate quickly. To minimize the amount of fugitive dust generated at the construction site, along haul routes, and in and around the post construction gravel roads and ops sites, the Preferred Alternative would implement the following BMPs and mitigations of the Eielson AFB Fugitive Dust Emission Plan unless prohibited by contaminated soil requirements:

- Spraying water within compliance of stormwater permit requirements when necessary;
- Limiting traffic speeds to 15 miles per hour or less on unpaved road surfaces; and,

- Daily cleaning of uncontaminated dirt and/or mud that is tracked onto paved roads.

Generally, the paved roadways would be watered before cleaning. If a street sweeper is used to clean away dirt and/or mud from paved roadways, it would have a water system that controls dust around the sweeper during operation.

No-Action Alternative

Under the No-Action Alternative, radars used at temporary YTA ops sites would continue to be powered by diesel generators. Gasoline generators would be utilized when necessary to warm up the permanent generators during low temperatures. The generators emit air pollutant emissions that would temporarily decrease air quality. Impacts to air quality would be highly localized. Air pollutant emissions produced under the No-Action Alternative would unlikely exceed Insignificance Indicators, NAAQSs, or SAAQSs, and fugitive dust would be controlled in accordance with Eielson AFB's Fugitive Dust Emission Plan. Thus, the No-Action Alternative would have minor permanent adverse impacts to air quality within the local environment.

3.7 WATER RESOURCES

3.7.1 Affected Environment

There are numerous water quality monitoring locations throughout the ROI. While there are localized water quality issues, water quality of both surface and groundwater is generally assumed to be within Alaska Water Quality Standards (WQSs) with higher quality water further away from developed areas, past historical activities linked to contamination, and stormwater outfalls. Furthermore, the groundwater can tend to have high concentrations of naturally occurring iron, manganese, and arsenic that are common treatment problems in Interior Alaska groundwater systems (Callegary *et al*. 2013).

Garrison Slough is an impaired water. *Impaired waters* are waters that persistently do not meet WQSs, and use of these waters are restricted. The closest ops site to Garrison Slough is the Engineer Hill Ops Site, approximately 6 miles northeast of the waterbody. It was listed as an impaired water in 1996 due to polychlorinated biphenyls (PCBs) contamination above Alaska WQSs. A 1996 EPA-approved recovery plan established under the Clean Water Act (CWA) Section 303(d) addresses the nonpoint source loading of PCBs into Garrison Slough and prescribes the removal of 80 percent of the PCBs through implementation of a phased Total Maximum Daily Load (TMDL) to restore the water's quality (EPA 1996).

AFI 32-1067, "Water and Fuel Systems" and other Air Force regulations require plans and procedures to be developed and implemented to minimize pollutant contributions to the environment through stormwater contact and flow from Air Force infrastructure and operations. Pursuant to minimizing stormwater environmental impacts, Eielson AFB has established a Stormwater Pollution Prevention Plan (SWPPP, Eielson AFB 2020). Changes in Eielson AFB operations or findings identified during inspection can lead to an update of this living document or require a separate SWPPP. The Eielson AFB SWPPP supports the base's Alaska Pollutant Discharge Elimination System (APDES) discharge Multi-Sector General Permits (MSGPs).

ADEC also issues APDES Construction General Permits (CGPs) for stormwater discharges from large and small construction-related activities that result in a total land disturbance of equal to or greater than 1 acre and where associated discharges enter waters of the US (WOTUS) or a municipal separate storm sewer system leading to WOTUS. A CGP also authorizes stormwater discharges from certain construction support activities and non-stormwater discharges commonly associated with construction sites. A Notice of Intent (NOI) to ADEC and submission of a new or modified SWPPP is required for a new or modified CGP or MSGP.

Under CWA Section 401, a State Water Quality Certification (WQC) from ADEC is required for actions that would result in a discharge of pollutants into WOTUS to ensure the action complies with all applicable WQSs, limitations, and restrictions. Furthermore, Under CWA Section 404, a permit must be acquired from US Army Corps of Engineers (USACE) Regulatory Division for actions within WOTUS involving fill for development, infrastructure development, and more.

Groundwater

In 2008, approximately 83 percent of Alaska's public drinking water systems and 90 percent of rural Alaskans used groundwater as a drinking water source (ADEC 2008). The Yukon River Basin encompasses the entirety of Interior Alaska and is the largest hydrologic region within Alaska. It also has the greatest extent of unconsolidated aquifer material in Alaska (Callegary *et al*. 2013). The low-lying and mountainous areas of the ROI generally consist of unconfined alluvial aquifers composed of unconsolidated materials derived from glaciers, rivers, and/or streams (ADEC 2008, USAG FWA 2013, Eielson AFB 2017). Ephemeral streams and rivers flowing out from mountain ranges (e.g., Alaska Range and Yukon-Tanana Uplands) in Alaska often diminish significantly or disappear into permeable glacial unconsolidated sediments prior to reappearing downslope where increases in fine-grained landscape features tend to occur. These landscape features promote groundwater accumulation that result in groundwater discharge that recharges various surface waterbodies in Interior Alaska (Callegary *et al*. 2013).

Surface Water

Groundwater is a major factor in surface water recharge of the various creeks, streams, ponds, and lakes throughout Interior Alaska. Within the ROI, varying extents of freezing generally between October and May will limit or stop surface water recharge from groundwater and other sources (e.g., snowmelt and precipitation). In March through April, snowmelt will typically begin and continue until July. The snowmelt contributes greatly to the high surface water flows in June and July. These surface waters will be recharged and sustained by precipitation until it begins to refreeze. The Tanana River, which is a major waterbody extending throughout the region of the Proposed Action, is fed by meltwater from glaciers and the snowmelt from the Alaska Range (NPG 1987, USAG FWA 2013).

Table 3-9 identifies specific surface waters within the footprint the ops sites and their associated new access roads based on the US Geological Survey (USGS) National Water Dashboard and includes potential ephemeral runoffs from higher ground.

Table 3-9. Surface Water along New Access Roads and/or Ops Sites.

Ops Site	Surface Water	Relevance to Site
Engineer Hill	Lily Lake	New access road around the perimeter of the Engineer Hill munitions storage and maintenance area lies north of Lily Lake.
Bridge to Terabithia	Tanana River	New access road lies within the Tanana River floodplain.
	Tanana River Anabranches	New access road and ops pad lie between two anabranches of the Tanana River.
Quartz Hill	Ephemeral Streams	New access road extends through potential ephemeral streams that would drain into Indian Creek.
Dry Creek	Dry Creek Tributary	New access road extends through an unnamed tributary that connects to Dry Creek.
	Ephemeral Streams	New access road extends through potential ephemeral streams that would drain into Dry Creek.
Tok Hill	Ephemeral Streams	New access road extends through potential ephemeral streams that would drain into springs at the base of the mountain.

Sources: (USGS 2023b.)

Floodplain

Within the ROI, the FNSB is the only community that participates in the Federal Emergency Management Agency's (FEMA's) National Flood Insurance Program (NFIP). Flood Insurance Rate Maps (FIRMs) can be used to identify a Special Flood Hazard Area (SFHA) within a mapped area. A SFHA is an area subject to inundation by 1 percent-annual-chance-flood and considered a 100-year floodplain. FNSB Code 15.04, "Floodplain Management Regulations," requires a Floodplain Permit for actions relating to new infrastructure development, substantial existing infrastructure improvements, or movable structure placement within a FNSB regulated SFHA or within 250 feet of the Tanana Levee Structure centerline. The FNSB Department of Community Planning is the issuing authority for the Floodplain Permit.

The main flood seasons or the Tanana River and Chena River in the ROI are the spring and summer and generally caused when there is rapid melting of above-normal snowfall from a preceding winter that causes a heavy spring runoff. Such flooding can be exacerbated by ice jams and by extreme rainfall within a short period of time (i.e., 2 or more inches in a 24-hour period). The Tanana River Levee System and Moose Creek Dam protect most of Fairbanks area from inundation by the 1 percent annual chance flood (FEMA 2020).

EO 11988, "Floodplain Management," applies to actions that occur within the 100-year floodplain (i.e., SFHA). Pursuant to this EO, Federal agencies ensure their actions reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Thus, the Air Force would be required to design or modify its action to minimize potential harm to or within the floodplain and publish a notice (i.e., EPN). The purpose of the notice is to inform the public the Air Force's action would potentially impact a 100-year floodplain.

Furthermore, actions occurring within a floodplain must comply with EO 13690, "Federal Floor Risk Management Standard." The purpose of this EO is to ensure resiliency against potential future flood events. The three approaches Federal agencies may pursue to establish the flood elevation and corresponding hazard area for an action's siting, design, and construction are:

1. *Climate Informed Science Approach*: uses the best-available, actionable hydrological and hydraulic data and methods that integrate current and future changes in flooding based on climate science;
2. *Freeboard Value Approach*: adds an additional 2 feet for non-critical actions and 3 feet for critical actions to base flood elevation(s); and,
3. *500-year Floodplain Approach*: includes the area subjected to flooding by the 0.2 percent-annual-chance-flood (i.e., 500-year floodplain) in floodplain assessment.

Wetlands

Special aquatic sites are waters possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general environmental health or vitality of the entire ecosystem of a region. Wetlands are considered a special aquatic site under CWA and are areas that are, "inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR § 328.3[b]). Wetlands are among the most productive ecosystems in the world and are a source of substantial biodiversity (EPA 2021).

Wetlands occur more frequently at higher latitudes largely because the cooler climate provides less opportunity for evaporation and wetlands cover approximately 43 percent of Alaska's surface area. Of the 175 million acres of Alaskan wetlands, two-thirds are classified as palustrine shrub/scrub, as described in the Classification of Wetlands and Deepwater Habitats of the US (Cowardin *et al*. 1979).

The National Wetland Inventory (NWI) mapping performed by the US Fish and Wildlife Service (USFWS) provides reconnaissance level information on the location, type, and size of aquatic resources. The maps are prepared from the analysis of high-altitude imagery and wetlands are identified based on vegetation, visible hydrology, and geography. For an area to be recognized as wetland as defined by the CWA, the parameters of appropriate vegetation, hydrology, and hydric soils must be satisfied. Impacts to wetlands mapped by the NWI would require a formal jurisdictional wetland delineation to determine the presence and extent of aquatic resources. These delineations will be performed during the application for a Department of the Army permit from the USACE Alaska District's Regulatory Division under Section 404 of the CWA, and in accordance with the 1987 *US Army Corps of Engineers Wetland Delineation Manual* (USACE 1987) and the 2007 *Regional Supplement to the USACE Wetland Delineation Manual: Alaska Region (Version 2.0)* (USACE 2007). Wetlands occur within the footprint of the Pogo Hill and Dry Creek Ops Sites.

EO 11990, "Protection of Wetlands," applies to actions that occur within wetlands. Pursuant to this EO, Federal agencies ensure their actions minimize the destruction, loss or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands. Thus, the Air Force would be required to design or modify its action to minimize potential harm to or within wetlands and publish a notice (i.e., EPN) to notify the public that its action may impact wetlands.

Pogo Hill Ops Site

A small section of the Pogo Hill powerline alignment would pass through wetlands mapped by the NWI as palustrine forested/shrub wetlands. These wetlands are typically dominated by black spruce (*Picea mariana*) in the tree and scrub stratum, with Labrador tea (*Rhododendron groenlandicum*) and various ericaceous species rounding out the scrub stratum. Black spruce and Labrador tea wetlands in Interior Alaska generally have a thick layer of sphagnum moss (*Sphagnum* spp.) covering the ground and deep organic soils that are susceptible to seasonal ice in the upper part and potential permafrost in alpine areas and north-facing slopes.

Palustrine forested/shrub wetlands in the powerline footprint are likely to perform production of organic matter, sediment removal, general habitat suitability, and native plant richness functions.

Dry Creek Ops Site

There are no wetlands on the hilltop where the ops pads would be constructed, but the new access road would cross several wetland palustrine scrub/shrub communities. The wetlands are typically dominated by resin birch (*Betula glandulosa*) and dwarf birch (*Betula nana*), with a few scattered black spruce saplings and ericaceous plants like western blueberry (*Vaccinium uliginosum*) and lingonberry (*Vaccinium vitis-idaea*). There is cottongrass (*Eriophorum vaginatum*) in the herb stratum and a robust layer of sphagnum moss across much of the ground surface.

Palustrine scrub/shrub wetlands in the new access road footprint are likely to perform flood flow alteration, production of organic matter, and general habitat suitability. These wetlands are very common in Interior Alaska, and do not contain or support rare or threatened species.

3.7.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have temporary, minor adverse impacts to surface water, the Tanana Floodplain, and wetlands due construction activities and permanent, minor adverse impacts to wetlands and surface waters post-construction. Furthermore, stormwater discharges of fill material placement would be required for the Preferred Alternative's construction activities. Groundwater impacts at the various ops sites would be negligible and discountable because the Preferred Alternative and its construction activities are not anticipated to contaminant or interrupt the movement of groundwater within the ROI.

The Preferred Alternative would require the development of an action specific SWPPP for each ops site to comply with the CGP from ADEC unless the site's ground disturbing and fill activities during construction would not exceed the *de minimis* threshold and not result in stormwater and non-stormwater discharges entering WOTUS (i.e., the Tanana River, wetlands, and Dry Creek tributary). A NOI issued to ADEC would be required for a complete CGP application. A CWA 401 WQC from ADEC and CWA 404 Permit from USACE Regulatory Division would be required for the Preferred Alternative's fill activities and discharges during construction as well.

Surface Water

Surface water impacts would be minimal and predominately effect ephemeral streams caused by snowmelt and mountain runoff at various sites. A perennial surface water that would be impacted by the Preferred Alternative is a tributary of Dry Creek that the new Dry Creek Ops Site access road alignment would cross. Impacts to the tributary would be temporary and would occur during construction. The construction of the Dry Creek new access road would limit and/or prevent water flow in the tributary until a culvert is emplaced. The culvert would allow water flow to occur while simultaneously preventing destabilization of the newly constructed access road. Once the culvert and overlaying road infrastructure is constructed, the impacts to this tributary would be negligible. As for the ephemeral streams, culverts and drainage design considerations would be incorporated to minimize impacts to the constructed infrastructure and ephemeral streams to retain the hydrology and minimize indirect impacts down-gradient.

Floodplain

Pursuant to EO 11988 and EO 13690, the 500-year Floodplain approach was implemented in the Air Force's floodplain analysis for the Preferred Alternative. The Bridge to Terabithia Ops Site is within the SFHA of the Tanana River floodplain (i.e., within a 100- and 500-year floodplain). The applicable FIRM for this is Panel 6425J (NFIP 2014) and the ops site area has a determined base flood elevation. To minimize potential flood loss during a flood event, base flood elevation considerations would be incorporated during the design of the site. In accordance with FNSB Code 15.04, a Floodplain Permit would be required for the Bridge to Terabithia Ops Site's construction activities. The permit would be issued if the Bridge to Terabithia Ops Site design is sound and not anticipated to heighten flood impacts on human safety, health, and welfare nor prevent the natural and beneficial values served by the Tanana Floodplain. However, during the construction of the site, there would be a temporary increased risk of flood loss due to instability of unfinished infrastructure. Upon completion of construction efforts, ops site infrastructure would be stabilized and able to withstand floodplain conditions resulting in negligible impacts to and from the floodplain.

Wetlands

The Pogo Hill and Dry Creek Ops Sites would impact wetlands.

Impacts to wetlands are typically divided between direct and indirect impacts. *Direct impacts* are caused by the placement of fill material directly into the wetland and generally result in the loss of all wetland function due to the destruction of vegetation, loss of water storage capacity, reduction in flood flow desynchronization, conversion of habitat, etc. *Indirect impacts* are usually caused by alterations to the hydrology in action-adjacent areas and can sometimes induce a change to the wetlands type by increasing or decreasing the amount of water the wetland receives or retains.

Both direct and indirect impacts are often quantified by acreage of impact, and sometimes the acreage is modified by a multiplier derived by a "functional assessment." Functional assessments are protocols used to quantitatively describe wetland function by giving wetland communities or polygons a score based on how well the wetland performs a given function, such as general habitat suitability, flood flow alteration, production of organic material, etc.

Pogo Hill Ops Site

The Pogo Hill Ops Site new access road improvement and powerline installation would cross a palustrine forested/shrub wetland (Figure 3-5).

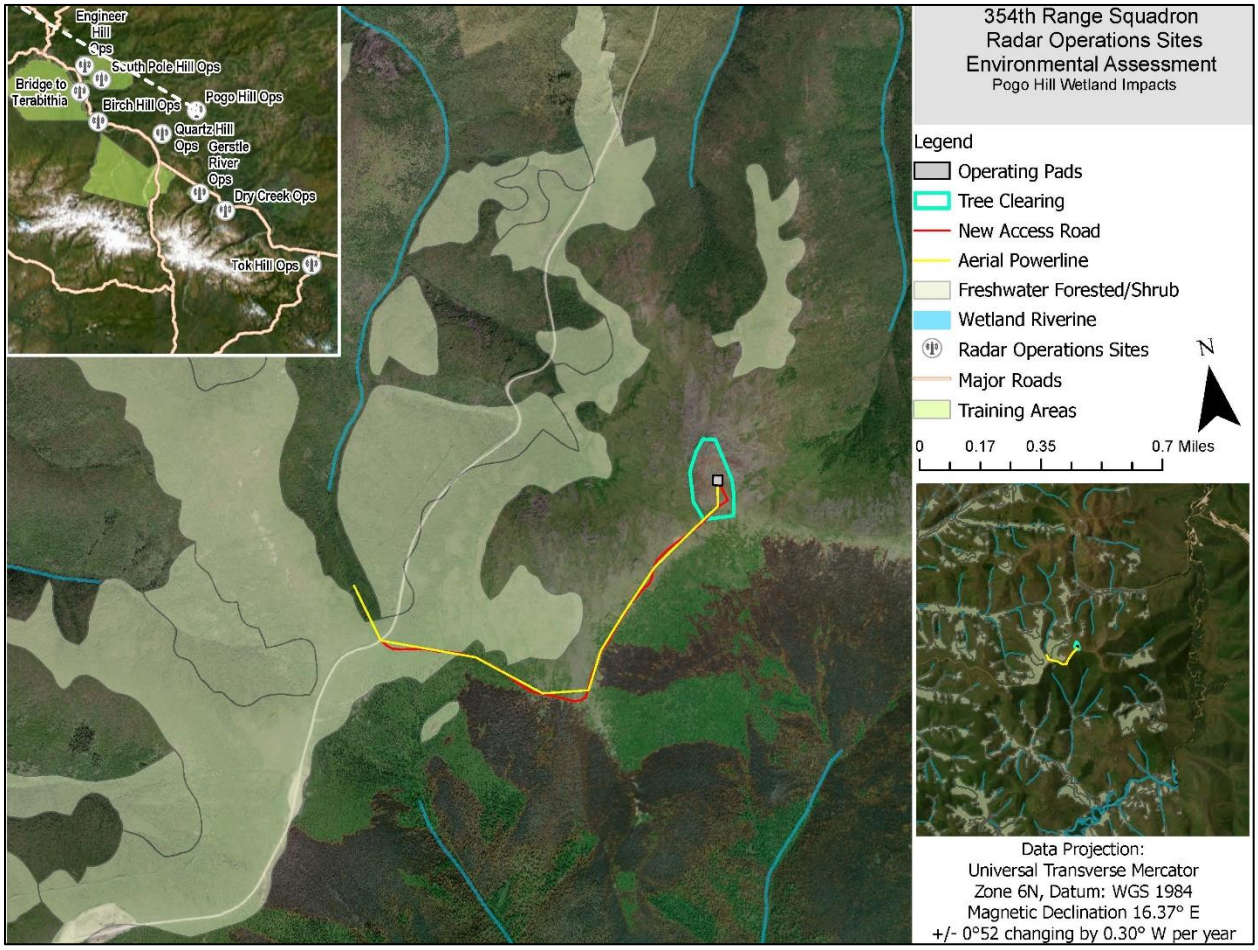


Figure 3-5. Pogo Hill Wetland Impacts

The new access road improvement is not expected to cause wetland impacts because the improvement work would be contained within the footprint of the existing unimproved road. A 30-foot-wide ROW would be cleared for the powerline. The Pogo Mine Access Road is within

the wetland boundary and vegetation clearing for the powerline would extend approximately 300 feet west of the road before leaving the wetland boundary. Powerline installation would require clearing approximately up to 0.2 acres of wetland vegetation. The powerline alignment was designed to avoid wetlands to the extent practicable. The vegetation clearing would be a temporary impact to wetlands because the vegetation would begin growing back soon after construction and operation of equipment along the ROW would not cause permanent changes to the soils, hydrology, or vegetation.

Utility poles installation would require equipment operation in wetlands north of the Pogo Mine Access Road to drill holes in the ground for setting the poles and anchors. The utility work south of this road is expected to be conducted from the existing unimproved road to the top of the Pogo Hill. Each utility pole would displace a small amount of wetland soil, and the hole drilled to set the utility pole would be backfilled with native soil. The installation of the utility poles would cause minor permanent impacts corresponding to the area occupied by the base of the utility pole and any anchors. The number of poles required to be set in wetlands would be dictated by terrain, existing utility infrastructure (e.g., substations), and equipment requirements. Wetland impacts associated with utility pole installation are expected to total less than 0.10 acres.

Dry Creek Ops Site

Construction of the Dry Creek new access road would cross multiple slope-discharge wetlands on its path up the north slope of the hillside (Figure 3-6).

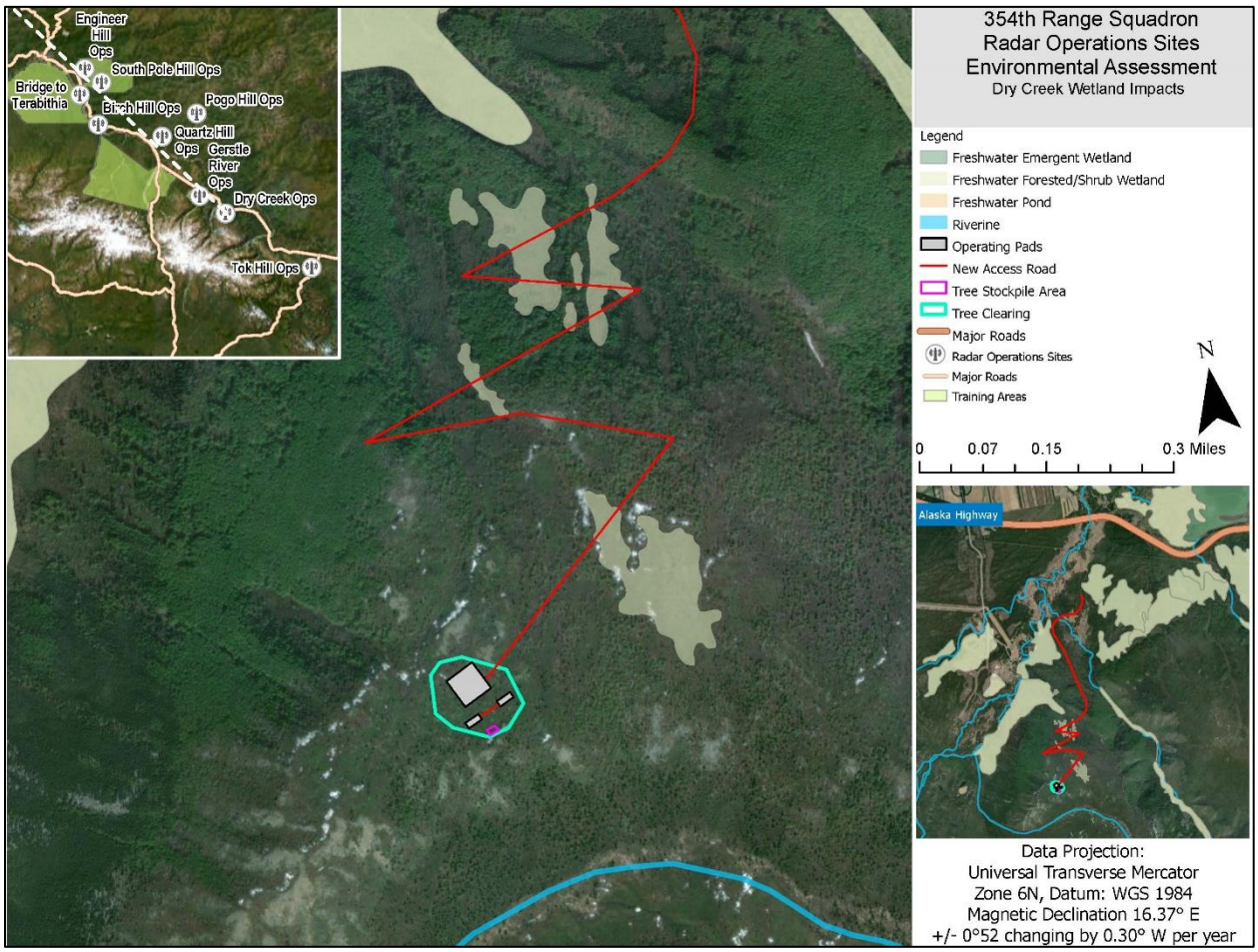


Figure 3-6. Dry Creek Wetland Impacts

The new access road would require a 50-foot-wide cleared ROW and the toe-to-toe width of the road embankment would be 20 feet. The total length of the new access road within the boundaries of the wetland communities would be approximately 1,325 feet, which would cause 0.9 acres of temporary impacts due to the vegetation clearing for the ROW and 0.6 acres of permanent, direct wetland impact associated with the placement of fill for road construction. The wetlands that would be impacted by the road construction are common palustrine forested/scrub wetlands and isolated from surface water. They do not provide substantial general habitat, fish habitat, organic material export, or filtration functions due to their position in the watershed and homogeneity.

The Air Force would install culverts as appropriate to retain the hydrology and minimize indirect wetland impacts down-gradient from the Dry Creek Ops Site. Wetlands were avoided to the extent practicable during new access road design, but the topography of the site presents significant road design constraints and requires the incorporation of several switchbacks to achieve practical grades.

No-Action Alternative

There would be no fill or discharges associated with the use of temporary YTA ops sites for radar training. However, potential spills and/or leaks could contaminant local water resources due to water run-off or migration of contaminants to groundwater. The Air Force would implement the appropriate leak and spill response if a leak and/or spill occurred to minimize the extent of contamination of such an event. Thus, impacts to water resources from the No-Action Alternative would be permanent minor adverse impacts.

3.8 EARTH RESOURCES

3.8.1 Affected Environment

Extensive Pleistocene glaciation occurred in the Alaska Range and the higher peaks within the Yukon-Tanana Uplands (USGS 1995). Climatic fluctuations during the Quaternary Period caused glacial expansion and recession that impacted the terrain of the ROI with several hundred feet of glacial silt, sand, and gravel flowing from various rivers into the Tanana River and Yukon valleys. This resulted in an extensive loess layer that can range over hundreds of feet thick in these valleys and gravel deposits up to approximately 150 feet thick along the Tanana River (NPG 1987, USAG FWA 2013). The valleys are generally flat beyond the base of the Alaska Range and Yukon-Tanana Uplands. The bedrock in the Tanana Valley can be hundreds of feet deep below these sediments. Whereas the alpine areas generally have exposed weathered bedrock and/or bedrock under a thin soil surface layer (Eielson AFB 2017).

Discontinuous permafrost dominates the ROI. Isolated masses or continuous thin layers of permafrost may occur at the ops sites within the Interior Bottomlands Ecoregion or Transitional Areas adjacent to the Interior Bottomlands. Ops site soil, geology, and topography is informed by the characteristics of its ecoregion(s) and described in Table 3-10.

Table 3-10. Ops Site Soil, Geology, and Topography Informed by Ecoregion Characteristics

Ops Site	Ecoregion	Soils	Geology	Topography
Bridge to Terabithia	Interior Bottomlands	Pergelic and Histic Pergelic Cryaquepts; Aquic and Typic Cryochrepts; and Typic Cryofluvents.	Unconsolidated surficial deposits, undivided (Quaternary); and floodplain alluvium (Quaternary).	New access road and ops pad at about 600 feet ASL within the Tanana Flats.

Ops Site	Ecoregion	Soils	Geology	Topography
Birch Hill			Gneiss, schist, and quartzite (Mississippian, Devonian, and older); and Gneiss and Quartzite (Paleozoic or Precambrian).	New access road extends to the ops pad from about 1,000 feet to 1,466 feet ASL.
Engineer Hill	Transitional Area – Interior Bottomlands and Interior Highlands	Pergelic and Histic Pergelic Cryaquepts; Aquic and Typic Cryochrepts; Pergelic Cryumbrepts; Lithic Cryorthents; Typic Cryorthods; and Typic Cryofluvents.	Unconsolidated surficial deposits, undivided (Quaternary) and Fairbanks loess (Quaternary) transitions into keevy peak formation and similar rocks (early Paleozoic) and calcareous phyllite, marble and phyllite (Paleozoic).	New access road extends to the ops pads from about 500 feet to 1,000 feet ASL. Terrain transitioning from flat lowlands to the Yukon-Tanana Uplands.
South Pole Hill			Totatlanika schist (Early Mississippian to Late Devonian) and Cataclastic rocks (Paleozoic).	New access road and ops pads at about 2,400 feet ASL. Terrain transitioning from flat lowlands to the Yukon-Tanana Uplands.
Quartz Hill			Unconsolidated surficial deposits, undivided (Quaternary) and loess (Quaternary) transitions into augen gneiss and orthogneiss (Early Mississippian and Late Devonian).	New access road extends to the ops pad from about 1,000 feet to 2,000 feet ASL. Terrain transitioning from flat lowlands to the Yukon-Tanana Uplands.
Pogo Hill	Interior Highlands	Histic Pergelic Cryaquepts; Typic Cryochrepts; Pergelic Cryumbrepts; Lithic Cryorthents; and Typic Cryorthods.	Gneiss, schist, and quartzite (Mississippian, Devonian, and older) and gneiss and quartzite (Paleozoic or Precambrian).	New access road extends to the ops pads from about 3,100 feet to 4,000 feet ASL within the Yukon-Tanana Uplands.
Gerstle River	Interior Forested Lowlands and Uplands	Pergelic and Histic Pergelic Cryaquepts; Aquic, Pergelic, and Typic Cyrophrepts; Typic Cryorthents; and Pergelic Cryumbrepts.	Unconsolidated surficial deposits, undivided (Quaternary) and Glaciofluvial deposits of Wisconsin glaciation (Holocene and Pleistocene).	New access road and ops pad at about 1,600 feet ASL.
Dry Creek	Alaska Range	Lithic Cryorthents; Pergelic Cryaquepts and Pergelic Ruptic-Histic Cryaquepts; Typic Cryochrepts; Pergelic Cryumbrepts, and Typic Cryumbrepts.	Unconsolidated surficial deposits, undivided (Quaternary) and colluvial deposits (Holocene) transitions into granitic rocks of central and southeast Alaska (Cretaceous, Coniacian, Albian) and granite of Macomb Plateau (Late Cretaceous).	New access road extends to the ops pads from about 1,300 feet to 2,600 feet ASL in the Macomb Plateau of the Alaska Range.
Tok Hill			Orthogneiss and amphibolite of igneous origin (Mississippian, Devonian, and older), Biotite gneiss and schist unit (Precambrian and/or Paleozoic).	New access road extends to the ops pads from about 2,000 feet to 3,000 feet ASL in the Alaska Range.

Sources: (USGS 1995 and USGS 2023a.)
Key: ASL = Above Sea Level.

Permits and coordination are required prior to ground disturbance activities, like excavation activities discussed in Section 3.4. On military bases, a Dig Permit is required prior to break ground more than 6 inches in depth. Furthermore, in accordance with the Alaska Dig Law (AS 42.30.400 – 490), a proponent must call 811 for a "locate request" to inform excavation activities and avoid damaging "underground facilities" and/or harming the public. *Locate requests* are requests for underground facility owners to identify and mark the location of their facilities within the confines of a planned excavation. AS 42.30.490(10) defines an *underground facility* as:

> *"a pipe, sewer, conduit, cable, valve, line, or wire, including attachments and those parts of poles or anchors that are below ground, for use in connection with the storage or conveyance of water, sewage, telecommunications, cable television, electricity, petroleum, petroleum products, hazardous liquids, or flammable, toxic, or corrosive gas."*

The use of mineral resources may also require agency coordination and/or permits depending on the owner of the mineral resource. The use of mineral resources on military lands by the military does not require coordination with the BLM. However, use of mineral resources, such as gravel, from public lands for construction purposes and road building, are subject to the Materials Act of 1947. Under this Act some "common variety" minerals, such as gravel, are subject to sale and require coordination with the appropriate BLM office. The appropriate BLM office for the ROI is the Fairbanks District Office. Regulations governing contracts and permits for mineral materials are contained in Title 43 CFR Subparts 3601, 3602, 3603, and 3604.

3.8.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would adversely impact earth resources by exposing earth resources to erosional forces and using available earth material (i.e., gravel) in permanent infrastructure. However, by limiting the footprint of infrastructure and implementing erosion considerations during design would minimize adverse impacts to these resources. The Preferred Alternative would have minor temporary and permanent adverse impacts to earth resources by developing minimal, stable infrastructure and stabilizing disturbed ground to the extent practicable after construction is completed.

The Air Force and/or its contractor would request "locates" to inform excavation activities and avoid damage to "underground facilities" and harm to the general public in accordance with the Alaska Dig Law (AS 42.30.400 – 490) for the Preferred Alternative. Furthermore, Dig Permits would be acquired for such actions on military lands.

For this EA analysis, ops site conceptual designs and best professional judgement were used to determine appropriate baseline metrics to inform potential impacts to earth resources. These metrics were used to determine ground disturbance estimations for the construction activities (i.e., new access road and operating pad(s) construction and powerline installation; Table 3-11).

Table 3-11. Estimated Ground Disturbance from Ops Site Construction Activities

Ops Site	Operating pad(s) (Acres)	New Access Road (Acres)	Powerline Installation[1] (Acres)	Total (Acres)
Engineer Hill	1.01	4.58	< 0.00[2]	5.59
South Pole Hill	0.69	1.21	< 0.00[2]	1.90
Bridge to Terabithia	0.47	0.12	< 0.00[2]	0.59
Birch Hill	0.69	1.84	< 0.00[2]	2.53
Pogo Hill	0.52	3.39	< 0.00[2]	3.91
Quartz Hill	0.52	15.27	*Not Applicable*	15.79
Gerstle River	0.47	0.48	0.10[2]	1.05
Dry Creek	1.01	7.03	*No Applicable*	8.04
Tok Hill	1.01	18.42	< 0.00[2]	19.43
Feature Total	6.39	52.34	0.10	58.83

Notes:

[1] Estimated using best professional judgment associated with powerline installation activities. Assumptions used were: (1) 9.4 miles of aerial powerlines would be installed, (2) 0.2 miles of underground powerlines would be installed, (3) an utility pole would be emplace every 300 feet of powerline, (4) a utility pole would disturb a 2 square foot area of soil, (5) an electrical transformer pads and utility vaults would disturb a 25 square foot area, (6) the width of the trench for an underground powerline would be 4 feet; (7) the

[2] Estimated utility pole installation was less than 0.00 acres for all ops sites with aerial powerlines.

Estimated total ground disturbance from the Preferred Alternative would be approximately 58.83 acres and ground disturbing activities associated with site infrastructure construction would generally not extend beyond the surface layer (approximately 5 feet bgs). However, specific site

conditions (e.g., depth of bedrock, sediment characteristics, and permafrost conditions) and coordination with utility providers and landowners would dictate the required design and safety compliance standards that would determine the dimensions and depths of the final design of each ops site. Subsequently, final dimensions and depths may vary from baseline metrics in this EA and deviate from estimated ground disturbance.

Infrastructure (e.g., gravel roads and operating pads) would build on top of existing surface layers to the extent necessary to stabilize the infrastructure. New access roads and operating pads would be built of compacted soil and pitrun on top with a compacted E1 gravel surface. Each site would resource its gravel for its new access road and operating pad(s) from the nearest, active established gravel source (e.g., community gravel pits) to the extent practicable. Generally, an active gravel source is within 15 miles of each ops site. Using established gravel sources would avoid impacts associated with opening a new gravel pit. However, minor permanent adverse impacts would occur from permanent conversion of earth resources into infrastructure and cause minor changes in topography.

The installation of the utility poles would cause minor permanent impacts to the earth resources within the corresponding area occupied by the base of the utility pole and any anchors. 5 feet bgs is a typical utility pole depth. However, the dimensions, number, and depth of utility poles at each ops site would be dictated by the earth resources and other conditions at the site. These factors would also determine the extent of ground disturbance as each utility pole would displace a small amount of soil. Impacts to earth resources from these activities and the trenching at the Gerstle River Ops Site for underground powerlines would be minimized by backfilling holes with the native soil to the extent practicable. Underground powerline trenching also varies based on site conditions but is not anticipated to extend more than 4 feet wide or bgs. A trench is defined as (OSHA 2015):

> "*A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth of a trench is greater than its width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m[eters]).*"

The Pogo Hill Ops Site is within an area of multiple active, proposed, and claimed mining sites. Coordination would be conducted with owners of these mining sites within the construction footprint of the Pogo Hill Ops Site.

Vegetation within the ROI protects earth resources in the existing environment from erosion. *Vegetation clearing* are the activities that cut trees off at ground level and masticate shrubs and is not considered a ground disturbing activity within this EA, but vegetation clearing would further expose earth resources to erosion from weathering, wind, and water. Culverts and ditches would be incorporated into the Preferred Alternative design to divert and funnel water to minimize erosion to the surrounding environment and Preferred Alternative infrastructure.

No-Action Alternative

Impacts to earth resources would be negligible under the No-Action Alternative, because no ground disturbing activities would be required to operate radars at the temporary YTA ops sites and earth resources would not be further exposed nor used.

3.9 BIOLOGICAL / NATURAL RESOURCES

3.9.1 Affected Environment

This section will cover Conservation Areas; terrestrial mammal, bird, and fish species and habitat; invertebrates; invasives species; vegetation; and wildfires as they apply to the ROI. A species list was retrieved from the USFWS Information for Planning and Consultation (IPaC)

online tool to inform the wildlife and habitat resources within the ROI (Appendix A). No Endangered Species Act (ESA) listed species or habitat are anticipated to occur within the ROI. Because Interior Alaska is far removed from marine waters, no species or habitat under the jurisdiction of the National Marine Fisheries Service (NMFS) would occur within the ROI.

Conservation Areas

Conservation Areas are protected lands and waters that are important to wildlife at a State to international level. Conservation Areas may require a Special Area Permits for certain activities from ADF&G. Many of these protected lands and waters provide opportunities for hunting, trapping, fishing, gathering of wild resources, photography, and wildlife viewing. The Conservation Areas applicable to the Proposed Action are identified in Table 3-12.

Table 3-12. Conservation Areas within the ROI that Apply to the Ops Sites

Area	Description	Applicable Ops Site(s)
Delta Junction Bison Range	Supports the Delta Bison Herd and mitigates damage to nearby agricultural lands.	Gerstle River
Anadromous Waters	Protected waterbodies that support anadromous fish (i.e., fish that live in saltwater except reproducing in freshwater habitats)	Not Applicable
Controlled Use and Management Areas	Areas where harvesting means and methods are restricted for one or more game species.	Gerstle River, Dry Creek, Tok Hill
Northern Region State Parks	Areas that protect wildlife while supporting related recreational opportunities like wildlife viewing, hiking, and camping.	Quartz Hill, Tok Hill
Important Bird Area	An area designated using standardized criteria for identifying habitats with a significant proportion of a population of one or more bird species.	Gerstle River, Dry Creek, Tok Hill
Tanana Valley State Forest	ADNR managed area for sustaining resource yield (e.g., timber management) while (1) providing beneficial uses of public land and resources and (2) providing protected wildlife habitat.	Quartz Hill, Gerstle River, Tok Hill

Terrestrial Mammals and Habitat

Table 3-13 lists species that may be present in appropriate habitats throughout the ROI.

Table 3-13. Terrestrial Mammals in the ROI

Scientific Name	Common Name
Alces alces	Moose
Bison bison bison	Plains Bison
Canis latrans	Coyote
Canis lupus	Wolf
Castor canadensis	Beaver
Erethizon dorsatum	North American Porcupine
Glaucomys sabrinus yukonensis	Northern Flying Squirrel
Gulo gulo	Wolverine
Lepus americanus	Snowshoe Hare
Lutra canadensis	River Otter
Lynx Canadensis	Lynx
Marmota caligata	Hoary Marmot
Marmota monax	Woodchuck
Martes americana	American Marten
Microtus pennsylvanicus	Meadow Vole
Mustela erminea	Ermine
Myotis lucifugus	Little Brown Bat

Scientific Name	Common Name
Neovison vison	American Mink
Ochotona collaris	Collared Pika
Ondatra zibethicus	Muskrat
Ovis dalli	Dall Sheep
Rangifer tarandus granti	Caribou
Spermophilus parryii	Arctic Ground Squirrel
Tamiasciurus hudsonicus	Red Squirrel
Ursus americanus	Black Bear
Ursus arctos	Brown Bear
Vulpes vulpes	Red Fox

Source: (ADF&G 2023d)

The Gerstle River Ops Site resides within the 90,000-acre Delta Junction Bison Range (Figure 3-7). The primary land manager of this area is the ADNR, but the ADF&G manages the wildlife and habitat within it. This Conservation Area was predominantly established to mitigate bison damage on nearby agricultural lands, but it is also used for a variety of public uses to include hunting, wildlife viewing, educational events, and more. The ADF&G states that the best viewing on the range is from mid-July to mid-September (ADF&G 2023b).

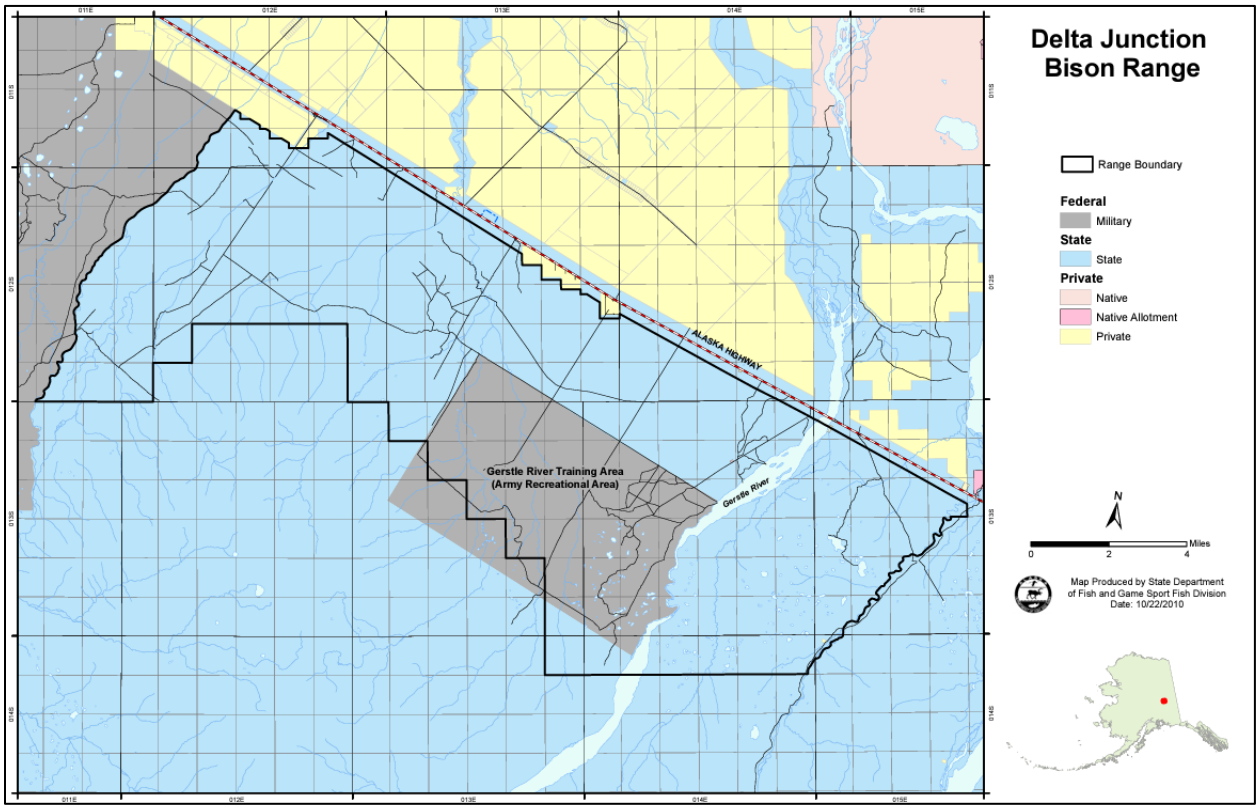


Figure 3-7. Delta Junction Bison Range
(ADF&G 2010)

Bird Species and Habitat

There are various migratory birds that occur within the ROI. With the exception of the State-managed ptarmigan (*Lagopus* spp.) and grouse species, native migratory birds and their associated active nests, eggs, and nestlings are protected under the Migratory Bird Treaty Act (MBTA). Furthermore, the Bald and Golden Eagle Protection Act (BGEPA) specifically prohibits

taking of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos)*. Thus, construction activities that interfere with the breeding, feeding, or sheltering of these protected bird species are regulated.

The Gerstle River, Dry Creek, and Tok Hill Ops Sites are within the 2,459,850-hectare (approximately 60.769 billion acres) Upper Tanana River Valley Important Bird Area (IBA). While this IBA is not afforded additional land or water protections, it has been identified as an area of global importance because it meets the criteria of holding congregations of more than or equal to 1 percent of the global populations for trumpeter swan (*Cygnus buccinator*) and sandhill crane (*Grus canadensis*), on a regular and/or predictable basis.

The USFWS has developed regional nesting windows throughout Alaska and recommended land disturbing and vegetation clearing activities take place outside these windows to avoid taking protected bird species. The USFWS Alaska Interior Region's nesting windows are applicable to the Proposed Action and are defined in Table 3-14.

Table 3-14. Alaska Interior Region Nesting Windows by Habitat Type

Habitat Type	Description	Nesting Window	
		Begins	Ends
Forest or Woodland	Trees present.	May 1[1,2]	July 15
Shrub or Open	Shrub cover or marsh, pond, tundra, gravel, or other treeless shrubless ground habitat.	May 1[1,2]	July 15
Terns and Gulls	Includes cliff and burrow colonies.	May 1	July 20
Eagles	--	March 1	August 31

Source: (USFWS 2017)
Notes:
The Interior Region is defined as the area north of Talkeetna, Alaska, to the south slope of the Brooks Range with the western boundary extending to the west tree line.
[1] Raptors may nest as early or earlier than March.
[2] Canada geese and swans nest beginning April 20.

Fish Species and Habitat

A multitude of rivers, lakes, and streams in the ROI support fish. Anadromous waters support anadromous fish and receive special protections in Alaska to preserve abundant fish runs. In accordance with AS 16.05.871 - .901, prior notification and permit approval from the ADF&G is required before affecting or modifying specified anadromous waterbodies identified in the Anadromous Waters Catalog (AWC). The Tanana River, a specified anadromous stream (AWC Code 334-40-11000-2490), follows the general route of the Richardson-Alaska Highway corridor within the ROI. Arctic lamprey (*Lethenteron camtschaticum*), Chum salmon (*Oncorhynchus keta*), chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), sockeye salmon (*Oncorhynchus nerka*), and humpback whitefish (*Coregonus pidschian*) are anadromous fish species present within the Tanana River (ADF&G 2023a). Many other anadromous waters within the ROI near the various ops sites are tributaries to the Tanana River. The Fish Passage Act (AS 16.05.841) requires the ADF&G to be notified about activities within or across a stream used by fish if the activities could impede fish passage. ADF&G issues permits for certain types of construction activities with potential to impact fish and fish passage.

The ADF&G manages amphibians that are included in ADF&G's broad definition of "fish." Based on its range, the wood frog (*Rana sylvatica*) is likely to occur within the ROI. It inhabits a wide range of habitats to include grassy meadows, open forest, muskeg, and tundra within Interior Alaska (Gotthardt 2005). Although it breeds in shallow bodies of permanent water in spring after hibernating in compacted forest litter under snow during winter, it can be found far from such waterbodies.

Invertebrates

Earthworms (*Lumbricus* spp.), insects, and spiders are invertebrates within the ROI and can contribute or degrade the health of an ecosystem, be considered pest, and/or carry disease. For example, earthworms contribute to the health of the ecosystem where they occur through aeration and enriching the soil, but spruce beetle (*Dendroctonus rufipennis*) kill numerous spruce trees that can degrade the health of the ecosystem in Interior Alaska. Mosquitos are also a prominent insect that occurs throughout Interior Alaska during summer. They may carry disease that can impact humans and other wildlife and considered a pest to many.

Invasive Species

Invasive species can have devastating impacts on the natural ecosystems of Alaska. Presidential EO 13112 defined "invasive species" as a species that is (1) nonnative to the ecosystem under consideration; and (2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. The ADF&G is responsible for receiving invasive species reports in Alaska (ADF&G 2023c).

An invasive specie's pathway of introduction to an area may be intentional and/or unintentional transport from human activities (e.g., ballast water, recreational, and transportation activities) or natural processes (e.g., climate change). Invasive animal species of particular concern within the ROI are listed in Table 3-15. Non-native plant species within the ROI are listed in Table 3-16. These lists are not all-inclusive.

Table 3-15. Notable Invasive Animal Species within the ROI

Scientific Name	Common Name
Terrestrial Mammal	
Rattus norvegicus	Norway Rat
Bird	
Sturnus vulgaris	European Starling
Columba livia	Rock Pigeon
Invertebrate	
Lymantria dispar	Gypsy Moth

Sources: (ADF&G 2023c) and (PMC 2023)

Table 3-16. Non-Native Plant Species within the ROI

Scientific Name	Common Name
Terrestrial Plant	
Alopecurus pratensis	Meadow foxtail
Artemisia biennis	Biennial wormwood
Atriplex hortensis	Garden orache
Brassica napus	Rape
Bromus inermis	Smooth brome
Capsella bursa-pastoris	Shepherd's purse
Caragana arborescens	Siberian peashrub
Cerastium fontanum	Mouse-ear chickweed
Cerastium glomeratum	Sticky chickweed
Chenopodium album	Lambsquarters
Chenopodium simplex	Mapleleaf goosefoot
Cirsium arvense	Canada thistle
Collomia linearis	Tiny Trumpet
Convolvulus arvensis	Field bindweed
Crepis tectorum	Narrowleaf hawksbeard
Descurainia sophia	Herb sophia

Scientific Name	Common Name
Elymus repens	Quackgrass
Eschscholzia californica	California poppy
Fallopia convolvulus	Black bindweed
Galeopsis bifida	Splitlip hempnettle
Galeopsis tetrahit	Brittlestem hempnette
Helianthus annuus	Common sunflower
Hieracium umbellatum	Narrowleaf hawkweed
Hordeum jubatum	Foxtail barley
Hordeum vulgare	Common barley
Impatiens capensis	Ornamental jewelweed
Lappula squarrosa	European stickseed
Lepidium densiflorum	Common pepperweed
Leucanthemum vulgare	Oxeye daisy
Linaria vulgaris	Common toadflax
Lolium perenne	Italian ryegrass
Matricaria discoidea	Pineappleweed
Medicago sativa ssp. falcata	Yellow alfalfa
Melilotus albus	White sweetclover
Melilotus officinalis	Yellow sweetclover
Papaver nudicaule	Iceland poppy
Phalaris arundinacea	Reed canarygrass
Phleum pratense	Timothy
Plantago major	Common plantain
Poa annua	Annual bluegrass
Poa compressa	Canada bluegrass
Poa pratensis	Kentucky bluegrass
Polygonum aviculare	Prostrate Knotweed
Prunus padus	European bird cherry
Prunus virginiana	Chokecherry
Scorzoneroides autumnalis	Fall dandelion
Senecio flaccidus	Desert ragwort
Senecio vulgaris	Common groundsel
Silene vulgaris	Maidenstears
Sinapis arvensis	Charlock mustard
Sonchus arvensis	Moist sowthistle
Sonchus arvensis	Field sowthistle
Sorbaria sorbifolia	False spiraea
Sorbus aucuparia	European mountain ash
Stellaria media	Common chickweed
Tanacetum vulgare	Common tansy
Taraxacum officinale	Common dandelion
Thlaspi arvense	Field pennycress
Trifolium hybridum	Alsike clover
Trifolium pratense	Red clover
Trifolium repens	White clover
Tripleurospermum inodorum	Scentless false mayweed
Vicia cracca	Bird vetch
Viola tricolor	Johnny jumpup
Aquatic Plant	
Elodea spp.	Elodea

Source: (ACCS 2023)

Vegetation

Vegetation is an important biological resource, because plants form the basis of the food chain by providing primary productivity, converting energy from the sun into chemical energy that can be used by animals and fungi. Plants also stabilize the soil, which can reduce erosion, and some plants can enrich the soil through decomposition and nitrogen fixation. Additionally, plant communities create habitat for animals, move water from the soil into the atmosphere through evapotranspiration, and sequester carbon.

There is a vast amount of carbon within the soil and vegetation of Interior Alaska. Covered extensively by boreal forests, Interior Alaska is dominated by black spruce that reside on poorly drained acidic soils in valley bottoms and on northern mountain slopes. On well-drained, warmer south-facing mountain slopes, white spruce, trembling aspen, and birch are dominant. (Calef *et al*. 2023). Due to rising temperatures leading to potential increases in extent, frequency, and severity of wildfires, vegetation composition within Interior Alaska may shift away from spruce-dominated landscapes (Calef *et al*. 2023, Foster *et al*. 2019). Although, there is evidence spruce abundance is increasing in cool, moist areas and higher elevation range boundaries (Foster *et al*. 2019).

The vegetation at the proposed ops sites is typical for Interior Alaska and varies based on topography, elevation, and soils (Figure 3-8). This section provides specific descriptions and classification of vegetation communities according for each ops site.

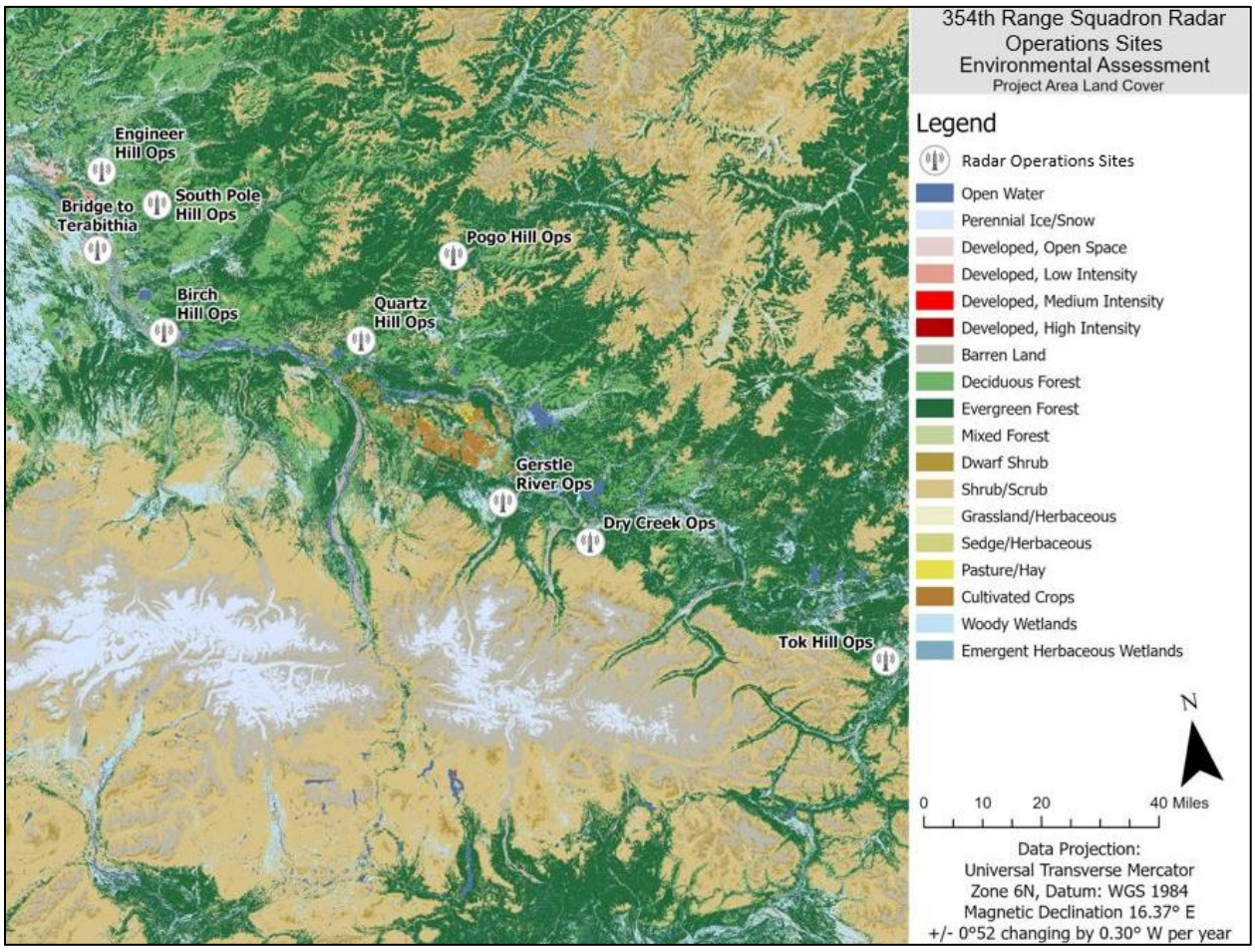


Figure 3-8. Affected Environment Land Cover

Engineer Hill Ops Site

The entire ops site footprint is in upland forests; classified as closed mixed forest (Figure 3-9). Canopy coverage varies but is generally between 40 and 80 percent. The tree community is dominated by white spruce (*Picea glauca),* balsam poplar (*Populus balsamifera),* Alaska birch (*Betula neoalaskana),* and quaking aspen (*Populus tremuloides).* The western part of the site contains a higher percent cover of deciduous trees like quaking aspen, while the eastern portion has more needleleaf trees like white spruce. The understory contains white spruce and birch saplings, and green alder (*Alnus viridus),* high bush cranberry (*Viburnum edule),* baneberry (*Actea rubra),* prickly rose *(Rosa acicularis),* tall blue bells *(Mertensia paniculata),* bunchberry (*Cornus canadensis),* wood fern (*Gymnocarpium dryopteris*), and horsetail *(Equisetum* spp.*)*. There is evidence of early-stage spruce beetle infestation in the western parts of the ops site's footprint.

Figure 3-9. Closed Mixed Forest

South Pole Hill Ops Site

The South Pole Hill Ops Site and its associated new access road and powerline would extend along a northeast-aligned ridge. The south-facing slope is closed mixed forest dominated by Alaska birch, quaking aspen, and black spruce in the tree stratum, and high bush cranberry, speckled alder (*Alnus incana),* lingonberry, western blueberry, wood fern, prickly rose, bunchberry, mountain larkspur (*Delphinium glaucum),* and bluejoint reedgrass *(Calamagrostis canadensis)* in the understory.

The north facing slope is an open needleleaf forest (Figure 3-10) dominated by black spruce in the tree stratum. The canopy is open and there is a robust shrub stratum containing black spruce saplings, Scouler's willow (*Salix scouleri),* Alaska birch, and resin birch. The understory is composed of western blueberry, bearberry (*Arctostaphylos uva-ursi),* and crowberry (*Empetrum nigrum)*. There is a thick layer of sphagnum moss ground cover. The northern slope appears to be cooler and wetter due to the reduced sunlight it receives compared to the southern slope.

Figure 3-10. Open Needleleaf Forest

Bridge to Terabithia Ops Site

The Bridge to Terabithia Ops Site would be constructed in a floodplain adjacent to a slough along the Tanana River. The site is an open mixed forest (Figure 3-11) dominated by balsam poplar and white spruce in the tree stratum. The understory is composed of high bush cranberry, speckled alder, prickly rose, Bebb's willow (*Salix bebbiana),* bunch berry, fireweed (*Epilobium angustifolium),* clubmosses (*Lycopodium spp.),* tall bluebells, and bluejoint reedgrass.

Figure 3-11. Open Mixed Forest

Birch Hill Ops Site

The Birch Hill Ops Site would be constructed on a hilltop adjacent to the Tanana River. The hilltop is closed mixed forest dominated by broadleaf species such as Alaska birch with white spruce mixed throughout. The understory includes prickly rose, speckled alder, bunch berry, salmonberry (*Rubus spectabilis)*, high bush cranberry, lingonberry, and Arctic sweet coltsfoot (*Petasites frigidus).*

The north facing hillside is also closed mixed forest, but the trees are generally smaller along the hillside and the needleleaf composition reduced compared to the hilltop community. The hillside contains more alder and reedgrass, and less white spruce, than the hilltop.

Pogo Hill Ops Site

The Pogo Hill Ops Site would be constructed at the end of an existing road above tree line elevation on a hilltop. The vegetation community on the hilltop and hillside is Dryas dwarf scrub Figure 3-12) dominated by mountain avens (*Dryas octopedala)* and alpine bearberry (*Arctostaphylos alpina).* There is a small amount of scattered arctic lupine (*Lupinus arcticus),* monkshood *(Aconitum delphiniifoliumis),* dwarf birch (*Betula nana),* Bebb's willow, white spruce, and mountain larkspur on the hilltop as well, but the area is dry with thin soils and exposed rocks.

Figure 3-12. Dryas Dwarf Scrub Community

Quartz Hill Ops Site

The Quartz Hill Ops Site would be constructed on a hilltop and the new access road would switchback up a south-facing hillside. The hilltop is closed mixed forest dominated by Alaska birch, quaking aspen, and some white spruce in the tree stratum. The shrub stratum includes prickly rose, speckled alder, high bush cranberry, and soapberry (*Shepherdia canadensis).* The herb stratum contains bunchberry, wintergreen (*Pyrola* spp.*),* tall bluebells, and bluejoint reedgrass.

The hillside contains most of the same species in various compositions. The southeast flank of the slope is a closed needleleaf forest made primarily of white spruce trees in the canopy, while the draw immediately south of the hilltop is a closed mixed forest dominated by aspen and birch

with significant amounts of speckled alder. Further down the slope the closed mixed forest has a more even split between needleleaved and broadleaved trees.

Gerstle River Ops Site

The Gerstle River Ops Site would be constructed on elevated terrain west of the Gerstle River. The vegetation community is closed mixed forest dominated by black spruce with white spruce, Alaska birch, and quaking aspen mixed in the tree stratum. Most of the trees are fairly small diameter. The understory includes prickly rose, fireweed, Labrador tea, Bebb's willow, lingonberry, and bunchberry. Some areas include sphagnum moss ground cover.

Dry Creek Ops Site

The Dry Creek Ops Site would be constructed on a hilltop near tree line elevation and the new access road would traverse the north slope of the hillside. The hilltop is a closed tall shrub (Figure 3-13) community dominated by resin birch, dwarf birch, Alaska birch saplings, western blueberry, and crowberry. There is also lingonberry, bearberry, black spruce saplings, and Labrador tea scattered across the hilltop.

The hillside is composed of several plant communities including open low shrub, closed tall shrub, closed mixed forest, open broadleaved forest, and open needleleaved forest.

Figure 3-13. Closed Tall Scrub Community

Tok Hill Ops Site

The Tok Hill Ops Site would be constructed near the tree line elevation at the end of an existing road to the hilltop. The area has been partially cleared and there is evidence of human uses, like hunting and camping. The vegetation community is closed low shrub (Figure 3-14) and dominated by resin birch, dwarf birch, speckled alder. There is a significant amount of Bebb's willow, western blueberry, Labrador tea, lingonberry, and crowberry at the site, as well as some Canadian lousewort (*Pedicularis canadensis*), fireweed, and bearberry.

Figure 3-14. Closed Low Scrub Community

Wildfires

Wildfires are integral to Interior Alaska's ecosystem, because the wildfires rejuvenate the region by thawing underlying permafrost, providing nutrients, and resetting forest succession. Crown fires within Interior Alaska boreal forests are predominately fueled by black spruce. The area burned varies year to year but is generally a result of: (1) availability of dry fuels, (2) cause(s) of ignition, and (3) occurrence of conducive weather (Calef *et al*. 2023).

Although many native plant and animal species within Interior have adapted and/or evolved in response to frequent wildfires, the severity and frequency of wildfires dictate the rate and potential of a burned area's recovery. Graminoids and herbaceous plant growth generally leads recovery of an area that are trailed by deciduous shrubs and trees (e.g., quaking aspen) and then slower-growing evergreen trees. Severe wildfires that remove much of the organic layer and nutrients of the soil and more frequent wildfires appear to inhibit recovery of evergreen trees (e.g., black spruce) and lead to a greater abundance of deciduous shrubs and trees (Foster *et al*. 2019). Animals caught in or near a wildfire event may die, flee to places of refuge (e.g., burrows in the soil), or beyond the fire line. In high-severity fires, the chance of animal casualties is much higher (Bonde and Keane 2017). During post-burn recovery, a non-native and/or invasive plant and/or animal species may establish itself within the area wherein it could have not otherwise (Snow 2022).

3.9.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have temporary and permanent minor adverse impacts to species that may occur within the ops sites' footprints and permanently convert wildlife habitat to anthropogenically modified lands of lower quality and productivity. These adverse impacts to habitat would be minor due to the quantity and quality of adjacent habitat where impacts from the Preferred Alternative would be negligible.

There are no Federal or State ESA-listed species within the ROI. Migratory birds under the protection of the MBTA use the ops site footprints to varying degrees for at least some part of

the year. Bald eagles under the protection of the BGEPA may be present and/or nest at some of the sites, but no eagle nests were detected in the July 2023 survey. The Air Force would adhere to the current USFWS guidance regarding land disturbance for the Interior Region of Alaska (USFWS 2017) to minimize impacts to migratory birds. If land disturbing activities must be conducted within Interior Alaska bird nesting windows, thorough nest and bird area surveys would be conducted to ensure no individuals, nests, and/or eggs of eagles and/or migratory birds are impacted by vegetation clearing activities. Any disturbance from construction activities to birds would be highly localized and temporary in nature, and birds are not anticipated to permanently abandon the area. If necessary to remove an eagle nest and/or take an eagle, the applicable would acquire a permit from USFWS prior to such an action taking place.

Other wildlife with potential to be impacted by the Preferred Alternative are non-anadromous fish and terrestrial animals. There are no specified anadromous waters within the construction footprints of the ops sites. However, potential fish within an unnamed Dry Creek tributary may be impacted by the construction of the new access road for the Dry Creek Ops Site. It is unknown whether this tributary is intermittent and/or supports fish movement. If fish are present in the tributary, a Fish Habitat Permit will be required from the ADF&G. Adverse impacts to potential fish in this tributary would be temporary, minor, and highly localized, lasting from the beginning until the completion of culvert construction. The culvert would allow water, and if applicable, fish passage. Wood frogs have also potential to occur throughout the ROI but would most likely be encountered closer to water and where there is sufficient underbrush.

As for terrestrial mammals, terrestrial mammals with habitat that would be cleared for the Proposed Action are of particular interest. Thus, small, burrowing mammals would be the most impacted by the Preferred Alternative, because vegetation clearing and habitat conversion may encompass burrows, brush, or other habitat features (e.g., prey resources) predominately used by these species. Although displacement of these species from the area may occur and be permanent, impacts would likely be no more than minor due to the abundance of nearby similar and/or better-quality habitat. Other terrestrial mammal species that would occur at or near the ops sites during construction and/or radar operations may be disturbed by such activities as well and temporarily displaced until the activities end. However, they are unlikely to permanently abandon the area.

During construction, disturbed areas would potentially destabilize native vegetation and species and make the area more susceptible to the introduction and/or spread of invasive species, especially potential invasive terrestrial plant species. White sweetclover and bird vetch are of particular concern, because their introduction and spread are often associated with gravel construction activities like those that would take place under the Preferred Alternative. To reduce the introduction and spread of potential invasive species, the following mitigations and BMPs would be implemented:

- Inspect equipment and vehicles between construction activities at different ops sites;
- Use clean equipment and vehicles, free from debris (e.g., plant fragments and soil);
- Decontaminate equipment and vehicles between construction at different ops sites; and,
- Use weed- and seed-free gravel and erosion control products when use of native soil is not feasible.

Ops site construction would increase the access to remote areas within the ROI, and subsequently increase local anthropogenic presence and activity predominantly relating to recreational activities and radar operations. This has potential to disturb the local wildlife.

However, due to the expanse of nearby similar, unaffected habitat and the likely minor increase in presence and the nature of activities, such disturbance to wildlife would be at most minor.

Impacts to habitat would be closely tied to the vegetation impacts incurred from vegetation clearing to meet radar LOS requirements to construct and/or emplace infrastructure. Shrubs and brush would be mechanically cleared, masticated, and the woody debris would be discharged onsite. Trees larger than 6-inches diameter breast height (DBH) would be cut at ground level and stockpiled for salvage. The salvaged timber from the Preferred Alternative would be managed in accordance with the policies of the landowner for each ops site. Vegetation clearing would reduce the likelihood of wildfires occurring within the immediate area by and spreading by creating additional firebreaks and potentially remove insect (e.g., spruce beetle) infested trees. Cleared areas would be converted to anthropogenically modified lands containing gravel roads and low herbaceous vegetation. The conversion would degrade the overall productivity of the site by modifying the habitat, reducing the production of organic matter, and removing established vegetation communities. Total vegetation clearance is described in Table 3-17, and specific vegetation impacts will be further discussed by ops site.

Table 3-17. Estimated Vegetation Clearing Impacts

Ops Site	Vegetation Clearing				
	Operating Pad(s) LOS Requirements		New Access Road and Powerline Infrastructure		Total
	Vegetation Type(s)	Acres	Vegetation Type	Acres	Acres
Engineer Hill	Closed Mixed Forest	26.2	Closed Mixed Forest	3.4	29.6
South Pole Hill	Closed Mixed Forest and Open Needleleaf Forest	17.4	Closed Mixed Forest	1.7	19.1
Bridge to Terabithia	Open Mixed Forest	13.9	*Not Applicable*		13.9
Birch Hill	Closed Mixed Forest	30.0	Closed Mixed Forest	4.1	35.6
Pogo Hill	*Not Applicable*		Open Needleleaf Woodland	0.6	0.6
Quartz Hill	Closed Mixed Forest	17.0	Closed Needleleaf Forest and Closed Mixed Forest	8.4	25.4
Gerstle River	Closed Mixed Forest	20.5	*Not Applicable*		20.5
Dry Creek	Closed Tall Shrub	4.8	Open Low Shrub, Closed Tall Shrub, Closed Mixed Forest, Open Broadleaved Forest, and Open Needleleaf Forest	9.8	14.6
Tok Hill	Closed Low Shrub	10.2	Closed Mixed Forest	3.5	13.7

Engineer Hill Ops Site

Up to 29.6 acres of closed mixed forest would be cleared to achieve LOS requirements and construct site infrastructure. The operating pad area is heavily vegetated with mature trees and is presumed to be in a climax successional stage. There is indication of early-stage spruce beetle infestation, and the removal of this vegetation may have a minor impact on reducing the spread of spruce beetles, but there are likely many host trees outside the clearing area and the full infestation of the region is unavoidable. The new access road and powerline would follow an existing trail, but vegetation clearing would be required to provide access for equipment and require approximately 3,000 feet of clearing along the new access road and powerline alignment within the same closed mixed forest community. The Engineer Hill munitions storage and maintenance area perimeter, unimproved road is already cleared, and no additional clearing would be required in this area.

Vegetation clearing at this site would likely generate a substantial quantity of salvageable timber due to the species composition and maturity of the forest. Timber salvaged from Preferred

Alternative activities at the Engineer Hill Ops Site would be turned over to the Eielson AFB Natural Resources Office.

South Pole Hill Ops Site

Up to 19.1 acres of closed mixed forest and open needleleaf forest would be cleared to achieve LOS requirements and construct site infrastructure. The operating pad area is heavily vegetated with mature trees and is presumed to be in a climax successional stage. The new access road and powerline would follow an existing trail, but vegetation clearing would be required to provide access for equipment and require approximately 1,500 feet of clearing along the new access road and powerline alignment within the same closed mixed forest community.

The clearing would likely generate a moderate quantity of salvageable timber because much of the area on the north slope is dominated by small diameter black spruce, and the south slope may be so steep that minimal tree clearing is required to achieve the LOS requirements. The north slope would likely regenerate with ericaceous species due to the presumed acidity of the soil, additional shade, and higher moisture content.

Bridge to Terabithia Ops Site

Up to 13.9 acres of open mixed forest would be cleared to achieve LOS requirements and construct site infrastructure. The operating pad area is dynamic and mid-successional due to its position in the floodplain, with many dead and fallen balsam poplar trees throughout the area. The new access road and powerline footprints are contained within the operating pad vegetation clearing footprint.

The clearing would likely generate a moderate quantity of salvageable timber because the canopy is open and there are substantial amounts of brush at the site that would be masticated.

Birch Hill Ops Site

Up to 30 acres of closed mixed forest would be cleared to achieve LOS requirements and construct site infrastructure. The operating pad area is heavily vegetated with mature trees and is presumed to be in a climax successional stage. The new access road and powerline would also occur in a closed mixed forest and required require clearing along an alignment approximately 3,600 feet long for the new access road (4.1 acres) and 2,180 feet long for the powerline (1.5 acres).

The clearing would likely generate a substantial quantity of salvageable timber because much of the area is dominated by mature trees.

Pogo Hill Ops Site

Up to 0.6 acres of open needleleaf woodland would be cleared to achieve LOS requirements and construct site infrastructure. No vegetation clearing would be required for the development of the operating pads at the site because the hill is dominated by a dwarf dryas community that would not interfere radar LOS requirements. The new access road would follow an existing road and would not require any vegetation clearing as well. Minor clearing may be required to connect the powerline to the existing power grid 900 feet north of the Pogo Mine Access Road. The vegetation in this area is low and may not interfere with the powerline. Thus, the impact of developing the Pogo Hill Ops Site on vegetation would be minor as the area within the powerline alignment would be temporarily affected before regeneration would occur.

Maintenance clearing may be required periodically, but the black spruce inhabiting the site are slow growing and rarely reach heights that would require maintenance.

Quartz Hill Ops Site

Up to 25.4 acres of closed needleleaf forest and closed mixed forest would be cleared to achieve LOS requirements and construct site infrastructure. The operating pad area is heavily vegetated with mature trees and is presumed to be in a climax successional stage. The new access road would pass through 3,000 feet of closed needleleaf forest (3.4 acres) and 4,400 feet of closed mixed forest (5.0 acres) between the end of the existing road and the edge of the site development clearing.

The clearing would likely generate a substantial quantity of salvageable timber because much of the area is dominated by mature trees.

Gerstle River Ops Site

Up to 20.5 acres of closed mixed forest would be cleared to achieve LOS requirements and construct site infrastructure. This operating pad area appears mid-successional. The new access road and powerline footprints are contained within the operating pad vegetation clearing footprint.

The clearing would likely generate a moderate quantity of salvageable timber because much of the area is dominated by small diameter black spruce and birch trees.

Dry Creek Ops Site

Up to 14.6 acres of closed tall shrub, open low shrub, closed mixed forest, open broadleaved forest, and open needleleaf forest would be cleared to achieve LOS requirements and construct site infrastructure. The operating pad area appears to be a very near tree line elevation and successionally stable. The new access road would extend 8,500 feet beyond the limits of the operating pad area to the end of the existing road, and it would cross several vegetation communities.

The clearing would likely generate a moderate quantity of salvageable timber because much of the hilltop area is dominated by shrub, but the slope that would be cleared for the new access road has pockets of mature forest.

Tok Hill Ops Site

Up to 13.7 acres of closed low shrub and closed mixed forest would be cleared to achieve LOS requirements and construct site infrastructure. The operating pad area appears to be a very near tree line elevation and successionally stable. The new access road would follow an existing road and additional vegetation clearing for the new access road is not expected. The powerline would extend approximately 5,150 feet from the edge of the ops site clearing to the end of a road northeast of Tok Hill and require an additional clearing.

The clearing would likely generate a moderate quantity of salvageable timber because much of the hilltop area is dominated by shrub, but the slope that would be cleared for the powerline has substantial amounts of mature forest.

No-Action Alternative

The No-Action Alternative has no construction or habitat modification activities that would impact wildlife and/or habitat. Species within the area would unlikely permanently abandon the area from the presence of and/or activities relating to the use and operation of the radars at temporary ops sites within the YTA. Although, temporary displacement of wildlife and vegetation clearing to maintain LOS requirements may occur. Thus, anticipated impacts to biological and natural resources would be permanent minor adverse impacts.

3.10 CULTURAL RESOURCES

3.10.1 Affected Environment

The term *cultural resources* refers to tangible remains and material evidence resulting from past human activity and/or specific locations of traditional importance. Cultural resources include prehistoric and historic archaeological sites, structures, buildings, districts, landscapes, or other locations or objects determined important for scientific, traditional, religious, or societal reasons. This includes Alaska Native sacred sites and TCPs.

Potential cultural resource impacts are addressed by NHPA Section 106 (54 USC 300101 et seq.) and its implementing regulations (36 CFR § 800), which require Federal agencies to consider effects to "historic properties" from an undertaking. In 54 USC 300308, historic properties are defined as cultural resources that are either listed, or eligible for listing, in the National Register of Historic Places (NRHP).

The cultural resources discussed in this section include those that meet the definition of the NHPA and associated regulations. The Section 106 process is set forth in 36 CFR § 800, "Protection of Historic Properties." In accordance with AFI 32-7065, "Cultural Resources Management," and 36 CFR § 800, the Air Force coordinates NEPA compliance with its NHPA responsibilities to ensure that historic properties and cultural resources are given adequate consideration during project planning.

Areas of Potential Effect

As defined under 36 CFR § 800.16(d), the *area of potential effect* (APE) is the geographic area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties. An APE is determined by the scale and nature of the undertaking and may vary for different kinds of effects caused by project activities. The proposed undertaking is comprised of nine discontinuous APEs.

The Air Force has defined the APEs for direct and indirect effects associated with proposed construction of access routes and gravel pads, installation of aerial and/or underground powerlines, and respective vegetation clearing at each of the nine radar ops sites associated with the Preferred Alternative. The APEs include a 100-foot buffer on either side of the proposed access and powerline route centerlines.

Cultural Resources

APEs for seven of the nine proposed radar ops sites had never been investigated for cultural resources. The two locations that have been previously investigated are the South Pole Hill and Engineer Hill Ops Sites. The South Pole Ops Site is within an area previously surveyed by the USAG Fort Wainwright. Consultation with Fort Wainwright and review of the Alaska Historic Resources Survey (AHRS) database indicated that no cultural resources are known within the South Pole Ops Site project area (Pers. Comm., Dr. Julie Esdale, November 16, 2022; CEMML 2014, 2021; AHRS 2023).

The Engineer Hill Ops Site on Eielson AFB was surveyed by Northern Land Use Research, Inc. (NLUR) in 1995. Their survey design was based on a predictive model, and the site was identified as a high-probability area for non-military cultural resources. The survey did not identify surface or subsurface archaeological sites. While the purpose of the 1995 survey was not to identify military cultural resources, NLUR did report "recent use sites" in an appendix. Within the Engineer Hill Ops Site APE, NLUR identified Recent Use Site 4A, which G. Von Reuden told them was known locally as the "Trapper's Cabin." They stated that it was "unclear as to whether this site is military related, [but] based upon the c-ration cans and MRE packets

this area has been used by military personnel for recreational purposes" (NLUR 1996:I-11). Recent Use Site 6A was also identified within the APE. This site was comprised of 17 features which NLUR interpreted as foxholes. Each of these foxholes were measured; however, as the site was of "recent military origin, no site map was drawn" (NLUR 1996:I-13).

In 2023, in an effort to identify any potential historic properties within the APEs (36 CFR § 800.4[b]), the Air Force had eight of the proposed ops sites investigated by archaeologists who meet the Secretary of the Interior's Professional Qualification Standards (36 CFR § 800.2[a][1]). The eight APEs surveyed in 2023 included all previously unsurveyed locations as well as a resurvey of the Engineer Hill Ops Site APE as due diligence to identify any archaeological, military and/or non-military historic materials (Table 3-18).

Table 3-18. Ops Site APE Surveys and Identified Cultural Resources

Ops Site	Applicable Survey Efforts		Cultural Resources Identified?
	Prior to 2023	In 2023	
Engineer Hill	NLUR 1996	CRC 2023	Recent use features of military origin
South Pole Hill	CEMML 2014, CEMML 2021	*Not Applicable*	None
Bridge to Terabithia	*Not Applicable*	CEMML 2023	None
Birch Hill	*Not Applicable*	CRC 2023	None
Pogo Hill	*Not Applicable*	CRC 2023	None
Quartz Hill	*Not Applicable*	CRC 2023	None
Gerstle River	*Not Applicable*	CEMML 2023	None
Dry Creek	*Not Applicable*	CRC 2023	None
Tok Hill	*Not Applicable*	CRC 2023	Tok-Cutoff Highway Segment, Eagle Trail

Sources: (CEMML 2014, 2021 and 2023; CRC 2023; NLUR 1996)

The Center for Environmental Management of Military Lands (CEMML) conducted pedestrian cultural resources surveys at the Bridge to Terabithia and the Gerstle River Ops Sites. Two subsurface tests (round shovel tests, approximately 30 centimeters in diameter) were excavated at high-probability areas within each APE. Excavated soils were screened with 1/4-inch screen. A mapping-grade global positioning system (GPS) unit was used to collect geospatial data during the surveys. No cultural features or cultural materials were identified (CEMML 2023).

Cultural Resource Consultants, LLC (CRC) conducted pedestrian cultural resources surveys of six of the proposed ops sites. In general, the survey team walked each area in transects with 10-meter spacing. Exceptions to this method were made on a judgmental basis in the field, including widening the transect spacing to up to 30 meters along existing road corridors. Slope areas above 10 degrees were excluded from pedestrian survey due to the low probability of cultural resources on such steep terrain. Multiple subsurface tests (square shovel tests, 50 x 50 centimeters) were excavated at high-probability areas within each APE. Excavated soils were screened with 1/8-inch screen, except during certain field conditions (e.g., saturated and sticky matrices) where 1/4-inch screen was used. A mapping-grade GPS unit was used to collect geospatial data during the surveys.

CRC did not identify any cultural features or cultural materials during cultural resources surveys of the Birch Hill, Dry Creek, Pogo Hill, and Quartz Hill Ops Sites (CRC 2023). The boundaries of the Shaw Creek Basin Archaeological District encompass part of the APEs for the Pogo Hill and Quartz Hill Ops Site. However, pedestrian cultural resources surveys and subsurface shovel-testing of these APEs did not identify any cultural features or cultural materials associated with the archaeological district.

The CRC's survey of the Engineer Hill Ops Site resulted in the identification of recent cultural resources. The only cultural material identified in the shovel tests was an extremely friable foil-like substance, likely from a cigarette or food package, recovered from a shovel test excavated in a defensive fighting position (DFP) feature (CRC 2023). Ground-surface disturbances identified in the APE included clearing and dozing for roads and other purposes, explosives detonation craters, and DFP features. A total of 36 DFP features were documented within the APE (CRC 2023). These DFP features appear to be modern, and it is likely that they are associated with the 17 "foxholes" identified as Recent Use Site 6A in 1995 (NLUR 1996:I-13). The CRC also relocated the "Recent Use Site 4A" cabin complex identified in 1995 (NLUR 1996:66, I-11; CRC 2023). This cabin complex was found within the APE, north of an existing access road to the top of Engineer Hill. It consists of a multi-part cabin, an outhouse, and remnants of a small metal mobile radio shelter. Examination of historical aerial imagery revealed that the cabin complex was not built before 1974. CRC also identified a small can dump comprised of three knife-opened coffee cans and a Welch's grape juice can. The coffee cans were too degraded to determine the brand or manufacture date, but the Welch's likely dates to the 1960s (CRC 2023).

CRC's cultural resources survey of the Tok Hill Ops Site resulted in the identification of several surface isolates were documented throughout the APE, including 1960s-era pull tab soda cans, six culturally-modified trees consisting of bark-stripped birch ranging from 15–24 centimeters DBH (indicating less than 50 years of growth), a small scatter of car parts and oil cans which could not be definitively dated, and a World War II-era wooden crate containing several blocks of trinitrotoluene (TNT). The TNT was packaged in cans labeled: "HIGH EXPLOSIVE / TNT / ½ POUND NET / CORPS OF ENGINEERS / DANGEROUS" (CRC 2023). Due to the hazard the crate of TNT represented to public safety, it was reported to the State of Alaska Emergency Operations Center, USACE Emergency Operations Department, Alaska State Troopers, and Eielson AFB. At the request of the Alaska State Troopers, and in accordance with 40 CFR § 264.1(g)(8)(i)(D), the Eielson AFB Explosive Ordinance Disposal Team responded to the discovery and conducted a controlled demolition of the TNT on site.

Approximately 3 miles of the original Tok-Cutoff Highway would be used to reach the Tok Hill Ops Site proposed new access road. The Tok-Cutoff Highway was built by USACE in 1943 during World War II. Historical aerial imagery shows a later realignment of the Tok-Cutoff Highway bypassed this original section of the road, leaving it relatively intact (CRC 2023).

Based on the AHRS Mapper, the Tok Hill Ops Site proposed powerline route was expected to cross the previously-identified Moose/Caribou Fence (TNX-00118). However, archaeologists were unable to relocate it within the APE. The proposed powerline will intersect the historical Eagle Trail, which appears to continue to be frequently used by both vehicle and four-wheeler traffic. The Eagle Trail preceded the construction of the Tok-Cutoff Highway, and historically ran between the communities of Valdez and Eagle, Alaska. The historical trail is more than 400 miles long. Approximately 200 feet of the trail (where the aerial powerline crosses plus a 100-foot buffer on either side) lies within the APE (CRC 2023).

Traditional/Alaska Native Resources

Six Federally Recognized Tribes may attach cultural significance to cultural resources within the Proposed Action locations: (1) Healy Lake Village; (2) Mentasta Traditional Council; (3) Native Village of Tanacross; (4) Native Village of Tetlin; (5) Northway Village; and (6) Village of Dot Lake. In accordance with DoDI 4710.02 and AFI 90-2002, the Air Force offered Tribal governments the opportunity to consult on both a Government-to-Government basis and as part of the Section 106 process. Additional Alaska Native organizations also offered the opportunity

to consult were the following: (1) Doyon, Ltd; (2) Cook Inlet Region, Inc.; (3) Tanana Chiefs Conference; (4) Dot Lake Native Corporation; (5) Fairbanks Native Association; (6) Mendas Cha-ag Native Corporation; (7) Northway Natives, Inc.; (8) Tanacross, Inc.; (9) Tetlin Native Corporation; and (10) Tok Native Association. Consultation correspondence is provided in Appendix A. No TCPs, sacred sites, or sites of traditional cultural importance have been identified within the APEs for this undertaking at this time.

3.10.2 Environmental Consequences

Impacts to cultural resources can occur by physically altering, damaging, or destroying a resource or by altering characteristic of the surrounding environment that contribute to the resource's significance. Direct impacts entail physical changes to a historic property. Indirect effects usually occur through increased use, visual disturbance, or noise.

To evaluate impacts, the criteria of adverse effect (36 CFR § 800.5[a][1]) are applied to the historic properties within the APEs. An adverse effect to a historic property occurs when an undertaking alters, directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion in the NRHP in a manner that would diminish its integrity. Adverse effects can include:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including repair and maintenance, that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR § 68);
- Removal of the property from its historic location;
- Change of character in the property's use or change of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration; and,
- Transfer, lease, or sale of property out of Federal ownership or control.

Adverse effects can also include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Preferred Alternative

The Preferred Alternative would result in no direct or indirect adverse effects on historic properties. There are four known cultural resources located within the APEs (Table 3-19; AHRS 2023). Of these, one is a historic property eligible for listing in the NRHP: the Shaw Creek Basin Archaeological District (XBD-00455). Both the Pogo Hill and Quartz Hill Ops Sites are within the boundaries of the Shaw Creek Basin Archaeological District. In consultation with the Alaska SHPO, Air Force has agreed to treat the Tok-Cutoff Highway Segment (TNX-00293) as eligible for the purposes of this project. No ops sites are within the Tok-Cutoff Highway Segment, but this cultural resource would be used to facilitate access the Tok Hill Ops Site. No cultural resources associated with the Shaw Creek Basin Archaeological District were identified during cultural resources surveys of these Ops Sites' APEs.

Table 3-19. Known Cultural Resources in Vicinity of the Preferred Alternative

AHRS Number	Site Name	National Register Status	In APE?
FAI-01766	Engineer Hill Munitions Area Historic District	*Pending (Eligible)*	No
TNX-00118	Moose/Caribou Fence	Unevaluated	**Yes**
XBD-00409	Richardson Highway	Unevaluated	No
XBD-00455	Shaw Creek Basin Archaeological District	**Eligible**	**Yes**
XMH-01164	Gerstle River Testing Site	Not Eligible	No
XMH-01473	Haines-Fairbanks Pipeline Corridor	Not Eligible	No
TNX-00293	Tok-Cutoff Highway Segment	**Treated as Eligible for Purposes of this Undertaking[1]**	**Yes**
TNX-00174	Eagle Trail	Unevaluated	**Yes**

Note:
[1] In accordance with consultation with Alaska SHPO.

The Moose/Caribou Fence (TNX-00118) is supposedly within the APE of the Tok Hill Ops Site. However, a pedestrian survey of the location was not able to relocate it.

3 miles of the 7-mile-long Tok-Cutoff Highway Segment is within the Tok Hill Ops Site APE. The Air Force intends to use this section of the Tok-Cutoff Highway Segment for access to the Tok Hill Ops Site. The current gravel road is well-built. There is no planned modification or improvements to this road under the Preferred Alternative and use of the road by military vehicles is consistent with its original purpose as a military transportation route. The Tok-Cutoff Highway Segment is significant under Criterion A for its association with World War II. However, analysis of the integrity of the entire 7-miles of the Tok-Cutoff Highway Segment is outside the scope of this undertaking. . Upon consultation with the Alaska SHPO, it was determined that, due to the uncertainty of the Tok-Cutoff Highway Segment's integrity, it should be treated as eligible for listing on the National Register of Historic Places for the purposes of this undertaking. The Alaska SHPO concurred that activities associated with the Preferred Alternative will have no adverse effect on the Tok-Cutoff Highway Segment on January 30, 2024 (SHPO 2024).

Approximately 200 feet of the more than 400-mile-long Eagle Trail lie within the Tok Hill Ops Site APE. The proposed new aerial powerline would cross over the trail. No physical disturbance to the trail or restriction of current traffic is anticipated.

The Air Force has reviewed the existing cultural resources information and conducted cultural resources investigations within the APEs, making a reasonable and good faith effort to identify historic properties. On November 28, 2023, the Air Force determined that the Preferred Alternative would result in no adverse effect on historic properties (Air Force 2023). The SHPO concurred with this assessment on January 30, 2024 (SHPO 2024).

No-Action Alternative

The No-Action Alternative would have no construction or ground-disturbance activities that could affect historic properties or other cultural resources. There would be no impact to cultural resources under this alternative.

3.11 SOCIOECONOMIC RESOURCES AND ENVIRONMENTAL JUSTICE

3.11.1 Affected Environment

Socioeconomic resources are anthropogenic resources that provide community services, places to live, and other infrastructure or features that make a community livable. This section will focus

on the public's access to and use of land, materials, services, and job opportunities. Use of site resources requires coordination with landowners and/or applicable managing agencies to ensure proper use of such resources and adherence to the landowner's policies (e.g., management of salvaged timber).

Construction projects provide local and regional economic opportunities. These opportunities include the investment of project money in the local and regional economy through use and buying of nearby resources and providing local and regional job opportunities to individuals and organizations. Other benefits beyond the purpose and intent of projects may also be provided by a construction project. For example, a road built in a remote area would give the public better access to the area for recreational activities (e.g., hiking, hunting, trapping, fishing, and foraging) and to available resource (e.g., timber, wild game, fish, mushrooms, and berries). Section 3.2 describes various recreational activities associated with the ops sites and Section 3.9 describes wildlife and vegetation associated with the ops sites and ROI.

Environmental Justice (EJ) is a consideration under socioeconomic resources. The following EOs are associated with EJ:

- *EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,"* was issued in 1994 (59 Federal Register [FR] 7629) directs Federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of their actions on low-income, minority, and Tribal populations, to the greatest extent practicable and permitted by law.
- *EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks,"* was issued in 1997 (62 FR 19885). directs Federal agencies to identify and address environmental health and safety risks that may disproportionately affect children, to the greatest extent practicable and permitted by law.
- *EO 14096, "Revitalizing our Nation's Environmental Justice for All,"* was issued in 2023 (88 FR 25251). It directs Federal agencies to advance EJ by implementing and enforcing the Nation's environmental and civil rights laws as well as investing in communities. This EO builds upon EO 12898 and reaffirms the Federal government's commitment to EJ. Federal guidance on implementation of this EO is anticipated in 2024.

3.11.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would have minor temporary and permanent adverse impacts to local and regional socioeconomics due to increases in EJ Indices. However, it would also have minor temporary and permanent beneficial impacts to local and regional socioeconomics by providing economic opportunities and improving recreational and resource access around the ops sites. No disproportionate impacts to certain groups (i.e., minorities, low-income, and/or children) are anticipated from implementation of the Preferred Alternative, which has ops sites in locations generally far removed from population centers.

The CEQ's Climate and EJ Screening Tool (CEJST) and the EPA's EJ Screening and Mapping Tool (EJScreen) were used to provide an EJ Analysis for the Preferred Alternative (Appendix C). The analysis provided the rationale for potential increases to the EJ Indices and impact determinations specific to EO 12898 and EO 13045 by:

- Identifying any minority and/or low-income status communities in the areas of the Preferred Alternative ops sites;

- Identifying any adverse environmental or human health impacts anticipated from the Preferred Alternative; and,
- Determining whether those impacts would disproportionately affect minority and/or low-income communities, and/or children.

In the EJ analysis, the Southeast Fairbanks Census Tract Number 02240000400 and Tract Number 02240000100 have been identified as partially or fully disadvantaged communities and include the Pogo Hill, Quartz Hill, Gerstle River, Dry Creek, and Tok Hill Ops Sites. Determinations under EO 12898 and EO 13045 were that the Preferred Alternative would not have any significant adverse environmental or human health impacts nor adverse disproportionate impacts to minority and/or low-income communities and/or children due to the remote nature of the sites and the generally temporary and/or localized nature of impacts that would potentially increase EJ Indices.

The Preferred Alternative construction activities would have the greatest potential to impact local and regional socioeconomics and to increase EJ Indices of nearby communities. Use of local and regional resources for the Preferred Alternative would require coordination with the landowners and/or managing agencies to ensure proper use of such resources and adherence to the landowner's policies (e.g., salvaged timber policies). The goal is to use local small businesses to the extent practicable during construction and for post-construction maintenance requirements. For example, construction materials would likely be acquired from local or regional sources, which would invest money within those economies. Thus, the Preferred Alternative would provide economic opportunities (e.g., jobs and income) to local and regional communities, to include disadvantaged communities which would offset potential increases to the EJ indices. There would also be minor socioeconomic benefits associated with the ops sites wherein new access roads improve access to and around the ops sites' and their nearby areas that would otherwise be difficult to reach. The improved access would generally enhance recreational opportunities and access to resources (e.g., foraged goods or wild game). However, due to the barriers that would be installed around the operating pads, the Preferred Alternative may also impose minor permanent adverse impacts to access specifically at the operating sites. Whether an ops site access is more beneficial than adverse varies between each ops site and is highly dependent on the current access and proposed location of an ops site. Quartz Hill Ops Site is further removed from existing access infrastructure (e.g., roads and trails), and there are no known land uses specific to the proposed ops site location. Improved access would be highly beneficial for this ops site. Conversely, the Tok Hill Ops Site is relatively accessible via OHV and there is evidence at the proposed location of camping and potentially parking. Improved access would not contribute much value at this ops site where the barrier would prevent use of the area for camping and parking.

Construction and post-construction operation of generators to support radar operations also have potential to increase EJ Indices predominantly due to air pollutant emissions, increased traffic, and potential wastewater discharge. However, no EJ Index is anticipated to increase over the 90th percentile due to the Preferred Alternative and would be minor at most due to the remoteness of the ops sites and the frequency and amount of air pollutant emission, traffic, and potential wastewater discharge that would be introduced into the environment with the application of best management practices and adherence to regulatory requirements.

No-Action Alternative

The No-Action Alternative would limit radar operations to temporary YTA ops sites (i.e., USAG Alaska land). Military personnel, contractors, and/or individuals with appropriate permits and/or

permissions are authorized access in YTA, a controlled-access military training area. Thus, impacts to socioeconomic resources and EJ would be negligible.

3.12 TRANSPORTATION

3.12.1 Affected Environment

Air transportation was covered in Section 3.1. Thus, this section will focus on roads and trails.

Existing roads capable of accommodating a 30,000-pound tow vehicle and 40,000-pound trailer are herein termed a *qualifying road transportation system*. The nearest, named qualifying road transportation system to each proposed ops site and existing, less developed roads and trails overlapped by new access roads are included in Table 3-20.

Table 3-20. Road and Trail Transportation Systems Associated with New Access Road

Nearest, Named Qualifying Road Transportation System		Overlapped Roads and Trails	
Name	**Traffic Description**	**Name**	**Traffic Description**
Engineer Hill Ops Site			
Transmitter Road	Restricted gravel road predominantly used for military purposes. Must have Eielson AFB access to use road.	Unnamed Road	Restricted unimproved dirt road that can support OHV traffic.
		Unnamed Trail	Restricted trail that can support all-terrain vehicle traffic.
South Pole Hill Ops Site			
Quarry Road and/or Johnson Road	Quarry Road is a gravel road that is controlled-access in YTA and restricted in Eielson AFB. Johnson Road is a controlled-access, gravel road. Predominately used for military purposes.	Unnamed road	Controlled-access gravel road that is a qualifying road transportation system.
		Unnamed Trail	Controlled-access trail that follows the ridgeline to the site that can support small recreational vehicle traffic.
Bridge to Terabithia Ops Site			
Richardson Highway	Public developed road where an unnamed gravel road extends west between Mileposts 331 and 332 to the Tanana River Rail Bridge.	Unnamed Road	Controlled-access gravel road extending across the Tanana River Rail Bridge into the TFTA.
Birch Hill Ops Site			
Richardson Highway	Public developed road where new access road would begin near Milepost 310.	Unnamed trail	Public trail that can support recreational vehicle traffic.
Pogo Hill Ops Site			
Pogo Mine Access Road	Restricted gravel road accessible to individuals with permission from Northern Star Resources Limited.	Unnamed road	Restricted unimproved gravel road that can support recreational vehicle traffic.
Quartz Hill Ops Site			
Quartz Lake Access Road	Public gravel road extending east off the Richardson Highway.	Quartz Lake Extended Forest Road	Public gravel road. A portion of it is considered unimproved but would be able to support OHV traffic.
Gerstle River Ops Site			
Tower Road	Public gravel road extending southwest from the Alaska Highway.	---	---
Dry Creek Ops Site			
Alaska Highway	Public developed road where unnamed road begins near Milepost 1378.	Unnamed Road	A qualifying road transportation public gravel road extending south from the Alaska Highway.

Nearest, Named Qualifying Road Transportation System		Overlapped Roads and Trails	
Name	**Traffic Description**	**Name**	**Traffic Description**
Tok Hill Ops Site			
Glenn Highway Tok Cutoff	Public developed road where unimproved road begins between Mileposts 116 and 117.	Unnamed Road	A qualifying road transportation public unimproved gravel road that can support OHV traffic. It was part of the original Tok-Cutoff Highway prior to the highway's realignment. A portion of this road overlaps with Eagle Trail.
		Unnamed Trail	Public dirt trail that extends north from the unnamed road and can support OHV traffic.

3.12.2 Environmental Consequences

Preferred Alternative

The Preferred Alternative would cause minor temporary adverse impacts during construction but overall minor permanent beneficial impacts post-construction to transportation resources.

The Preferred Alternative would construct new roads and/or improve existing roads and/or trails to accommodate 30,000-pound tow vehicle and 40,000-pound trailer access to the proposed ops sites. The construction and improvement of new road infrastructure was minimized by utilizing existing roads and trails before taking the shortest route to the ops site through new terrain. Route alignments considered other environmental resources and topography to avoid and/or minimize impacts to other resources and ensure drivable road grades (i.e., slope). Specific types of environmental resources avoided to the extent practicable when determining road alignments were water resources (e.g., wetlands) and private real estate parcels.

The new access routes depicted in ops site figures (Figure 2-5 to Figure 2-13) would either improve existing or construct at least a single lane, 12-foot drivable gravel road with a 4-foot toe on either side. Roads that are part of the operating pad configurations would be 16-foot single lane roadways with 4-foot toes (i.e., 24 feet width total). Table 3-21 describes the estimated length, widths, and total area of new access roads required for each ops site (see Table 3-11 for ops site total ground disturbance estimations). Proposed new access road alignments would permanently replace approximately 43.64 acres of existing roads, trails, and undisturbed land with road infrastructure meeting Preferred Alternative operational requirements.

Table 3-21. New Access Road Estimated Length, Width, and Area by Ops Site

Ops Site	Length of New Access Road	Width of New Access Road[1]	Total Area
Engineer Hill	2.0 miles	20 feet	4.85 acres
South Pole Hill	0.5 miles		1.21 acres
Bridge to Terabithia	0.05 miles		0.12 acres
Birch Hill	0.76 miles		1.84 acres
Pogo Hill	1.4 miles		3.39 acres
Quartz Hill	6.3 miles		15.27 acres
Gerstle River	0.2 miles		0.48 acres
Dry Creek	2.9 miles		7.03 acres
Tok Hill	3.9 miles		9.45 acres
Total	*18.01 miles*	*Not Applicable*	*43.64 acres*

Construction vehicles and equipment would temporarily increase traffic volume and potentially cause traffic congestion and/or traffic movement restrictions at or near the ops sites for the duration of construction. Post construction, new access roads would provide better access to

the remote ops sites' areas. Thus, traffic volume is anticipated to increase to and from these sites but not so much that it would be a detriment to the local environment and area users. Traffic along the new access roads would likely be predominantly related to military radar training, maintenance, and recreational purposes. Road infrastructure and traffic impacts are not anticipated to result in traffic congestion. Rather, it should provide better access to and from the remote ops site areas and alleviate potential parking congestion within the area.

No-Action Alternative

Under the No-Action Alternative, existing road infrastructure would be used to access the temporary YTA radar ops sites. Traffic related to radar operations would include operators traveling to and from the ops sites for operation and maintenance purposes and would be very limited. Thus, anticipated impacts to transportation would be negligible.

3.13 UTILITIES

3.13.1 Affected Environment

The electrical utility providers within the ROI are the Alaska Power & Telephone (AP&T), Central Heat and Power Plant (CHPP), and Golden Valley Electric Association (GVEA). Eielson AFB and YTA are serviced by the CHPP. Figure 3-15 depicts the AP&T and GVEA electrical utility systems within the ROI.

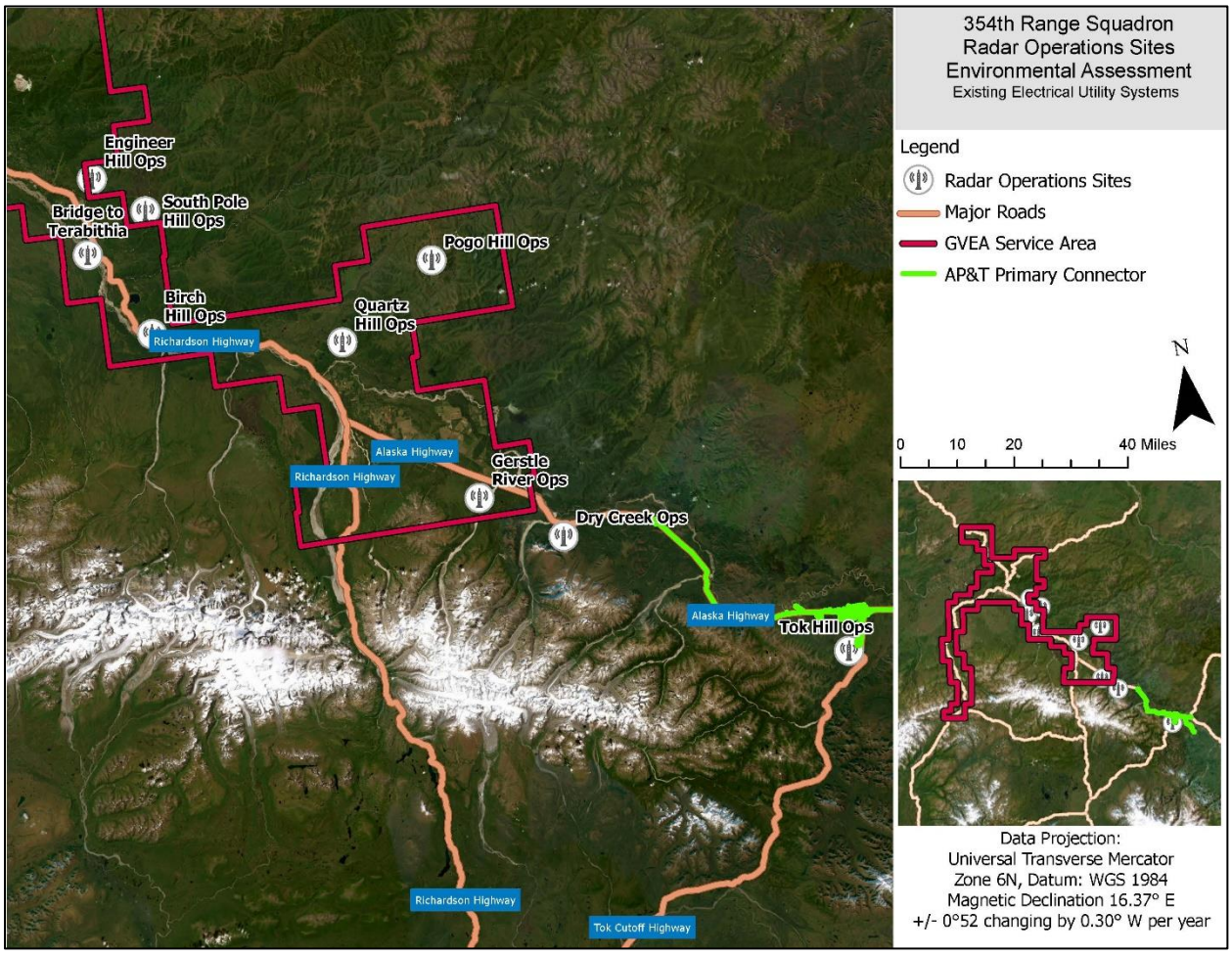


Figure 3-15. Existing Electrical Utility Systems of ROI Utility Providers

Table 3-22 describes the source of energy and power grid capacity of each electrical utility provider.

Table 3-22. Electrical Utility Provider Energy Source and Power Grid Capacity within the ROI

Provider	Fuel Source(s)[1]	Power Capacity	Peak Demand	Available Capacity[2]
CHPP	Coal (100%)	~30 MW[3]	~17 MW	~13 MW
GVEA	Diesel (39%), Coal (24%), Natural Gas (15%), Naptha (13%), Hydro (4%), Wind (6%), Solar (>0%)	~479 MW	~206 MW	~273 MW
AP&T	Diesel (99%), Solar (1%)	~8 MW	~2 MW	~6 MW

Notes:
[1] Percentages were rounded to the nearest whole number.
[2] Available Capacity is *Power Capacity* minus *Peak Demand*.
[3] A 10 MW turbine installation is scheduled to be completed in 2024 for a total capacity of 30 MW.

The utility providers, landowner, and land use of an area dictate the appropriate type of powerline (i.e., aerial and/or underground). An underground powerline would be required in areas where aerial powerlines would present a hazard to other land uses (e.g., aircraft landing or drop zone). On DOT&PF managed lands (e.g., Federal aid highway, non-Federal aid highway, airport, and others), utility permits are required to install, operate, and maintain utilities. These permits define utility ownership, type, size, location, construction methods, maintenance frequency, duration, and other information considered necessary by DOT&PF. Furthermore, the ARRC must authorized the installation of utilities on its property, to include its ROWs. To receive such authorization, a proponent must submit an application and received approval for an ARRC Utility Permit or ROW Use Permit from the ARRC Real Estate Department.

3.13.2 Environmental Consequences

Preferred Alternative

With proper coordination and permitting, the Preferred Alternative would have permanent minor adverse impacts to existing utilities.

The lower-draw radars require a maximum power demand of 0.4 MW while the higher-draw radars require 0.75 MW. The operation of each radar would average 3 hours per week for 42 weeks of the year, accumulating in approximately 126 hours each year. For the other 10 weeks of the year during large-scale air training exercises, maximum operations would range approximately 12 hours per week, accumulating in 120 hours each year. This equates to a potential of up to approximately 246 hours of radar operations at each ops site per year. To meet power requirements of the ops sites, the Preferred Alternative would install approximately 9.6 miles of permanent powerlines (0.2 miles of underground and 9.4 miles of aerial powerline), use a temporary diesel generator, and use two permanent diesel generators with associated gasoline generators to meeting radar power requirements.

Permanent powerlines would be installed for seven of the ops sites. Powerlines are annotated on applicable site figures in Section 2.3.1. New powerlines would extend from the nearest existing aerial powerline, and alignments would follow new access roads except for the Tok Hill Ops Site. According to the National Electrical Safety Code, the standard utility pole for an aerial powerline is 35 feet tall. Powerline installation would require coordination, permissions, and/or permits from the utility provider and/or, as appropriate, the Alaska DOT&PF. Specific to the Bridge to Terabithia Ops Site, an ARRC ROW Use Permit would be required from the ARRC to install aerial powerlines within their ROW along the Tanana River Rail Bridge.

Powerlines to two of the most inaccessible, remote sites (Quartz Hill and Dry Creek Ops Sites), were deemed infeasible due to costs and distance from existing power grids. These ops sites will use lower-draw systems and be powered by an appropriately rated diesel-powered generators owned by the Air Force to meet the ops site power requirements.

Permanent, diesel fuel storage tanks would be installed onsite to support generator operations at the Quartz Hill and Dry Creek Ops Sites. Gasoline generators would be used to warm diesel generators prior to radar operations when necessitated by low temperatures. November through April (a 24-week period) was used as a basis for when temperatures may require use of a gasoline generator. Gasoline generators would warm diesel generators for an hour prior to radar operations. There would be approximately two radar operations per week requiring 48 hours over the 24-week period. Tok Hill Ops Site would be temporarily powered by an appropriately rated diesel generator until the powerline can be installed. This site would not use a gasoline generator to warm the diesel generator or not install an AST on-site. Generators are not anticipated to cause impacts on other utility users.

Table 3-23 summarizes the powerline utilities of the Preferred Alternative.

Table 3-23. Preferred Alternative Powerline Installation

Ops Site	Existing Power Connection Point	Powerline			Is Power Grid able to Support Radar Power Demand?			
		Type	Length (Miles)	# of Utility Poles	Available Capacity	Maximum Demand Per Site[1]	Maximum Demand Total[1]	YES/ NO[2]
CHPP								
Engineer Hill	Powerline at Engineer Hill munitions storage and maintenance area.	Aerial	0.7	13	13 MW	1.5 MW	1.9 MW	YES
South Pole Hill	Powerline extending from Quarry Road in YTA.	Aerial	0.5	9		0.4 MW		
GVEA								
Bridge to Terabithia	Powerline adjacent to Tom Bear Road.	Aerial	2.1	37	273 MW	0.4 MW	2.0 MW	YES
Birch Hill	Powerline adjacent to Richardson Highway.	Aerial	0.5	9		0.4 MW		
Pogo Hill	Powerline adjacent to Pogo Mine Access Road.	Aerial	1.6	29		0.4 MW		
Gerstle River	Powerline adjacent to Tower Road.	Aerial	0.9	16		0.4 MW		
		Underground[3]	0.2	---		0.4 MW		
AP&T								
Tok Hill	Powerline adjacent to the Glenn Highway Tok Cutoff.	Aerial	3.1	55	5.82 MW	1.5 MW		YES

Notes:
Other projects in Interior Alaska have utility poles every 300 feet. This metric was applied.
[1] Maximum demand assumed the distal end ops sites would at most operate two higher-draw radars and all other sites would at most support a single lower-draw radar.
[2] Determined holistically based on all sites within a particular provider's service area.
[3] A helicopter landing zone requires powerline to be installed underground.

Table 3-24 summarizes the generator utilities of the Preferred Alternative

Table 3-24. Preferred Alternative Generator and Fuel Storage

Ops Site	Generator Description[1]		On-site Diesel Fuel Storage
	Diesel	Gasoline	
Quartz Hill	456 Hp, Diesel, Permanent	13.4 Hp, Gasoline, Warm-up	5,000-gallon AST
Dry Creek	456 Hp, Diesel, Permanent	13.4 Hp, Gasoline, Warm-up	10,000-gallon AST
Tok Hill	456 Hp, Diesel, Temporary	Not Applicable	None

Note:
[1] Description reflects the anticipated generator characteristics. However, actual specifications may vary based on power demand requirements and available generators that could meet such demand.
Key:
Hp = Horsepower

No-Action Alternative

Under the No-Action Alternative, Air Forced-owned, standalone generators would be used to power the radars at the temporary YTA op sites. Thus, the No-Action Alternative would have permanent minor adverse impacts at most.

3.14 OTHER NEPA CONSIDERATIONS

3.14.1 Protected Tribal Resources

The 1994 Executive Memorandum on "Government-to-Government Relations with Native American Tribal Governments," the 1998 DoD "American Indian and Alaska Native Policy," the AFI 90-2002 "Air Force Interaction with Federally Recognized Tribes," and the Air Force Manual (AFM) 32-7003 "Environmental Conservation" require the Air Force to assess the impact that Federal actions may have on Protected Tribal Resources and assure that the rights and concerns of Federally Recognized Tribes are considered during the development of such actions. Pursuant to AFI 90-2002, *Protected Tribal Resources* are defined by the Air Force as:

> *"Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources."*

The Federal government's trust responsibility, deriving from the Federal Trust Doctrine and other sources, for these Protected Tribal Resources is independent of their association with Tribal lands.

This trust responsibility was discharged in this EA through compliance with multiple statutes affecting Protected Tribal Resources (Table 3-25) and through ongoing Government-to-Government consultation (Section 1.5.2). In this EA, Protected Tribal Resources are generally understood to include natural resources, cultural resources, and access to subsistence resources; no specific resource(s) have been identified by any Federally Recognized Tribe (list of Tribes consulted in Appendix A).

Table 3-25. EA Sections that Addressed Potential Protected Tribal Resources

Resource	Section	Relevant Resource Statutes	Potential Effects
Natural Resources	3.7, 3.9	– Migratory Bird Protection Treaty Act of 1918 – National Environmental Policy Act of 1970 – Clean Water Act of 1972	Insignificant
Cultural Resources	3.10	– National Historic Preservation Act of 1966 – National Environmental Policy Act of 1970	Insignificant
Subsistence Use	3.2, 3.9	– Alaska National Interest Lands Conservation Act of 1980	Insignificant
Environmental Justice	3.6, 3.11	– Clean Air Act of 1963 – National Environmental Policy Act of 1970 – EO 12898, Environmental Justice	Insignificant

3.14.2 Unavoidable Adverse Effects

This EA identifies any *unavoidable adverse impacts* that would be incurred by an alternative of the Proposed Action and the significance of the potential impacts to resources and issues. Title 40 CFR §1508.27 specifies that a determination of significance requires consideration of context and intensity. The Preferred Alternative's construction of gravel access roads and operating pads, and installation of powerlines, generators, and ASTs would impact the local areas of the various ops sites within Interior Alaska. The severity of potential impacts would be limited by regulatory compliance, proposed mitigations, and best management practices (Table 5-1) for the protection of the human and natural environments.

Unavoidable short-term adverse impacts associated with implementing the Preferred Alternative would include temporary construction impacts related to erosion and sedimentation, increases in fugitive dust and air pollution, intermittent noise, impacts to wetland vegetation, and alterations to traffic. However, these effects are considered minor and would be confined to the immediate area. Unavoidable, long-term, adverse impacts would include destruction of wetlands (0.6 acres) at the Dry Creek Ops Site, of wildlife habitat (175 acres) to anthropogenically modified lands, increases in fugitive dust, alterations to traffic, and air pollutant emissions from generators at the Quartz Hill and Dry Creek Ops Sites. Use of proposed environmental controls and implementing controls from required permits and approvals would minimize these potential impacts.

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

The relationship between short-term uses and enhancement of long-term productivity from implementation of the Preferred Alternative is evaluated from the standpoint of short-term effects and long-term effects. *Short-term effects* would be those associated the construction and installation activities of the Preferred Alternative. The *long-term enhancement of productivity* would be those effects associated with the ops sites' post-construction operation and maintenance.

The negative effects of the short-term construction activities would be minor compared to the positive benefits from implementing the Preferred Alternative that would modernize training radars and locations for realistic training representative of the current threat environment. Immediate and long-term benefits would be realized for operation and maintenance after construction is completed for the Preferred Alternative.

3.14.4 Irreversible and Irretrievable Commitments of Resources

This EA identifies any irreversible and irretrievable commitments of resources associated with the implementation of the Preferred Alternative. An *irreversible effect* results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An *irretrievable effect* results from loss of resources (e.g., endangered species) that cannot be restored as a result of an action. The short-term irreversible commitments of resources from the Preferred Alternative include planning and engineering costs, building materials and supplies and their cost, use of energy resources during construction, labor, generation of fugitive dust and other air pollutant emissions, and creation of temporary construction noise. If avoidance and minimization of impacts is not sufficient, replacement of impacted wetland areas may be required to obtain authorization under the CWA Section 401 and Section 404. No long-term irretrievable commitments of resources would result from the Preferred Alternative.

4.0 REASONABLY FORESEEABLE ACTIONS AND CUMULATIVE IMPACTS

This EA also considers the effects of cumulative impacts as required in 40 CFR 1508.7 and concurrent actions as required in 40 CFR 1508.25[1]. A cumulative impact, as defined by the CEQ (40 CFR 1508.1), which are:

> *"…effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time."*

4.1 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

Actions announced for the ROI that could occur during the same time period as the Proposed Action are included in Table 4-1 and herein collectively termed, "Other ROI Actions." For this EA, these announced actions are addressed from a cumulative perspective and would be evaluated under separate NEPA actions conducted by the appropriate involved Federal and State agencies. Based on the best available information on the Other ROI Actions, the Air Force cumulative impact analysis does consider them.

Table 4-1. Other ROI Actions for Consideration of Potential Cumulative Impacts

Other ROI Actions	Descriptions
Blair Lakes Radar Ops Site[1]	This action would repurpose a portion of previously developed land at the Blair Lakes Bombing Range within the USAG Alaska TFTA to support radar operations. A gravel operations pad would be developed, and radars would be staged at the site. Power would be supplied by a diesel generator. Total impacts to land use would be less than 1-acre, and there are no known protected resources that would be impacted.
ARRC Northern Rail Extension	There are four phases to this action. Phase one was completed and extended the Alaska Railroad across the Tanana River by constructing the dual-use Tanana River Rail Bridge. This bridge supports military access and railroad access into and activities within the TFTA. Phases two through four are not currently funded but would extend the railroad south, southeast.
Quartz Lake Spruce Timber Sale	The DOF proposed the sale of approximately 37.5 acres of white spruce timber from the Quartz Lake area (SOA land) as a single competitive bid contract for commercial use. The land covered by this action appeared in the 2022 Northern Region Five Year Schedule of Timber Sales. The sale has been completed, and the harvest of the white spruce is ongoing.

Note:
[1] The Air Force completed an Air Force Form 813 for this action, which documented the application the of categorical exclusion A2.3.14 under 32 CFR Appendix B to § 989. A2.3.14 states an action is categorically excluded in absence of unique circumstances if it: "[i]nstall[s] on previously developed land, equipment that does not substantially alter land use (i.e., land use of more than 1 acre)."

4.2 ASSESSMENT OF CUMULATIVE IMPACTS BY RESOURCE

This section describes the cumulative effects for the resource areas assessed within this EA. Due to the remoteness of the Preferred Alternative ops sites, many resources are not discussed further due to lack of impacts. The resources not discussed further include Airspace Management and Use, Hazardous Materials and Waste, Noise, Water Resources, and Cultural Resources.

4.2.1 Biological / Natural Resources

Preferred Alternative

The ARRC Northern Rail Extension action would permanently convert existing habitat to anthropogenically modified lands, and the Quartz Lake Spruce Timber Sale action would temporarily impact existing habitat through the harvesting of white spruce timber. These actions and the Preferred Alternative would cumulatively impact habitat (to include vegetation) within the ROI with the greatest impact occurring wherein actions are within close proximity (e.g., the Quartz Lake Spruce Timber Sale action and the Preferred Alternative Quartz Hill Ops Site). However, cumulatively, these impacts would at most cause minor adverse impacts due to the abundance of similar habitat throughout the ROI.

No-Action Alternative

There are no cumulative impacts anticipated under the No-Action Alternative.

4.2.2 Land Use

Preferred Alternative

The ARRC Northern Rail Extension action would impact land use designations within the ROI. The extension of the railroad would extend south, southeast through the ROI through Federal, State, and potentially FNSB and/or private lands from the distal end of the Phase one construction efforts. Unlike the Preferred Alternative, that would convert land use designations to Federal or retain the Federal land use designation, the ARRC Northern Rail Extension action would convert or retain land use designations as SOA land and/or require coordination and agreements for ROWs. This action and the Preferred Alternative would permanently change land use designations throughout the ROI. However, it would cause minor adverse impacts at most because the activities would likely be generally compatible with other land uses and the two actions may offset each other.

No-Action Alternative

There are no cumulative impacts anticipated under the No-Action Alternative.

4.2.3 Safety and Occupational Health

Preferred Alternative

The construction activities and operations of the Other ROI Actions and the Preferred Alternative may overlap. The distance between these actions would generally avoid and/or minimize cumulative impacts to this resource. However, the Preferred Alternative Quartz Hill Ops Site construction activities and the Quartz Lake White Spruce Timber Sale harvesting actions may occur concurrently. If occurring concurrently, there would be additional hazards during construction and/or post construction if one of the actions is ongoing. The Preferred Alternative would consider the other action's construction activities when assessing safety and health hazards and implement BMPs and risk responses accordingly. Thus, the cumulative impact to this resource would be minor at most.

No-Action Alternative

There are no cumulative impacts anticipated under the No-Action Alternative.

4.2.4 Air Quality

Preferred Alternative

The Blair Lakes Radar Ops Site and ARRC Northern Rail Extension actions would add new permanent sources of air pollutant emissions to the ROI. The generator used to support the Blair Lakes Radar Ops Site action would contribute air emissions within the ROI from point sources (i.e., generators). However, its generator emissions would be highly localized and far removed from the emissions produced from the Preferred Alternative and the ARRC Northern Rail Extension. The ARRC Northern Rail Extension would extend the existing railroad into new areas. Trains would become a new mobile source of air pollutant emissions wherein it is extended. Train emissions may decrease local air quality within the area of the Preferred Alternative's Dry Creek Ops Site, which would utilize a diesel generator and gasoline generator due to the proximity of the proposed railroad extension and the ops site. Emissions from these sources would only persist in the area for a short period of time. Generally, the decreases in air quality would generally be highly localized and separate from other actions, and the cumulative decrease in regional air quality from these actions is not anticipated to cause an exceedance of an SAAQS or NAAQS that would re-designate an attainment area to a near nonattainment or nonattainment area.

No-Action Alternative

There are no cumulative impacts anticipated under the No-Action Alternative.

4.2.5 Earth Resources

Preferred Alternative

The ARRC Northern Rail Extension action is anticipated to have ground disturbing activities and/or infrastructure made from earth resource materials. However, like the Preferred Alternative, this action's activities and infrastructure would likely be limited to surface soil layers and have minimal topography changes due minor increases and/or decreases in elevation. The ARRC Northern Rail Extension action and Preferred Alternative are anticipated to use similar earth resources (i.e., gravel) from local and regional sources (e.g., community gravel pits) to construct required infrastructure. If these actions occur concurrently, the required earth resource demand may stress local and regional sources' supply. Subsequently, this could reduce and/or exhaust the available earth resources at a particular source and require sourcing from options further away for these actions but also for other local users and needs. It may also introduce unanticipated delays. Consideration of the timing and earth resource requirements between these separate actions would be needed to minimize and avoid these potential cumulative impacts.

No-Action Alternative.

There are no cumulative impacts anticipated under the No-Action Alternative.

4.2.6 Socioeconomic Resources

Preferred Alternative

The Other ROI Actions and Preferred Alternative would provide jobs relating to construction and/or operations of these actions and/or provide valuable resources (e.g., timber and enhanced access) throughout the ROI. These actions are generally far removed from one another and population centers within the ROI. Thus, potential, and likely minor, increases in the EJ Indices are not anticipated to cumulatively impact any community or minority, low-income, or children population disproportionately. Cumulative impacts would be mostly beneficial due to the

economic opportunities and/or access to resources these actions would provide locally and regionally. A specific example of a beneficial impact would be the availability of salvaged timber from the Preferred Alternative and Quartz Lake Spruce Timber Sale actions. The salvaged timber would be available for use and/or sale, depending on landowner policies, throughout the ROI.

No-Action Alternative

There are no cumulative impacts anticipated under the No-Action Alternative.

4.2.7 Transportation

Preferred Alternative

The Preferred Alternative and the Other ROI Actions may lead to better minor increased localized traffic throughout the ROI and at worksites during construction/vegetation clearing activities and operations. However, due to the distance between the Other ROI Actions and Preferred Alternative, cumulative impacts are generally unlikely. If the Quartz Hill Ops Site construction and Quartz Lake White Spruce Timber Sale action harvesting activities occur concurrently, it may lead to traffic congestion at the Quartz Lake area. This can be minimized through coordination between the actions and/or offsetting the scheduled construction of the Quartz Hill Ops Site from the harvesting activities of the Quartz Lake White Spruce Timber Sale action.

No-Action Alternative.

There are no cumulative impacts anticipated under the No-Action Alternative.

4.2.8 Utilities

Preferred Alternative

The ARRC Northern Rail Extension action and Preferred Alternative would require power from existing ROI power grids. Coordination with utilities providers would be required to extend powerlines from the existing power grid for all actions, and the capacity of the current grid would be considered before implementation of such actions. If existing power grids cannot support one or more of these actions, then the construction of the action(s) would need to be reassessed and other methods of supplying energy would need to be considered. Otherwise, these actions would cumulatively demand more power than separately. This would reduce the available capacity of existing power grids to meet power demands of future projects.

No-Action Alternative

There are no cumulative impacts anticipated under the No-Action Alternative.

5.0 SUMMARY OF ENVIRONMENTAL MANAGEMENT AND MITIGATIONS

The environmental management (e.g., BMPs) and mitigation measures that would be implemented to minimize, avoid, and/or compensation for potential adverse impacts of the Preferred Alternative are described in this section. This section does not include required consultation and coordination and/or permits and authorizations required for regulatory compliance that would add additional BMPs and mitigation measures to the actions that would be undertaken for the Preferred Alternative. Furthermore, BMPs and mitigations measures would be added and further developed during the final design of each ops site.

There are two overarching best management practices that were implemented under the Preferred Alternative with the ops sites' designs:

1. Ops sites are in remote areas at high latitudes wherein traffic is limited.
2. Designs are focused on utilizing existing, disturbed areas to the maximum extent practicable before taking the shortest route feasible with new infrastructure. The purpose of this BMP is to avoid and/or minimize impacts to other resources.

Specific resource BMPs and mitigations covered in this EA are summarized in Table 5-1.

Table 5-1. Summary of Environmental Management and Mitigation Measures

Resource	Environmental Management and Mitigations
Airspace Management and Use	• Established, existing airspace would be used for action-related air operations. • The Air Force would maintain its current operating pace within the ROI airspace.
Land Use	• The Air Force Real Estate would acquire necessary leases. • Design would incorporate other site user access considerations through and around the ops sites.
Hazardous Materials and Waste	• The Air Force would conduct regular inspections and maintenance of ASTs and radars.
Safety and Occupational Health	• Workers and operators would utilize and wear appropriate PPE during construction activities and radar operations. • Barriers protective of the general public would be constructed at each ops site to prevent non-operators (and certain wildlife) from uncontrolled access within MPE limits for EMFR.
Noise	• Workers and operators would utilize and wear appropriate PPE during construction activities and radar operations. • Ops site infrastructure (e.g., generators and radars) do not produce noise levels that would cause permanent hearing loss. • Noise impacts to other site users and wildlife would be minimized due to distance between noise sources and restrictive barriers that would be installed for EMFR.
Air Quality	• The Air Force would apply the Eielson AFB Fugitive Dust Emission Plan's BMPs: (1) Spray water when necessary and in compliance with stormwater permit requirements; (2) Limit traffic speeds to 15 miles per hours on unpaved roads; and, (3) Clean uncontaminated dirt and/or mud from paved roads daily.
Water Resources	• Road alignments were designed to avoid water resources (e.g., wetlands and surface waters) to the extent practicable. • Design considerations for culvert emplacement and drainage would be incorporated to minimize impacts to water flow.

Resource	Environmental Management and Mitigations
	• Floodplain baseline elevations design considerations would be implemented for the Bridge to Terabithia Ops Site.
Earth Resources	• Native soil would be used to backfill holes to the extent practicable. • The Air Force would attain required gravel from the nearest active established source for each site. • Erosion considerations would be incorporated for culvert emplacement and drainage designs.
Biological / Natural Resources	• Vegetation clearing activities would take place outside of USFWS bird nesting windows to the extent practicable. • The ops sites were designed to utilize disturbed, preexisting infrastructure to the maximum extent practicable to avoid and minimize impacts to environmental resources. • BMPs and mitigation measures would be implemented to avoid and/or minimize invasive and non-native species introduction and spread: (1) Equipment and vehicles will be inspected, cleaned, and decontaminated between ops sites during construction. (2) Weed- and seed-free gravel and erosional control products would be used with native soil is not feasible. • Vegetation clearing would develop firebreaks and remove potential insect infested trees. • Timber from vegetation clearing activities would be salvaged.
Cultural Resources	• If buried cultural resources or human remains are inadvertent identified through ground disturbing activities, protocol for inadvertent discovery of cultural resources will be followed. Immediately following an inadvertent discovery, work will cease, and the Air Force Project Manager and Cultural Resources Manager will be contacted to assess the nature of the discovery.
Socioeconomic and Environmental Justice	• Economic opportunities would be provided to local and regional communities: (1) The Air Force would use local small businesses to the extent practicable during construction and for post-construction maintenance requirements. (2) Construction materials would be sourced locally and/or regionally to the extent practicable. • See Air Quality and Transportation.
Transportation	• Unimproved roads and trails within the new access route alignment would be improved and provide better access throughout the ROI.
Utilities	• Underground powerlines were limited to areas wherein aerial powerlines would pose a safety concern. • Appropriately rated generators were utilized wherein powerline installation would be infeasible due to distance from existing power grids and costs.

6.0 REFERENCES

Abrahamson, I. L. 2014. Fire regimes of Alaskan white spruce communities. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Online Article, www.fs.usda.gov/database/feis/fire_regimes/AK_white_spruce/all.html. Accessed January 16, 2023.

Alaska Center for Conservation Science (ACCS). 2023. AKEPIC Data Portal. ACCS, University of Alaska Anchorage. Online Database, https://akepic.accs.axds.co/old/akepic.php?js_libraries_root=/old/js-libraries/js/#map?. Accessed November 13, 2023.

Alaska Department of Environmental Conservation (ADEC). 2008. Factsheet: Groundwater in Alaska. Drinking Water Program, Division of Environmental Health, ADEC. Online Document, https://dec.alaska.gov/media/8493/dwp-groundwater-fact-sheet-2008.pdf.

Alaska Department of Environmental Conservation (ADEC). 2014. Letter to Department of the Army, Directorate of Public Works (Brian Adams) from ADEC, Division of Spill Prevention and Response, Contaminated Sites Program (Guy Warren) re: Gerstle River Test Site-UST Sites #000, #449, and # 450 and #451. May 14, 2014.

Alaska Department of Environmental Conservation (ADEC). 2018. Guidance for Evaluating Metals at Contaminated Sites. Technical Memorandum. Contamination Sites Program, Division of Spill Prevention and Response, ADEC.

Alaska Department of Environmental Conservation (ADEC). 2023a. Alaska DEC Contaminated Sites. Online Mapper, https://www.arcgis.com/apps/mapviewer/index.html?webmap=315240bfbaf84aa0b8272ad1cef3cad3. Accessed September 18, 2023.

Alaska Department of Environmental Conservation (ADEC). 2023b Fairbanks – Carbon Monoxide. Online Webpage, https://dec.alaska.gov/air/anpms/communities/co-fairbanks. Accessed November 13, 2023.

Alaska Department of Environmental Conservation (ADEC). 2023c Fairbanks – Particulate Matter. Online Webpage, https://dec.alaska.gov/air/anpms/communities/fbks-particulate-matter/. Accessed November 13, 2023.

Alaska Department of Fish and Game (ADF&G). 2010. Delta Junction Bison Range. Online document; https://www.adfg.alaska.gov/static/lands/protectedareas/_land_status_maps/deltajunctionbisonrangels.pdf.

Alaska Department of Fish and Game (ADF&G). 2023a. Alaska Fish Resource Monitor, AWC. Online Mapper: https://adfg.maps.arcgis.com/apps/MapSeries/index.html?appid=a05883caa7ef4f7ba17c99274f2c198f&_ga=2.224620890.1175819519.1694447049-946385212.1683572715. Accessed September 18, 2023.

Alaska Department of Fish and Game (ADF&G). 2023b. Delta Junction – State Bison Range. Online Webpage; https://www.adfg.alaska.gov/index.cfm?adfg=deltajunctionbison.main. Accessed September 18, 2023.

Alaska Department of Fish and Game (ADF&G). 2023c. Invasive Species. ADF&G. Online webpage, https://www.adfg.alaska.gov/index.cfm?adfg=invasive.main. Accessed September 18, 2023.

Alaska Department of Fish and Game (ADF&G). 2023d. Mammals. Online Webpage, https://www.adfg.alaska.gov/index.cfm?adfg=animals.listmammals&sort=scientific. Accessed September 18, 2023.

Alaska Occupational Health and Safety (AKOSH). 2023. Physical Agent Data Sheet (PADS) – Radio Frequency/Microwave Radiation. Alaska Department of Labor and Workforce Development. Online Webpage, https://labor.alaska.gov/lss/pads/radio.htm. Accessed November 13, 2023.

Alaska Department of Natural Resources (ADNR). 2023 Alaska Mapper. Online Mapper, https://mapper.dnr.alaska.gov/map. Accessed September 18, 2023.

Alaska Earthquake Center (AEC). 2002. Magnitude 7.9 – 45 miles E of Denali Park. AEC, University of Fairbanks Alaska.

Air Force Civil Engineer Center (AFCEC) 2021a. Department of the Air Force PFAS Snapshot. Online Webpage, https://www.afcec.af.mil/WhatWeDo/Environment/Perfluorinated-Compounds/.

Air Force Civil Engineer Center (AFCEC). 2021b. Department of the Air Force Response to PFAS (PFOS/PFOA) Fact Sheet. Online Webpage, https://www.afcec.af.mil/WhatWeDo/Environment/Perfluorinated-Compounds/. Alaska Heritage Resources Survey (AHRS). 2023. Alaska Heritage Resources Survey. Office of History and Archaeology, Alaska Department of Natural Resources.

American Radio Relay League (ARRL). 2021. Understanding the Changes to the FCC RF Exposure Rules. In *QST*.

Belov, L. A., S. M. Smolskiy, and V. N. Kochemasov. 2012. *Handbook of RF, Microwave, and Millimeter-wave Components*. Artech House.

BirdLife International (BLI). 2023. Important Bird Area Factsheet: Upper Tanana River Valley. Online Database; http://datazone.birdlife.org/site/factsheet/upper-tanana-river-valley-iba-usa. Accessed September 18, 2023.

Bond, W. J and R. E. Keane. 2017. Fires, ecological effects of. Reference Module in Life Sciences. doi: 10.1016/B978-0-12-809633-8.02098-7.

Brice Engineering, LLC (Brice). 2022. Final: 2021 Land Use Controls Inspection Report, Gerstle River Test Site. Contract W911KB-17-D-0020, Task Order W911KB-20-F-0053. Prepared for U.S. Army Garrison Alaska. March.

Callegary J. B., C. P. Kikuchi, J. C. Koch, M. R. Lilly, and S. A. Lake. 2013. Review: Groundwater in Alaska (USA). In *Hydrogeology Journal* (2013) 21:25–39.

Calef, Monika P.; Schmidt, Jennifer I.; Varvak, Anna; Ziel, Robert. 2023. Predicting the unpredictable: predicting landcover in boreal Alaska and the Yukon including succession and wildfire potential. Forests 14(8):1577.

Center for Environmental Management of Military Lands (CEMML). 2014. Cultural Resources Survey and Evaluation, Fort Wainwright and Training Lands, 2014. Prepared by J. A. Esdale, K. Yeske, H. D. Hardy, J. J. Lynch, and W. E. McLaren for Fort Wainwright, U.S. Army Garrison Alaska. Colorado State University.

Center for Environmental Management of Military Lands (CEMML). 2021. USAG Alaska Cultural Resources Annual Report. Prepared by J. A. Esdale, H. D. Hardy, W. E. McLaren, R. Nethken, and E. Bishop for Fort Wainwright, U.S. Army Garrison Alaska. Colorado State University.

Center for Environmental Management of Military Lands (CEMML).2023. Archaeological Investigations of Proposed Air Force Radar Sites on USAG Alaska-Managed Lands. Prepared by J. A. Esdale, R. Nethken, and W. E. McLaren for Fort Wainwright, U.S. Army Garrison Alaska. Colorado State University. Final, August.

Committee on Man and Radiation (COMAR). 2000. Human Exposure to Radio Frequency and Microwave Radiation from Portable and Mobile Telephones and Other Wireless Communication Devices. COMAR Technical Information Statement. COMAR, Institute of Electrical and Electronics Engineers. Online Document, https://ewh.ieee.org/soc/embs/comar/phone.pdf.

Congressional Research Service (CRS). 2023. Wildfire Statistics. CRS Reports.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. Washington, D.C. Office of Biological Services, Fish and Wildlife Service, U.S. Department of the Interior.

Cultural Resources Consultants, LLC (CRC). 2016. Cultural Resources Report for the Pogo Gold Mine Transmission Line Corridor Survey, 2014–2015. Report prepared by S. J. Meitl, M. R. Yarborough, and A. L. Morrison for Sumitomo Metal.

Cultural Resources Consultants, LLC (CRC). 2023. Cultural Resource Survey for 354th Range Squadron Radar Operation Sites, AKV402. Report prepared by H. K. McCaig, A. L. Morrison, H. A. Reddington, and M. R. Yarborough for AECOM and the U.S. Army Corps of Engineers. Draft, December.

Directorate of Public Works – Center for Environmental Management (DPW-ENV). 2023. Bear Baiting Map of Yukon Training Area. Environmental Division GIS Program Office, Directorate of Public Works, Center for Environmental Management of Military Lands. Online Document, https://usartrak.isportsman.net/files/Documents%2FMaps%2FBear%20Baiting%2FBear baiting_YTA.pdf. Accessed September 18, 2023.

Division of Forestry & Fire Protection (DOF). 2022. Fairbanks-Delta Area Forestry Preliminary Best Interest Finding and Decision for Quartz Lake Spruce. NC-1740-D. Division of Forestry & Fire Protection, Alaska Department of Natural Resources.

Division of Public Health (DPH). 2016. Alaska Trauma Centers & The 24 Acute Care Facilities in the State of Alaska [MAP]. Alaska Department of Health. Accessed at, https://health.alaska.gov/dph/Emergency/Documents/trauma/Trauma%20Center%20Designation%20HOSPITAL%20MAP%202016.pdf.

Division of Public Health (DPH). 2023 Alaska Trauma Center Levels I – IV.docx. Alaska Department of Health. Accessed at, https://health.alaska.gov/dph/Emergency/Pages/trauma/designation.aspx. Accessed September 18, 2023.

EA Engineering, Science, and Technology, Inc, PBC (EA EST). 2021. Final Land Use Control Implementation Plan 2021. Contract Number FA-8903-17-D-0057, Task Order Number FA-8903-19-F-0184. Prepared for Air Force Civil Engineer Center. December.

Eielson Air Force Base (Eielson AFB). 2017. US Air Force Integrated Natural Resources Management Plan. Eielson AFB, United States Airforce.

Eielson Air Force Base (Eielson AFB). 2020. Final, 2020 Stormwater Pollution Prevention Plan. Contract No. FA 8903-17-D-0054, Task Order FA5215-19-F-A056.

Environmental Protection Agency (EPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. EPA/ONAC 550/9-74-004. Online Document, http://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF.

Environmental Protection Agency (EPA). 1996. Final, Total Maximum Daily Load (TMDL) for Poly-Chlorinated Biphenyl (PCBs) in Garrison Slough, Alaska. United States EPA.

Environmental Protection Agency (EPA). 2020. 2020 National Emissions Inventory Data Retrieval Tool, Fairbanks North Star Borough and Southeast Fairbanks Data. Environmental Protection Agency. Online Database, https://awsedap.epa.gov/public/single/?appid=20230c40-026d-494e-903f-3f112761a208&sheet=5d3fdda7-14bc-4284-a9bb-cfd856b9348d&opt=ctxmenu,currsel%20and%20https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results.

Environmental Protection Agency (EPA). 2021. How do Wetlands Function and Why are they Valuable? Online Webpage, https://www.epa.gov/wetlands/how-do-wetlands-function-and-why-are-they-valuable.

Environmental Protection Agency (EPA). 2023. NAAQS Table. Online Webpage, https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed September 18, 2023.

Fairbanks Environmental Services (FES). 2015. Final: Long-Term Management Plan, Gerstle River Test Site, Alaska. Contract W911KB-12-D-0001, Task Order 26. Prepared for U.S. Army Corps of Engineers, Alaska District. June.

Federal Aviation Administration (FAA). 2023a. Anchorage Sectional Chart [Map dated November 30, 2023]. Federal Aviation Administration. Accessed September 18, 2023.

Federal Aviation Administration (FAA). 2023b. FAA National Headquarters (FOB-10B), Mission Support Service Policy (AJV-p), Chapter 3. Airspace. Federal Aviation Administration, United States Department of Transportation.

Federal Aviation Administration (FAA). 2023c. Fairbanks Sectional Chart [Map, dated November 30, 2023]. Federal Aviation Administration.

Federal Emergency Management Agency (FEMA). 2020. Flood Insurance Study, Fairbanks North Star Borough, Alaska. Flood Insurance Study Number 02090CV000B. FEMA, United States Department of Homeland Security.

Foster, A. C., A. H. Armstrong, J. K. Shuman, H. H. Shugart, B. M. Rogers, M. C. Mack, S. J. Goetz, and K. J. Ranson. 2019. Importance of tree- and species-level interactions with wildfire, climate, and soils in interior Alaska: Implications for forest change under a warming climate. In *Ecological Modeling* 409:108765.

Gotthardt, T. A. 2005. Wood Frog. In State Conservation Status, Element Ecology & Life History. Alaska Department of Fish and Game.

Hare, Ed. 1998. RF Exposure and You. American Radio Relay League. Online Document, https://www.arrl.org/files/file/Technology/RFsafetyCommittee/RF+Exposure+and+You.pdf.

Hollinger, K. 2003. The Haines-Fairbanks Pipeline. Center for Environmental Management of Military Lands, Colorado State, University, Conservation Branch, Directorate of Public Works, U.S. Army Alaska.

Kellyhouse, D. G., Fire. 1980. Wildlife Relationships in Alaska. Alaska Department of Fish and Game.

McClory, J. and T. Gotthardt. 2008. Non-Native and Invasive Animals of Alaska: A Comprehensive List and Select Species Status Reports. Final Report. Alaska Natural Heritage Program, Environmental and Natural Resources Institute, University of Anchorage Alaska.

Missile Defense Agency (MDA). 2020. Draft Environmental Impact Statement for Long Range Discrimination Radar Operations, Clear Air Force Station, Alaska. Missile Defense Agency, Department of Defense.

Moore, C., K. Howard, H. Strader, S. Alden, and R. Ziel. 2020. Alaska Seasonal Strategic Analysis Tool. Bureau of Land Management.

Nakata Planning Group (NPG). 1987. Master Plan Report. Prepared for U.S. Army Corps of Engineers, Alaska District. Anchorage, AK.

National Flood Insurance Program (NFIP). 2014. Flood Insurance Rate Map, Fairbanks North Star Borough, Alaska, Panel 6425 of 7300 [MAP]. NFIP, Federal Emergency Management Agency. Accessed at, https://map1.msc.fema.gov/firm?id=02090C6425J.

Northern Land Use Research, Inc. (NLUR). 1996. Archaeological Survey and Assessment of Prehistoric Cultural Resources on Eielson Air Force Base, Alaska. Report prepared by S. C. Gerlach, S. J. McIntosh, P. M. Bowers, and O. K. Mason for the Shannon and Wilson, Inc., and the U.S. Army Corps of Engineers. Final, September.

Occupational Safety and Health Administration. 2015. Trenching and Excavation Safety. OSHA 2226-10R 2015. OSHA, United States Department of the Interior.

Plant Materials Center (PMC). 2023 Invasive Plants and Agricultural Pest Management. PMC, Division of Agriculture, Department of Natural Resources, State of Alaska. Online webpage: https://plants.alaska.gov/invasives/index.htm. Accessed September 18, 2023.

Sierra Research, Inc (Sierra). 2006. Alaska Rural Dust Control Alternatives. Report Number SR2006-03-03. Prepared for Alaska Department of Environmental Conservation.

State Historic Preservation Officer (SHPO). 2024. Letter from SHPO to USAF regarding the 354th Range Squadron Radar Operations Project, Eielson Air Force Base. January 30, 2024.

Snow, M. 2022. How Does Wildfire Impact Wildlife and Forests? Sacramento Fish and Wildlife Office, Pacific Southwest Region Headquarters, United States Fish and Wildlife. Online Article, https://www.fws.gov/story/2022-10/how-does-wildfire-impact-wildlife-and-forests.

United States Air Force (Air Force). 2016. Final Environmental Impact Statement, F-35 Operational Beddown – Pacific. Volume 1. Air Force.

United States Air Force Installation Restoration Program (Air Force IRP). 2019. Final Decision Document for Installation Restoration Program Source Areas SO066, TU077, SS079, SO501, SO503, and CG505. Prepared for Air Force Civil Engineer Center. June.

United States Air Force Installation Restoration Program (Air Force IRP). 2021. Final Decision Document for Performance-Based Remediation Source Areas SO065, SO069, SO070, SO071, SO073, SS084, and TU506. Contract Number FA-8903-09-D-8568. Prepared for Air Force Civil Engineer Center. May.

United States Air Force (Air Force). 2022. Proposed Plan, No-Action Munitions Response Sites: Open Storage Area (A) (DA995A), AAA Site #7 (FR970), and Lily Lake (B) (TM973B) MRSs, Eielson Air Force Base, Alaska. June.

United States Air Force (Air Force). 2023. Letter from USAF to SHPO regarding the 354th Range Squadron Radar Operations Project, Eielson Air Force Base. 28 November 2023.

United States Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

United States Army Corps of Engineers (USACE). 2007. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-07-24. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

United States Army Garrison Alaska, Alaska State Historic Preservation Officer, and the Advisory Council on Historic Preservation (USAG et al.). 2021. Programmatic Agreement among the United States Army Garrison Alaska, the Alaska State Historic Preservation Officer, and the Advisory Council on Historic Preservation regarding the Operation, Maintenance, and Development of Army-Managed Resources at Fort Wainwright, Fort Greely, Associated Training Areas and Other Properties, Alaska (AK-PA-2202). Executed December 29, 2021.

United States Army Garrison Fort Wainwright (FWA USAG). 2013. Integrated Natural Resources Management Plan. FWA, USAG Alaska, United States Army.

United States Census Bureau (USCB). 2020. Decennial Census. U.S. Department of Commerce. Online Webpage, https://data.census.gov/.

United States Department of the Interior (DOI), United States Department of Agriculture (USDA), and State of Alaska (SOA). 2023. Alaska Master Cooperative Wildland Fire Management and Stafford Act Response Agreement. 2023 Alaska Statewide Operating Plan.

United States Fish and Wildlife Service (USFWS). 2017. Timing Recommendations for Land Disturbance & Vegetation Clearing. USFWS, United States Department of the Interior.

United States Geological Survey (USGS). 1995. Ecoregions of Alaska. Professional Paper 1567. Earth Resources Observation and Science (EROS) Center.

United States Geological Survey (USGS). 2003. Earthquakes in Alaska. USGS, U.S. Department of the Interior. Online Document, https://pubs.usgs.gov/of/1995/0624/pdf/of95-624L.pdf.

United States Geological Survey (USGS). 2023a. Geological Map of Alaska. USGS, U.S. Department of the Interior. Online Database,

https://alaska.usgs.gov/science/geology/state_map/interactive_map/AKgeologic_map.html. Accessed September 18, 2023.

United States Geological Survey (USGS). 2023b. National Water Dashboard. USGS, U.S. Department of the Interior. Online Database, https://dashboard.waterdata.usgs.gov/app/nwd/en/?region=lower48&aoi=default. Accessed September 18, 2023.

Werdon, M. 2021. 2020 Alaska Mining Industry Update. Alaska Division of Geological & Geophysical Surveys. Online Document, https://dggs.alaska.gov/webpubs/dggs/po/text/po2021_001.pdf.

World Health Organization (WHO). 1999. Fact Sheet No. 226: Electromagnetic Fields and Public Health Radars and Human Health. Online Document, extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.jeic-emf.jp/academic/assets/files/archive/fact_sheet_226.pdf.

World Health Organization (WHO). 2007. Question and Answers, Radiation: Radar. Online Webpage, https://www.who.int/news-room/questions-and-answers/item/radiation-radar.

Environmental Health and Safety (EHS). 2023. Decibel Level Comparison Chart. EHS, Yale University. Online Document, https://ehs.yale.edu/sites/default/files/files/decibel-level-chart.pdf. Accessed November 29, 2023. Accessed November 13, 2023.

7.0 LIST OF PREPARERS

This EA has been prepared under the direction of the US Air Force, PACAF, 11 AF, 354 FW. The individuals that contributed to the preparation of this EA are listed below (Table 7-1).

Table 7-1. List of Preparers

Name/Organization	Education	Resource Area	Years of Experience
Kayla Campbell USACE	BS, Molecular and Cellular Biology	Document Preparation, All Resources except Cultural	2
Kelly Eldridge USACE	MA, Anthropology	Cultural Resources	16
Matthew Ferguson USACE	MS, Environmental Management	Section 1 and 2 Preparation, Vegetation, and Wetlands	7
Michael Rouse USACE	BA, Environmental, Population, and Organismic Biology	Natural Resources and Document Preparation Oversight	18
Camryn Robert-Capak USACE	BS, Marine Science, Safety, & Environmental Protection; Minor in Marine Biology	Socioeconomics and Environmental Justice	1

Key: BA = Bachelor of Arts; BS = Bachelor of Science; MA= Master of Arts; MS = Master of Science.

THIS PAGE IS INTENTIONALLY LEFT BLANK.

APPENDIX A

Interagency/Intergovernmental Coordination and Public Participation

The following persons and agencies were consulted and/or coordinated with in the preparation of the Environmental Assessment for the *354th Range Squadron Radar Operation Sites, Eielson AFB, Alaska*.

Federal Agencies	
Bureau of Land Management Fairbanks District Office 222 University Avenue Fairbanks, Alaska 99709	Environmental Protection Agency Region 10 Alaska Operations Office 222 West 7th Avenue, #19 Anchorage, Alaska 99513
Federal Aviation Administration Alaskan Region 222 West 7th Avenue, #14 Anchorage, Alaska 99513	United States Army Corps of Engineers Alaska District Regulatory Division Fairbanks Field Office 1046 Marks Road Fort Wainwright, Alaska 99703
United States Army Garrison Alaska Directorate of Public Works 1046 Marks Road #4500 Fort Wainwright, Alaska 99703	United States Fish and Wildlife Service Northern Alaska Fish & Wildlife Field Office 101 12th Avenue, Room 110 Fairbanks, Alaska 99701
State Agencies	
Alaska Department of Environmental Conservation P.O. Box 111800 Juneau, Alaska 99811	Alaska Department of Fish & Game 1300 College Rd Fairbanks, Alaska 99701
Alaska Department of Natural Resources 550 West 7th Avenue, Suite 1360 Anchorage, Alaska 99501	Alaska Department of Transportation and Public Facilities 2301 Peger Road Fairbanks, Alaska 99709
Alaska Occupational Safety and Health Consultation and Training 1251 Muldoon Road, Suite 109 Anchorage, Alaska 99504	Alaska Railroad Corporation P.O. Box 107500 Anchorage, AK 99510
Alaska State Historic Preservation Office Office of History and Archaeology 550 West 7th Avenue, Suite 1310 Anchorage, Alaska 99501	
Local Agencies	
Fairbanks North Star Borough Historic Preservation Commission P.O. Box 71267 Fairbanks, Alaska 99707	Fairbanks North Star Borough Natural Resources Development P.O. Box 71267 Fairbanks, Alaska 99707
Tanana-Yukon Historical Society P.O. Box 71336 Fairbanks, Alaska 99707	
Other Stakeholders	
Alaska Power & Telephone 1314 Alaska Highway Tok, Alaska 99780	Golden Valley Electric Association Delta Junction Office 1681 Richardson Highway Delta Junction, Alaska 99737
Golden Valley Electric Association Fairbanks Office 758 Illinois Street Fairbanks, Alaska 99701	Northern Star Resources Limited P.O. Box 2008 Subiaco WA 6904 Australia

Federally-Recognized Tribes	
Healy Lake Village 600 University Avenue, Suite 100 Fairbanks Alaska 99709	Mentasta Traditional Council P.O. Box 6019, Mentasta, Alaska 99780
Native Village of Tanacross P.O. Box 76009 Tanacross, Alaska 99776	Native Village of Tetlin P.O. Box 797 Tok, Alaska 99780
Northway Village P.O. Box 516 Northway, Alaska 99764	Village of Dot Lake P.O. Box 70488 Fairbanks, Alaska 99701
Alaska Native Corporations	
Cook Inlet Region, Inc. P.O. Box 93330 Anchorage, Alaska 99509	Dot Lake Native Corporation 615 Bidwill Avenue, Suite 407 Fairbanks, Alaska 99701
Doyon, Ltd. 1 Doyon Place, Suite 300 Fairbanks, Alaska 99701	Fairbanks Native Association 3830 Cushman Street, Suite 100 Fairbanks, Alaska 99701
Mendas Cha-ag Native Corporation P.O. Box 74983 Fairbanks, Alaska 99707	Northway Natives, Inc. P.O. Box 476 Northway, Alaska 99764
Tanacross, Inc. P.O. Box 76029 Tanacross, Alaska 99776	Tanana Chiefs Conference 122 First Avenue Fairbanks, Alaska 99701
Tetlin Native Corporation P.O. Box 657 Tok, Alaska 99780	Tok Native Association P.O. Box 372 Tok, Alaska 99780

Government to Government Correspondence

Government-to-Government Correspondence List	
Federally-Recognized Tribes	
Healy Lake Village 600 University Avenue, Suite 100 Fairbanks Alaska 99709	Mentasta Traditional Council P.O. Box 6019, Mentasta, Alaska 99780
Native Village of Tanacross P.O. Box 76009 Tanacross, Alaska 99776	Native Village of Tetlin P.O. Box 797 Tok, Alaska 99780
Northway Village P.O. Box 516 Northway, Alaska 99764	Village of Dot Lake P.O. Box 70488 Fairbanks, Alaska 99701
Alaska Native Corporations	
Cook Inlet Region, Inc. P.O. Box 93330 Anchorage, Alaska 99509	Dot Lake Native Corporation 615 Bidwill Avenue, Suite 407 Fairbanks, Alaska 99701
Doyon, Ltd. 1 Doyon Place, Suite 300 Fairbanks, Alaska 99701	Fairbanks Native Association 3830 Cushman Street, Suite 100 Fairbanks, Alaska 99701
Mendas Cha-ag Native Corporation P.O. Box 74983 Fairbanks, Alaska 99707	Northway Natives, Inc. P.O. Box 476 Northway, Alaska 99764
Tanacross, Inc. P.O. Box 76029 Tanacross, Alaska 99776	Tanana Chiefs Conference 122 First Avenue Fairbanks, Alaska 99701
Tetlin Native Corporation P.O. Box 657 Tok, Alaska 99780	Tok Native Association P.O. Box 372 Tok, Alaska 99780

DEPARTMENT OF THE AIR FORCE
354TH FIGHTER WING (PACAF)
EIELSON AIR FORCE BASE, AK

25 September 2023

Colonel Paul P. Townsend
Commander
354th Fighter Wing
354 Broadway Street Unit 19A
Eielson AFB AK 99702

Tracy Charles-Smith
President
Village of Dot Lake
P.O. Box 70494
Fairbanks AK 99701

Dear President Charles-Smith

I am writing to invite your consultation on a proposed United States Air Force (USAF) Federal undertaking, in accordance with Section 161 of Public Law 108-199, Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments;* and Department of Defense Instruction (DoDI) 4710.02, *DoD Interactions with Federally Recognized Tribes*. The USAF is proposing to construct radar simulator infrastructure in the Joint Pacific Alaska Range Complex (JPARC) near Eielson Air Force Base (AFB), Alaska. The purpose of this Undertaking is to modernize radar threat system training. Radar threat simulators are used by the Air Force to represent adversary nation systems however, the current radar simulators are out-of-date and are located too close together to provide realistic or adequate training. The new proposed radar technology has extended range capabilities and must be operated at more distant locations than the current radar sites within United States Army Garrison Alaska's Yukon Training Area. The radar simulators which have been selected to modernize training and represent current threats are mobile trailer-mounted radar systems that require road access and electrical power to operate. The USAF proposes to construct nine radar simulator sites along an approximately 360-mile-long by 100-mile-wide corridor, roughly bisected by the Richardson Highway (Attachment 1).

The USAF is preparing an Environmental Assessment under the National Environmental Policy Act (NEPA) to evaluate potential environmental impacts associated with the proposed radar simulator site construction. Additionally, efforts to identify potential historic properties with the proposed site locations in accordance with Section 106 of the National Historic Preservation Act (NHPA) have begun. In accordance with NEPA, NHPA, Executive Order 13175, DoDI 4710.02, Department of Air Force Instruction 90-2002, and Air Force Manual 32-7003, the purpose of this letter is to engage with Tribal governments as the United States Air Force formulates this undertaking and formally offer government-to-government consultation.

As the Eielson AFB Installation Commander, I am offering to discuss the proposed construction of radar simulator infrastructure at these nine locations in detail with you, and

would like to hear from you regarding any comments, concerns, and suggestions you may have. This includes any concerns regarding actions associated with the proposed undertaking that may affect Protected Tribal Rights or Resources. If you determine that the proposed radar simulator site construction affects Protected Tribal Rights or Resources and wish to discuss or formally consult on this, we would appreciate your response within 30 days of receiving this consultation request; however, a lack of response does not preclude your ability to consult or request government-to-government consultation on this project at any time.

If you have any questions, please contact Captain Sarah Larson, JPARC Program Manager, by phone at 907-377-3023 or email at sarah.larson.7@us.af.mil. Thank you in advance for your assistance in this effort.

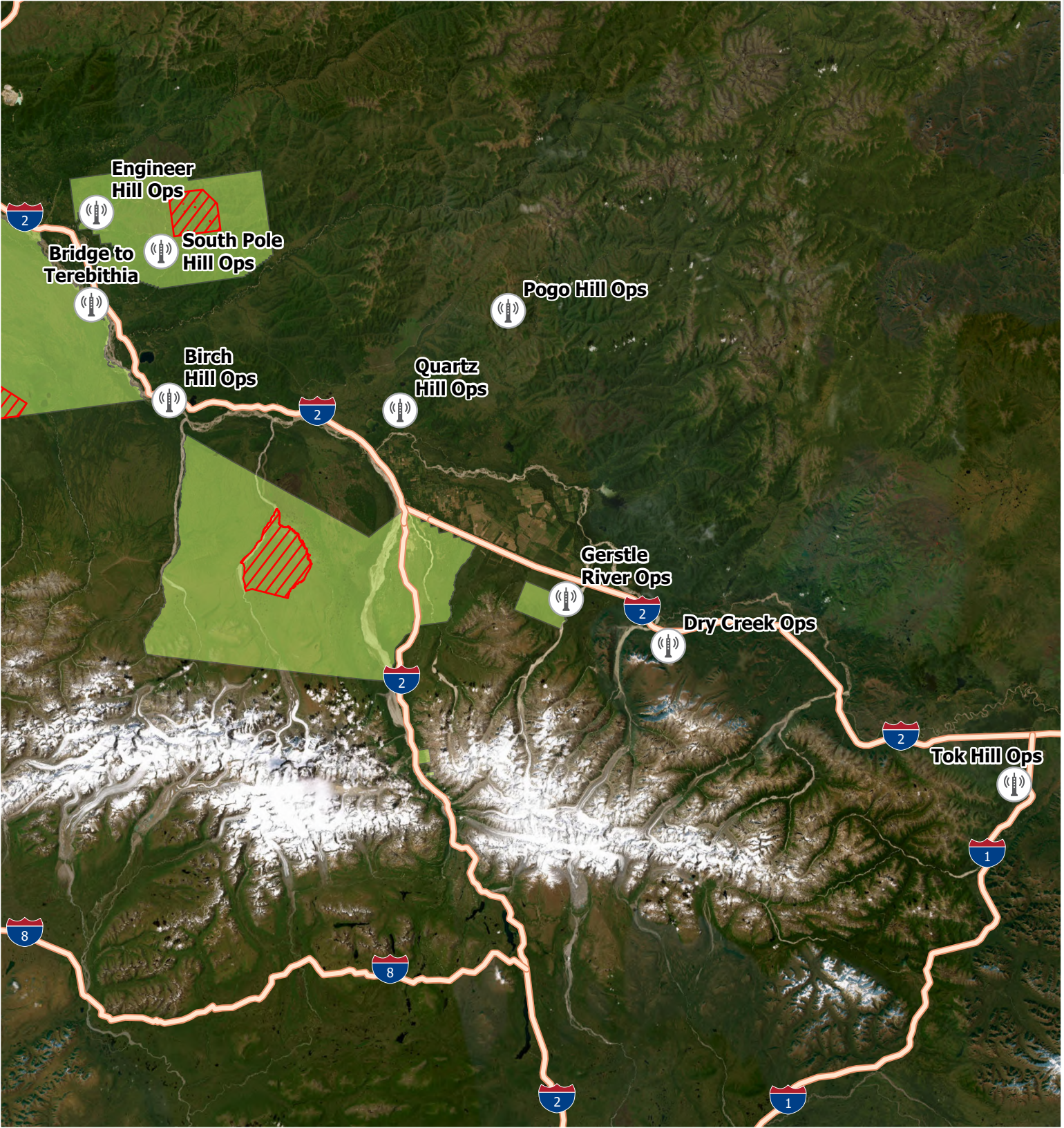
Sincerely

PAUL P. TOWNSEND, Colonel, USAF
Commander

1 Attachment:
1. Figure of Proposed Radar Simulation Site Locations, 11 Sep 23

354th Range Squadron (RANS)
Radar Operation Sites
Environmental Assessment

Alternative 1:
Develop Radar Operating Sites
on Mixed-Ownership Lands

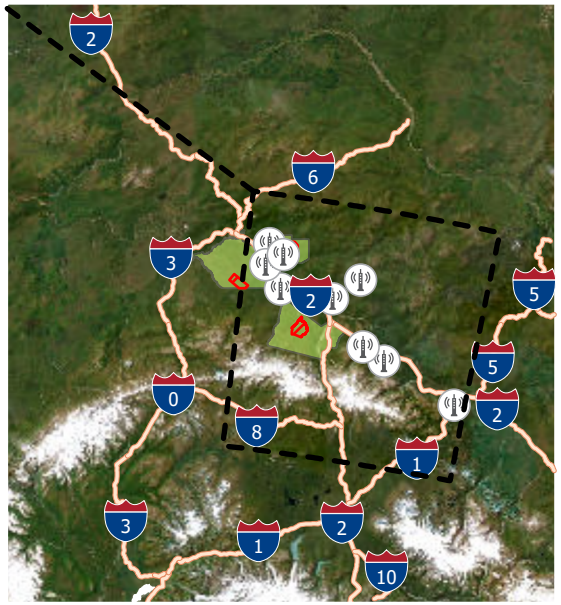


Legend

- Radar Operation Sites
- Impact Areas
- Training Areas
- Major Roads

N

0 10 20 40 Miles



Data Projection:
Universal Transverse Mercator
Zone 6N, Datum: WGS 1984
Magnetic Declination 16.37° E
+/- 0°52 changing by 0.30° W per year

National Historic Preservation Act
Section 106 Correspondence

National Historic Preservation Act of 1966, Section 106 Correspondence List	
State Agencies	
Alaska State Historic Preservation Office Office of History and Archaeology 550 West 7th Avenue, Suite 1310 Anchorage, Alaska 99501	
Local Agencies	
Fairbanks North Star Borough Historic Preservation Commission P.O. Box 71267 Fairbanks, Alaska 99707	Tanana-Yukon Historical Society P.O. Box 71336 Fairbanks, Alaska 99707
Federally-Recognized Tribes	
Healy Lake Village 600 University Avenue, Suite 100 Fairbanks Alaska 99709	Mentasta Traditional Council P.O. Box 6019, Mentasta, Alaska 99780
Native Village of Tanacross P.O. Box 76009 Tanacross, Alaska 99776	Native Village of Tetlin P.O. Box 797 Tok, Alaska 99780
Northway Village P.O. Box 516 Northway, Alaska 99764	Village of Dot Lake P.O. Box 70488 Fairbanks, Alaska 99701
Alaska Native Corporations	
Cook Inlet Region, Inc. P.O. Box 93330 Anchorage, Alaska 99509	Dot Lake Native Corporation 615 Bidwill Avenue, Suite 407 Fairbanks, Alaska 99701
Doyon, Ltd. 1 Doyon Place, Suite 300 Fairbanks, Alaska 99701	Fairbanks Native Association 3830 Cushman Street, Suite 100 Fairbanks, Alaska 99701
Mendas Cha-ag Native Corporation P.O. Box 74983 Fairbanks, Alaska 99707	Northway Natives, Inc. P.O. Box 476 Northway, Alaska 99764
Tanacross, Inc. P.O. Box 76029 Tanacross, Alaska 99776	Tanana Chiefs Conference 122 First Avenue Fairbanks, Alaska 99701
Tetlin Native Corporation P.O. Box 657 Tok, Alaska 99780	Tok Native Association P.O. Box 372 Tok, Alaska 99780

DEPARTMENT OF THE AIR FORCE
354TH FIGHTER WING (PACAF)
EIELSON AIR FORCE BASE, AK

28 November 2023

Ms. Brooks A Lawler
Cultural Resources Manager
354th CES/CEIE
2310 Central Avenue, Suite 100
Eielson AFB, AK 99702

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

Dear Ms. Bittner

The United States Air Force (Air Force), 354th Range, Eielson Air Force Base (AFB) is proposing to construct radar simulator infrastructure in the Joint Pacific Alaska Range Complex (JPARC) at multiple locations in the vicinity of Eielson AFB, Alaska. To take into account various environmental concerns, the Air Force is engaging early with the appropriate resource and regulatory agencies as it formulates the undertaking. The Air Force is also preparing an Environmental Assessment (EA) under the National Environmental Policy Act to evaluate potential environmental impacts associated with the proposed 354th Range Squadron Radar Operations Sites. In accordance with Section 306108 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the Air Force, Eielson AFB, is advising you of a proposed undertaking that has the potential to affect historic properties.

Description of Proposed Undertaking

The proposed undertaking consists of establishing radar operations (ops) sites at nine locations across the JPARC. The mission of the 354th Fighter Wing at Eilson AFB is to provide combat-ready airpower, advanced integration training, and a strategic Arctic basing option. Current JPARC threat radar systems represent adversary nation systems that are 30 to 40 years old and limited to locations within the United States Army Garrison Alaska's Yukon Training Area (YTA), as such these systems do not provide adequate or realistic training for the current threat landscape. The 354th Range Squadron proposes to modernize training with mobile trailer-mounted radar systems with extended range capabilities to support the Eielson AFB mission. The new proposed radar technology must be operated at more distant locations than the current radar sites within YTA to maximize training effectiveness and mission readiness.

The proposed radar ops sites will be located within a 360-mile long by 100-mile wide corridor roughly bisected by the Richardson and Alaska Highways in interior Alaska. Four of the proposed site locations are on State of Alaska (SOA) lands managed by the Department of Natural Resources, three locations are on lands managed by the U.S. Army Garrison Alaska, one

location is on lands managed by the Air Force, and one location is on Fairbanks North Star Borough (FNSB) lands. Each site will utilize existing infrastructure to the extent it will support the project, constructed single-lane gravel access roads will be 12-foot (ft) wide, electrical alignments will be cleared 30-ft wide and utilize the same corridor as the access roads where possible, and the 8-ft x 33-ft trailer-mounted radar system will be placed on a constructed gravel pad.

Area of Potential Effect

The proposed undertaking consists of nine discontinuous Areas of Potential Effect (APEs; Attachment 1 - 10). The APEs are comprised of new access routes, new powerline routes, and the area to be cleared of vegetation around where pads to support the radar will be installed (Table 1). Buffers 100-ft wide were included on either side of the access and powerline route centerlines. The APEs do not include existing commercial quarries from which material will be obtained to improve the new access routes, or existing well-maintained road infrastructure that will not be altered by the undertaking.

Table 1. Locations associated with the proposed undertaking.

Radar Ops Site	APE Acreage	Landowner	References
Bridge to Terabithia	22	U.S. Army, Fort Wainwright	CEMML 2023
Gerstle River	58	U.S. Army, Fort Wainwright	CEMML 2023
South Pole Hill	30	U.S. Army, Fort Wainwright	USAG et al. 2021
Engineer Hill	88	U.S. Air Force, Eielson AFB	CRC 2023, ES 2018, NLUR 1996
Birch Hill	53	Fairbanks North Star Borough	CRC 2023
Dry Creek	78	State of Alaska	CRC 2023
Pogo Hill	62	State of Alaska	CRC 2023
Quartz Hill	168	State of Alaska	CRC 2023
Tok Hill	253	State of Alaska	CRC 2023

Bridge to Terabithia Radar Ops

The proposed Bridge to Terabithia Radar Ops site is located in the eastern portion of Tanana Flats Training Area managed by the U.S. Army Garrison, Alaska (USAG Alaska), southwest of the Richardson Highway. A 250-ft access road would be constructed to access the site. Approximately 14 acres of vegetation would be cleared, and salvaged timber would be temporarily stockpiled within the cleared area. A 400-ft x 400-ft gravel pad would be constructed to support the radar system, and electricity would be provided by a new electrical feeder and 2.1 miles of new aerial powerline along the new and existing access routes. The Area of Potential Effect (APE) is approximately 22 acres (Attachment 2).

Gerstle River Radar Ops

The proposed Gerstle River Radar Ops site is located in the northeastern corner the Gerstle Training Area managed by USAG Alaska, south of the Alaska Highway. A 0.2-mile long

road would be constructed to access the site from the existing Tower Road. Approximately 20.5 acres of vegetation would be cleared, with salvaged timber temporarily stockpiled adjacent to the new access road. A 400-ft x 400-ft gravel pad would be constructed to support the radar system. Electricity would be provided by a new electrical feeder, about one mile of new aerial powerline, and 0.2 miles of new underground powerline along the access route. The APE is approximately 58 acres of flat terrain on an old terrace of the Gerstle River (Attachment 3).

South Pole Hill Radar Ops

The proposed South Pole Hill Radar Ops site is located in the Yukon Training Area managed by USAG Alaska, east of the Richardson Highway. A 0.5-mile long access road would be constructed along an existing trail. Approximately 17.5 acres of vegetation would be cleared, with salvageable timber temporarily stockpiled along the new access route. Three 100-ft x 100-ft gravel pads will be constructed for the radar system. Electricity would be provided by a new electrical feeder and 0.5 miles of a new aerial powerline along the access road. The APE is approximately 30 acres (Attachment 4)

Engineer Hill Radar Ops

The proposed Engineer Hill Radar Ops site is located on Eielson AFB, east of the Richardson Highway, near the northern edge of Air Force lands. An approximately 2-mile long access road would be constructed and about 26 acres of vetegation would be cleared. The salvageable timber would be temporarily stockpiled near the terminus of the new access road. Three gravel pads (two 40-ft x 100-ft pads and one 200-ft x 200-ft pad) would be constructed to support the radar system. Electricity would be provided by a new electrical feeder and approximately 1 mile of an aerial powerline along the access route. The APE is approximately 88 acres (Attachment 5).

Birch Hill Radar Ops

The proposed Birch Hill Radar Ops site is located southwest of the Richardson Highway and east of Delta Junction on FNSB lands. A new 0.75-mile long road would be constructed to access the site. Approximately 29 acres of vegetation would be cleared, and salvageable timber would be temporarily stockpiled within the cleared area. Three 100-ft x 100-ft gravel would be constructed to support the radar system. Electricity would be provided by a new electrical feeder and 0.5 miles of new aerial powerline. The APE is approximately 53 acres (Attachment 6).

Dry Creek Radar Ops

The proposed Dry Creek Radar Ops site is located south of the Alaska Highway near the Dry Creek community on SOA lands. A 3-mile long road would be constructed to access the site. Approximately 5 acres of vegetation would be cleared, and salvageable timber would be temporarily stockpiled within the cleared area. Three gravel pads (two 40-ft x 100-ft pads and one 200-ft x 200-ft pad) would be constructed to support the radar system. Additionally, a 10,000 gallon aboveground storage tank (AST) and diesel generator would be installed to provided electricity to the radar system. The APE is approximately 78 acres (see Attachment 7).

Pogo Hill Radar Ops

The proposed Pogo Hill Radar Ops site is located east of the Richardson Highway and Pogo Mine Road on SOA lands. A 1.4-mile long access road would be constructed along an existing unimproved road alignment. Up to 14 acres of vegetation would be cleared at the site; salvageable timber is not anticipated. One 150-ft x 150-ft gravel pad would be constructed to support the radar system. Electrictiy would be provided by a new electrical feeder and 1.6 miles of new aerial powerline. The APE is approximately 62 acres (see Attachment 8).

Quartz Hill Radar Ops

The proposed Quartz Hill Radar Ops site is located east of the Richardson Highway and north of Big Delta on SOA lands. A 6.3-mile long access road would be constructed primarily along the unimproved Quartz Lake Extension Forest Road. Approximately 17 acres of vegetation would be cleared, with salvageable timber temporarily stockpiled within the cleared area. One 150-ft x 150-ft gravel pad would be constructed to support the radar system. Additionally, a 5,000-gallon AST and diesel generator would be installed on site to supply electricity. The APE is approximately 168 acres (see Attachment 9).

Tok Hill Radar Ops

The proposed Tok Hill Radar Ops site is west of Highway A1, Tok Cutoff, and south of Tok on SOA lands. A 7.5-mile long road would be constructed along an existing trail to access the site. Approximately 10 acres of vegetation would be cleared, with salvageable timber temporarily stockpiled within the cleared area. Three gravel pads (two 40-ft x 100-ft pads and one 200-ft x 200-ft pad) would be constructed to support the radar system. Electricity would be provided by a new electrical feeder and 3.1 miles of new aerial powerline. The APE is approximately 253 acres (see Attachment 10).

Cultural Resources

Previous Cultural Resources Investigations

The proposed South Pole Hill Radar Ops site is in the Yukon Training Area, within an area previously surveyed by the USAG Fort Wainwright. Consultation with Fort Wainwright archaeologists indicates that no additional cultural resources survey is needed for the proposed location and that no cultural resources are known within the APE (Pers. Comm., Dr. Julie Esdale, November 16, 2022; CEMML 2023). The development of military infrastructure at this location is addressed under a Programmatic Agreement regarding the operation, maintenance, and development of Army-managed lands (USAG et al. 2021).

In 1995, Northern Land Use Research, Inc. (NLUR) was contracted to inventory and evaluate non-military cultural resources on Eielson AFB to satisfy NHPA Section 110 requirements. Their survey design was based on a predictive model and included pedestrian survey of 5,459.72 acres. The proposed Engineer Hill Radar Ops site is located within one of

NLUR's identified high-probability areas for non-military cultural resources. While the purpose of the 1995 survey was not to identify military cultural resources, NLUR did report "recent use sites" in an appendix. Within the Engineer Hill Radar Ops site APE, NLUR identified Recent Use Site 4A, which G. Von Reuden told them was known locally as the "Trapper's Cabin." They stated that it was "unclear as to whether this site is military related, [but] based upon the c-ration cans and MRE packets this area has been used by military personnel for recreational purposes" (NLUR 1996:I-11). Recent Use Site 6A was also identified within the APE. This site was comprised of 17 features which NLUR interpreted as foxholes. Each of these foxholes were measured; however, as the site was of "recent military origin, no site map was drawn" (NLUR 1996:I-13). The Engineer Hill APE was resurveyed by Cultural Resources Consultants, LLC (CRC) in 2023 as best practice to update the 1996 survey results.

In 2014 and 2015, CRC was contracted to survey the entirety of the Pogo Transmission Line corridor, part of which is adjacent to the proposed Pogo Hill Radar Ops site. CRC did not identify any cultural resources along the section of powerline in the high alpine area near the Pogo Hill APE (CRC 2016).

Cultural Resources Survey Results

Prior to this effort, archaeological investigations had only been conducted at one of the nine proposed radar ops sites. No known archaeological investigations had ever been conducted at seven of the proposed locations, and the 1996 archaeological investigation at the proposed radar ops site on Engineer Hill had been geared towards non-military cultural resource identification and evaluation. In order to identify potential historic properties in the APEs in accordance with 36 CFR § 800.4(b), cultural resources surveys were conducted at eight of the proposed radar ops sites between June and September of 2023. Two locations (Bridge to Terabithia, Gerstle River) were surveyed by Julie Esdale (PhD), Robert Nethken (BS), and Whitney McLaren (BA) of the Center for Environmental Management of Military Lands at Colorado State University (CEMML 2023). Six locations (Engineer Hill, Birch Hill, Dry Creek, Pogo Hill, Quartz Hill, Tok Hill) were surveyed by Aubrey Morrison (MA) and Haley McCaig (BA) of CRC. The surveys conducted by CRC on SOA lands were carried out under State Cultural Resources Investigation Permit 2023-71 (CRC 2023). Both CEMML and CRC documented their cultural resources surveys with mapping-grade GPS units.

Bridge to Terabithia Radar Ops

The proposed Bridge to Terabithia Radar Ops site is located on flat terrain in the Tanana River floodplain. Archaeologists investigated the APE on July 3, 2023, conducting a pedestrian survey and excavating two round shovel tests. Neither shovel test yielded cultural material, and no archaeological sites or historic structures were discovered during the survey (CEMML 2023).

Gerstle River Radar Ops

The proposed Gerstle River Radar Ops site is located on flat terrain on an old terrace of the Gerstle River. Archaeologists investigated the APE on June 14, 2023, conducting a pedestrian survey and excavating two round shovel tests. Neither shovel test yielded cultural

material. Two linear push-piles of unknown date were observed: one push-pile ran northeast-southwest and parallel to an anthropogenic clearing, while the second push-pile paralleled an old dirt trail running northwest-southeast. No archaeological sites or historic structures were discovered during the survey (CEMML 2023).

Engineer Hill Radar Ops

The proposed Engineer Hill Radar Ops site is located on a hill at an elevation just over 1,000-ft. The area is roughly 900-ft higher than the surrounding valley floor, and is about 1 mile northeast of Lily Lake. Archaeologists conducted a pedestrian survey of the APE in September 2023. Eighteen shovel tests were excavated in the APE. Shovel tests consisted of square excavations measuring 50 x 50 centimeters (cm); all excavated sediments were screened using 1/8-inch screen, except for certain field conditions (e.g., saturated and sticky matrices) where 1/4-inch screen was used. The only cultural material identified in the shovel tests was an extremely friable foil-like substance, likely from a cigarette or food package, recovered from a shovel test excavated in a defensive fighting position (DFP) feature (CRC 2023).

Ground-surface disturbances identified in the APE included clearing and dozing for roads and other purposes, explosives detonation craters, and DFP features. A total of 36 DFP features were documented within the APE (CRC 2023). These DFP features appear to be modern; it is likely that they are associated with the 17 "foxholes" identified as Recent Use Site 6A in 1995 (NLUR 1996:I-13). CRC also relocated the "Recent Use Site 4A" cabin complex identified in 1995 (NLUR 1996:66, I-11; CRC 2023). This cabin complex was found within the APE, north of an existing access road to the top of Engineer Hill. It consists of a multi-part cabin, an outhouse, and remnants of a small metal mobile radio shelter. Examination of historical aerial imagery revealed that the cabin complex was not built before 1974. CRC also identified a small can dump comprised of three knife-opened coffee cans, a Welch's grape juice can, and part of a wooden crate was identified southeast of the proposed radar pad. The coffee cans were too degraded to determine the brand or manufacture date, but the Welch's can likely dates to the 1960s (CRC 2023).

Birch Hill Radar Ops

The proposed Birch Hill Radar Ops site is located on a hill approximately 0.5 miles north of the Tanana River, roughly 800 ft above the surrounding valley floor. Archaeologists conducted a pedestrian survey of the APE in September 2023, permissions provided by Bryan Sehmel, Land Officer, FNSB. Multiple 50 x 50 cm shovel tests were excavated and screened; however, no cultural materials were recovered. No archaeological or historical sites were discovered during the survey (CRC 2023).

Dry Creek Radar Ops

The proposed Dry Creek Radar Ops site is located near the top of a hill at approximately 2,600-ft elevation. Archaeologists conducted a pedestrian survey of the APE in September 2023 under SCRIP# 2023-71. Multiple 50 x 50 cm shovel tests were excavated and screened;

however, no cultural materials were recovered. No archaeological o rhistorical sites were discovered during the survey (CRC 2023).

Pogo Hill Radar Ops

The proposed Pogo Hill Radar Ops site is located on a large, 4,000 ft elevation landform. Archaeologists conducted a pedestrian survey of the APE in September 2023 under SCRIP# 2023-71. Pogo Hill currently supports modern communication equipment associated with the nearby Pogo Mine, and the rocky ground surface shows evidence of large tracked heavy machinery being driven around the area. Due to the lack of sedimentation, only limited shovel testing was conducted. Erosian faces and rock outcroppings were closely examined for evidence of cultural resources. No cultural materials were identified, and no archaeological or historical sites were discovered during the survey (CRC 2023).

Quartz Hill Radar Ops

The proposed Quartz Hill Radar Ops site is located on a hill at an elevation of approximately 2,000 ft. The APE is about 3.75 miles northeast of Quartz Lake and 0.75 miles northwest of Indian Creek. Archaeologists conducted a pedestrian survey of the APE in September 2023 under SCRIP# 2023-71. Multiple 50 x 50-cm shovel tests were excavated and screened; however, no cultural materials were recovered. Ground disturbance in the APE included sawn tree stumps and a two-track access road. No archaeological or historical sites were discovered during the survey (CRC 2023).

Tok Hill Radar Ops

The proposed Tok Hill Radar Ops site is located on a heavily-disturbed hill approximately 6 miles northwest of the Tok River. Archaeologists conducted a pedestrian survey of the APE in September 2023 under SCRIP# 2023-71. The proposed radar pad locations are in a parking lot-style area strewn with modern hunting debris, including fire pits and a tipped-over outhouse. Modern marten traps and four-wheeler trails noted within the APE.

Multiple 50 x 50-cm shovel tests were excavated and screened; however, no subsurface cultural materials were recovered. Several surface isolates were documented throughout the APE, including 1960s-era pull tab soda cans, six culturally-modified trees consisting of bark-stripped birch ranging from 15–24 cm in diameter at breast height (indicating less than 50 years of growth), a small scatter of car parts and oil cans which could not be definitively dated, and a World War II-era wooden crate containing several blocks of trinitrotoluene (TNT). The TNT was packaged in cans labeled: “HIGH EXPLOSIVE / TNT / ½ POUND NET / CORPS OF ENGINEERS / DANGEROUS” (CRC 2023). Due to the hazard the crate of TNT represented to public safety, it was reported to the State of Alaska Emergency Operations Center, the U.S. Army Corps of Engineers Emergency Operations Department, the Alaska State Troopers, and Eielson AFB. At the request of the Alaska State Troopers, and in accordane with 40 CFR § 264.1(g)(8)(i)(D), the Eielson AFB Explosive Ordinance Disposal (EOD) Team responded to the discovery and conducted a controlled demolition of the TNT on site.

In addition to the scattered historical surface isolates, approximately 3 miles of the proposed access road was found to follow a portion of the original Tok Cutoff Highway. The Tok Cutoff Highway was built by the U.S. Army Corps of Engineers in 1943 during World War II. Historical aerial imagery shows a later realignment of the Tok Cutoff Highway bypassed this original section of the road, leaving it relatively intact (CRC 2023).

Based on the Alaska Heritage Resources Survey (AHRS) Mapper, the proposed powerline route was expected to cross the previously-identified Moose/Caribou Fence (TNX-00118); however, archaeologists were unable to relocate it within the APE. The proposed powerline will intersect the historical Eagle Trail, which appears to continued to be frequently used by both vehicle and four-wheeler traffic (Attachment 10). The Eagle Trail preceeded the construction of the Tok Cutoff Highway, and historically ran between the communities of Valdez and Eagle, Alaska. The historical trail is more than 400 miles long, and only 200 feet of the route — where the aerial powerline crosses the trail plus a 100-ft buffer on either side of it — lies within the APE (CRC 2023).

Evaluation of Eligibility for the National Register

The surveys conducted in support of the proposed undertaking identified one previously-unrecorded cultural resource older than fifty years: the Tok Cutoff Highway Segment (AHRS No. *forthcoming*). The Tok Cutoff Highway Segment was identified within the Tok Hill Radar Ops site APE. CRC provided a recommendation on the eligibility of the property for listing in the National Register of Historic Places (NRHP) in their survey report (CRC 2023), on which the below analysis is based. CRC (2023) has recommended that the Eagle Trail be evaluated as a whole linear feature; however, less than 0.01% of Eagle Trail lies within the Tok Hill Radar Ops site APE, and it is beyond the scope and authority of this undertaking to conduct additional surveys outside of the APEs.

Tok Cutoff Highway Segment

Historic Context and Period of Significance

An appropriate historic context within which to evaluate the significance of the Tok Cutoff Highway Segment was produced by the Alaska Department of Transportation and Public Facilities in 2014 (Mead & Hunt and CRC 2014). The modern Tok Cutoff is considered part of a Glenn Highway and is designated as interstate highway A-1, beginning at Gulkana and ending at Tok, Alaska. The southern half of the Tok Cutoff includes a branch off the Richardson Highway from Gulkana to Nabesna, Alaska which was originally constructed in the early 1930s (Mead & Hunt and CRC 2014:65). By 1934, half of the 107-mile road was improved for automobile traffic. It was not until World War II, during the construction of the Alaska Highway, that the 97th Regiment of the U.S Army Corps of Engineers, a segregated Black unit, constructed a road from Slana to the Tanana River, completing the Tok Cutoff Highway in 1943 (Mead & Hunt and CRC 2014:186). The Alaska Road Commission reconstructed and paved the Tok Cutoff Highway in the early 1950s to provide year-long access to the Alaska Highway for communities and military bases in Valdez, Fairbanks, and Anchorage (Mead & Hunt and CRC 2014:88). The

State of Alaska Department of Highways repaired the road after the 1964 earthquake (Mead & Hunt and CRC:107).

The Tok Cutoff Highway Segment surveyed in September 2023 comprises 3 miles of a 7-mile section of the original World War II-era highway that was bypassed during a later realignment of the Tok Cutoff, sometime before 1954. The period of significance for this segment of the highway is 1943–1945.

Application of National Register Criteria for Evaluation

The Alaska Department of Transportation and Public Facilities has produced a methodology for evaluating the National Register significance of historical Alaskan roads (Mead & Hunt 2014). They note that it is important to first consider the significance of the entire road, followed by an evaluation of the integrity of the segment of road that would be impacted by a proposed project (Mead & Hunt 2014:11). The segment of road that would be impacted by the proposed Tok Hill Radar Ops site is part of the northern half of the Tok Cutoff Highway, which was constructed by the military in 1943.

Criterion A: Association with events that have made a significant contribution to the broad patterns of history. To meet the significance requirements of Criterion A, an Alaskan road must have a "direct and important association with single events, a pattern of events, repeated activities, or historic trends" (Mead & Hunt 2014:12). A road significant for its association with transportation must also be associated with agriculture, community planning and development, entertainment/recreation/conservation, industry, military, and/or politics/government. A road is considered to be directly associated with military significance if it "established or improved access to a mission critical military facility" and/or "facilitated specific activities or strategic access deemed critical for national defense" (Mead & Hunt 2014:20).

The northern segment of the Tok Cutoff **is significant under Criterion A** for its direct association with World War II military transportation in Alaska. The Tok Cutoff Highway Segment was constructed by the U.S. Army and, in tandem with new and existing roads, established a direct overland route from the contiguous United States to mission-critical military installations in Alaska. Overland access to interior Alaska was considered important at the time for national defense.

Criterion B: Association with the lives of significant persons. To meet the significance requirements of Criterion B, an Alaskan road must "best exemplify a person's contributions to history; mere association with a road, such as involvement in design or construction, would not render a road significant under Criterion B" (Mead & Hunt 2014:12). The north Tok Cutoff Highway Segment **is <u>not</u> significant under Criterion B**. Although the 97th Regiment constructed the road, their completion of the Tok Cutoff was a side project and the unit's greatest contribution to history was the Alaska Highway.

Criterion C: Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represents a significant and

distinguishable entity whose components may lack individual distinction. To meet the significance requirement of Criterion C, an Alaskan road must "reflect design features or construction practices that were the result of uncommon, early, or specific contributions or advances in the application of engineering principles" (Mead & Hunt 2014:22). The Tok Cutoff Highway Segment **is <u>not</u> significant under Criterion C** because the road does not embody distinctive characteristics, represent the work of a master, or possess high artistic value.

Criterion D: Having yielded, or having the potential to yield, information important in prehistory or history. The Tok Cutoff Highway Segment is a dirt road with no unique physical characteristics or associated artifacts. It is unlikely to provide important information about the past and is therefore **<u>not</u> significant under Criterion D**.

Consideration of Integrity

According to Mead & Hunt (2014:27), "assessing integrity is usually focused more narrowly on the segment of road within the APE. In assessing historic integrity, a road or segment of road with significance needs to convey the essential physical features and be of a distance long enough to provide a sense of time and place and travel experience related to the period(s) of significance." The 3-mile section of the original Tok Cutoff Highway within the APE has a very narrow period of significance; the road served a critical purpose during World War II. By 1954, the modern alignment of the Tok Cutoff Highway had been constructed, completely bypassing the Tok Cutoff Highway Segment.

In the intervening years, the Tok Cutoff Highway Segment has been used recreationally for hunting and logging. The total bypassed segment is 7 miles long, but the 3-mile section within the APE is the most heavily-trafficked and modified. Based on descriptions of the original Tok Cutoff Highway constructed during World War II, the 3-mile section of the road within the APE has had culverts installed, pullouts constructed, and embankments bulldozed since its period of significance.

According to Mead & Hunt (2014:32), the most important aspects of integrity for a historical road that is significant under Criterion A are *location*, *design*, and *association*. The Tok Cutoff Highway Segment is within its original alignment and retains integrity of *location*. But the modern alterations to the road, including the pullouts, embankments, and culverts, have negatively affected its integrity of *design* and *association*, making it no longer expressive of its period of significance.

Eligibility for Listing in the National Register

For a property to qualify for the National Register "it must meet one of the National Register Criteria for Evaluation… *and* retain historic integrity of those features necessary to convey its significance" (NSP 1997:3). Although the Tok Cutoff Highway Segment meets the requirements of National Register Criterion A with its direct association with World War II military transportation in Alaska, it does not retain sufficient integrity to demonstrate its historic

significance. The Air Force has therefore determined that the Tok Cutoff Highway Segment is **not eligible for listing in the NRHP**.

Assessment of Effect

Prior to the surveys conducted in 2023, two cultural resources were known to be located within the proposed undertaking's APEs (AHRS 2023). Archaeological investigations in support of this undertaking have identified additional properties within the APEs (Table 2).

Table 2. Known cultural resources in the vicinity of the proposed undertaking.

AHRS No.	Site Name	National Register Status	In APE?
FAI-01766	Engineer Hill Munitions Area Historic District	*Pending (Eligible)*	No
TNX-00118	Moose/Caribou Fence	Unevaluated	**Yes**
XBD-00409	Richardson Highway	Unevaluated	No
XBD-00455	Shaw Creek Basin Archaeological District	**Eligible**	**Yes**
XMH-01164	Gerstle River Testing Site	Not Eligible	No
XMH-01473	Haines-Fairbanks Pipeline Corridor	Unevaluated	No
forthcoming	Tok Cutoff Highway Segment	*Pending (Not Eligible)*	**Yes**
forthcoming	Eagle Trail	Unevaluated	**Yes**

Both the Pogo Hill and Quartz Hill Radar Ops sites are within the boundaries of the Shaw Creek Basin Archaeological District (XBD-00455); however, no cultural resources associated with the Shaw Creek Basin Arcaheological District were identified during cultural resources surveys of their APEs.

The Moose/Caribou Fence (TNX-00118) is supposedly within the APE of the Tok Hill Radar Ops site; however, a pedestrian survey of the location was not able to relocate it.

Three miles of the 7-mile long Tok Cutoff Highway Segment is within the Tok Hill Radar Ops APE. The Air Force intends to use this section of the Tok Cutoff Highway Segment for access to the proposed Tok Hill Radar Ops site. The current dirt road is well-built and will likely require little improvements to support the Eielson AFB mission. Additionally, use of the road by military vehicles is keeping with its historic purpose as a military transportation route.

Approximately 200-ft of the more than 400-mile long Eagle Trail lie within the Tok Hill Radar Ops APE. The proposed new aerial powerline will cross over the trail; no physical disturbance to the trail or restriction of current traffic is anticipated.

Conclusion

Eielson AFB has reviewed existing information on historic properteis with the proposed undertaking's APEs and has made a reasonable and good faith effort to identify historic properties by conducting cultural resources surveys within the APEs. The Air Force has determined that the Tok Cutoff Highway Segment (AHRS No. *forthcoming*) is not eligible for

the National Register of Historic Places. There is one historic property within the undertaking's APEs: the Shaw Creek Basin Archaeological District (XBD-00455). However, Eielson AFB has reviewed the Criteria of Adverse Effect and have determined that none apply to the activities that would be carried out in this undertaking.

Purusant to 36 CFR § 800.5(b), the Air Force has determined that there would be no adverse effect to historic properties by the 354th Range Squadron Radar Operations Sites. Attached for your review are relevant figures supporting the Air Force's findings and determinations.

We request your comment and/or concurrence on both the determination that the Tok Cutoff Highway Segment is *not eligible* for the National Register and on the finding of *No Adverse Effect*. If we do not receive your comments and/or concurrence within the required 30 days we will assume concurrence and proceed with the undertaking as described.

Please contact Ms. Brooks Lawler, Cultural Resources Manager, by phone at 907-377-4253 or email at brooks.lawler@us.af.mil, if you have any questions.

Sincerely,

Brooks Ann Lawler

BROOKS A. LAWLER, GS-12, DAF
Cultural Resources Manager,
354th CES/CEIE

Attachments:
1. Figure 1: Overview of Proposed Radar Locations and Vicinity
2. Figure 2: Bridge to Terabithia Radar Ops APE
3. Figure 3: Gerstle River Radar Ops APE
4. Figure 4: South Pole Hill Radar Ops APE
5. Figure 5: Engineer Hill Radar Ops APE
6. Figure 6: Birch Hill Radar Ops APE
7. Figure 7: Dry Creek Radar Ops APE
8. Figure 8: Pogo Hill Radar Ops APE
9. Figure 9: Quartz Hill Radar Ops APE
10. Figure 10: Tok Hill Radar Ops APE

References

Alaska Heritage Resources Survey (AHRS)
2023. Alaska Heritage Resources Survey. Office of History and Archaeology, Alaska Department of Natural Resources.

Center for Environmental Management, Military Lands (CEMML)
2023. Archaeological Investigations of Proposed Air Force Radar Sites on USAG Alaska-Managed Lands. Prepared for Fort Wainwright, U.S. Army Garrison Alaska. Colorado State University. Final, August.

Cultural Resources Consultants, LLC (CRC)
2016. Cultural Resources Report for the Pogo Gold Mine Transmission Line Corridor Survey, 2014–2015. Report prepared for Sumitomo Metal.
2023. Cultural Resource Survey for 354th Range Squadron Radar Operation Sites, AKV402. Report prepared for AECOM and the U.S. Army Corps of Engineers. PreDraft, November.

Environmental Solutions, Inc. (ES)
2018. Cultural Resources Services Cold War Survey: Historic Building Inventory at Eielson Air Force Base, Alaska. Prepared for the General Services Administration and the Air Force Civil Engineer Center. Final, April.

Mead & Hunt and Cultural Resources Consultants, LLC (Mead & Hunt and CRC)
2014. Alaska Roads Historic Overview: Applied Historic Context of Alaska's Roads. Prepared for the Alaska Department of Transportation and Public Facilities. Final, February.

Mead & Hunt
2014. Alaska Roads: Methodology for Assessing National Register of Historic Places Eligibility. Prepared for the Alaska Department of Transportation and Public Facilities. Final, December.

National Park Service (NPS)
1997. How to Apply the National Register Criteria for Evaluation. National Register Bulletin No. 15. U.S. Department of the Interior. Washington, D.C.

Northern Land Use Research, Inc. (NLUR)
1996. Archaeological Survey and Assessment of Prehistoric Cultural Resources on Eielson Air Force Base, Alaska. Report prepared for the Shannon and Wilson, Inc. and the U.S. Army Corps of Engineers. Final, September.

U.S. Army Garrison Alaska, Alaska State Historic Preservation Officer, and the Advisory Council on Historic Preservation (USAG et al.)
2021. Programmatic Agreement among the United States Army Garrison Alaska, the Alaska State Historic Preservation Officer, and the Advisory Council on Historic Presevation regarding the Operation, Maintenance, and Development of Army-Managed Resources at Fort Wainwright, Fort Greely, Associated Training Areas and Other Properties, Alaska (AK-PA-2202). Executed December 29, 2021.

Engineer Hill

South Pole Hill

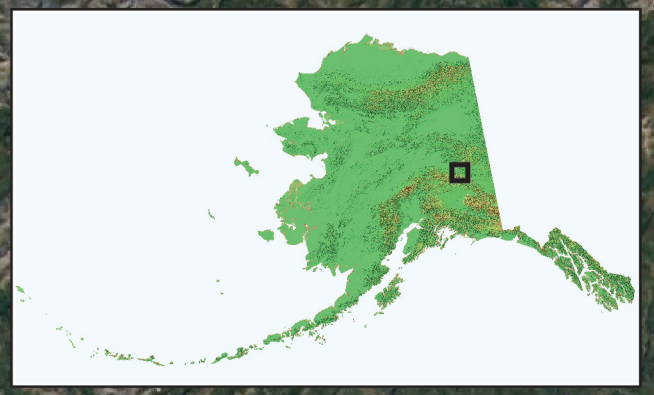
Richardson Highway

Bridge to Terabithia

Birch Hill

Pogo Hill

Quartz Hill



354th Range Squadron Radar Operation Sites

Radar Ops Sites

Highways

20 miles

Alaska Highway

Gerstle River

Dry Creek

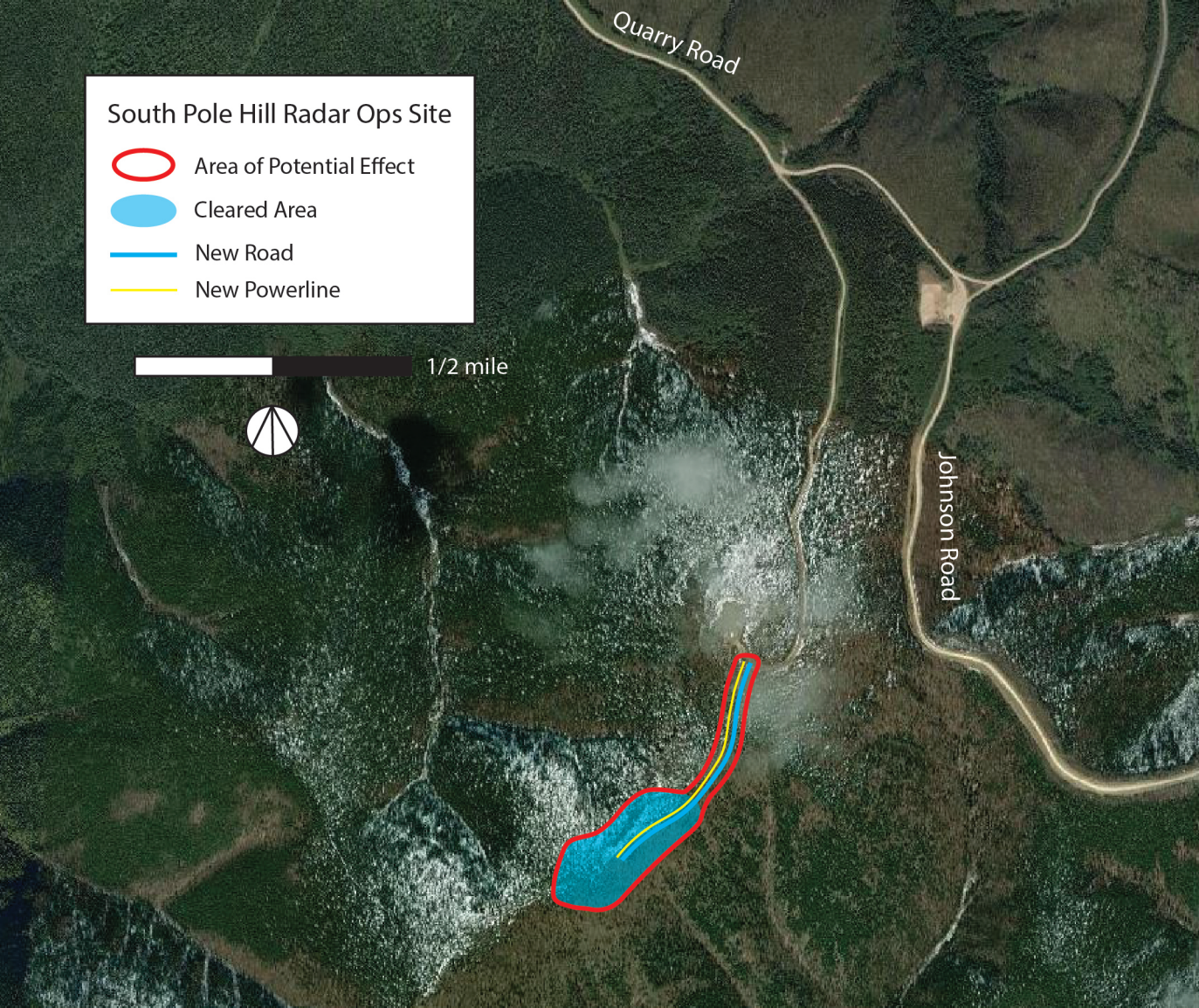
Tok Hill

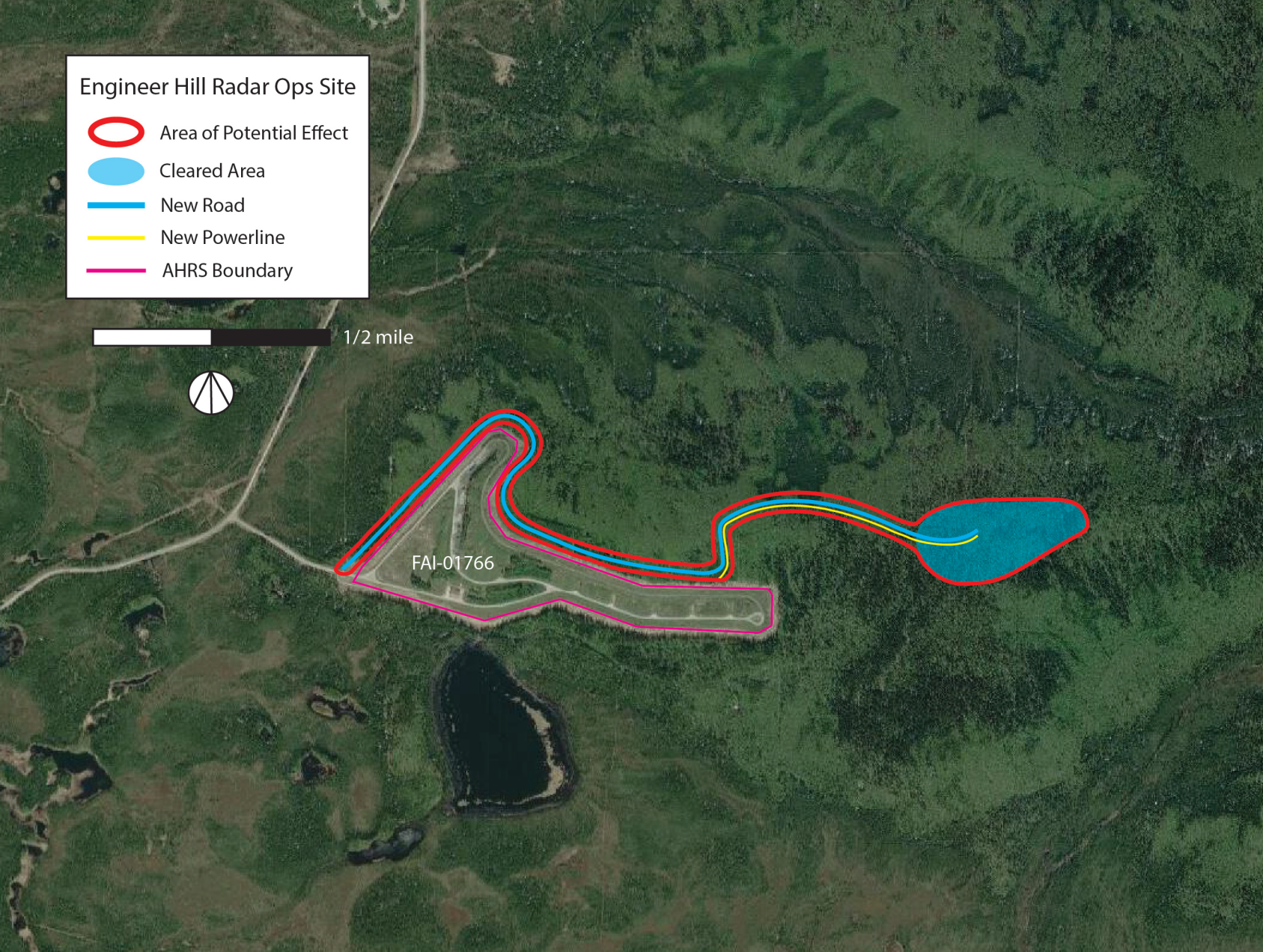
Tok Cut-Off Highway

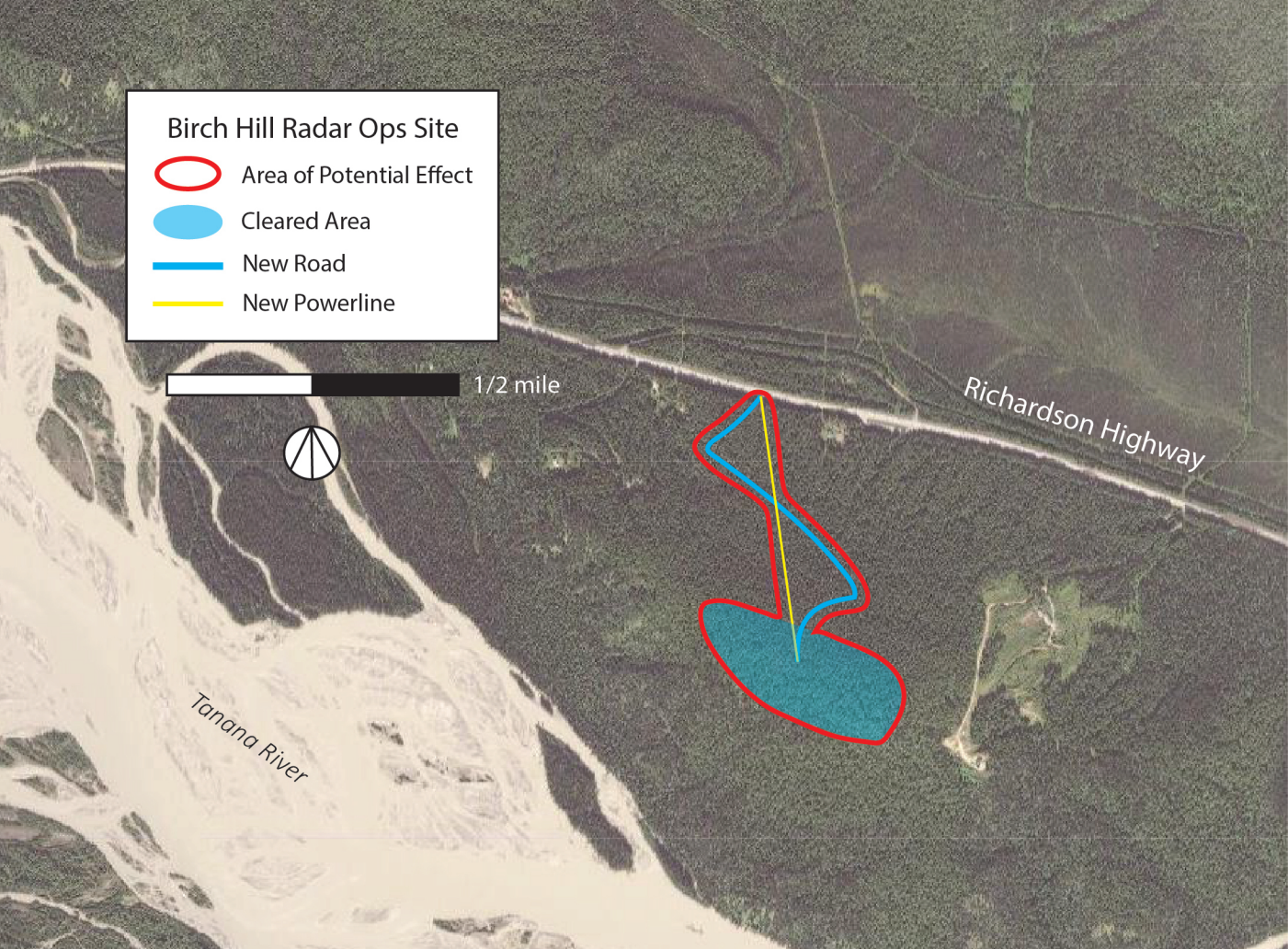
Image Landsat / Copernicus

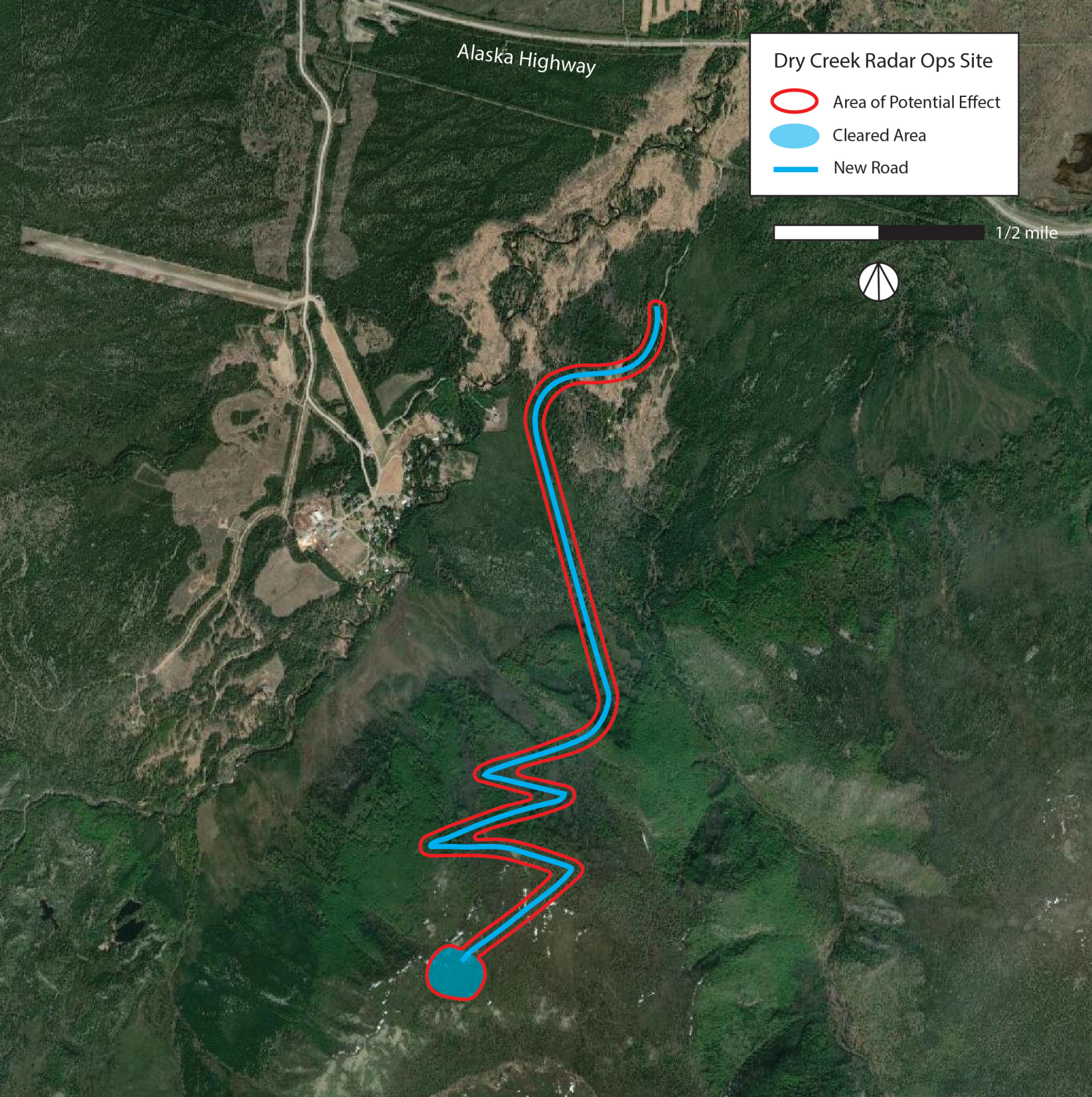

Bridge to Terabithia
Radar Ops Site
Area of Potential Effect
Cleared Area
New Road
New Powerline
1/2 mile
Richardson Highway

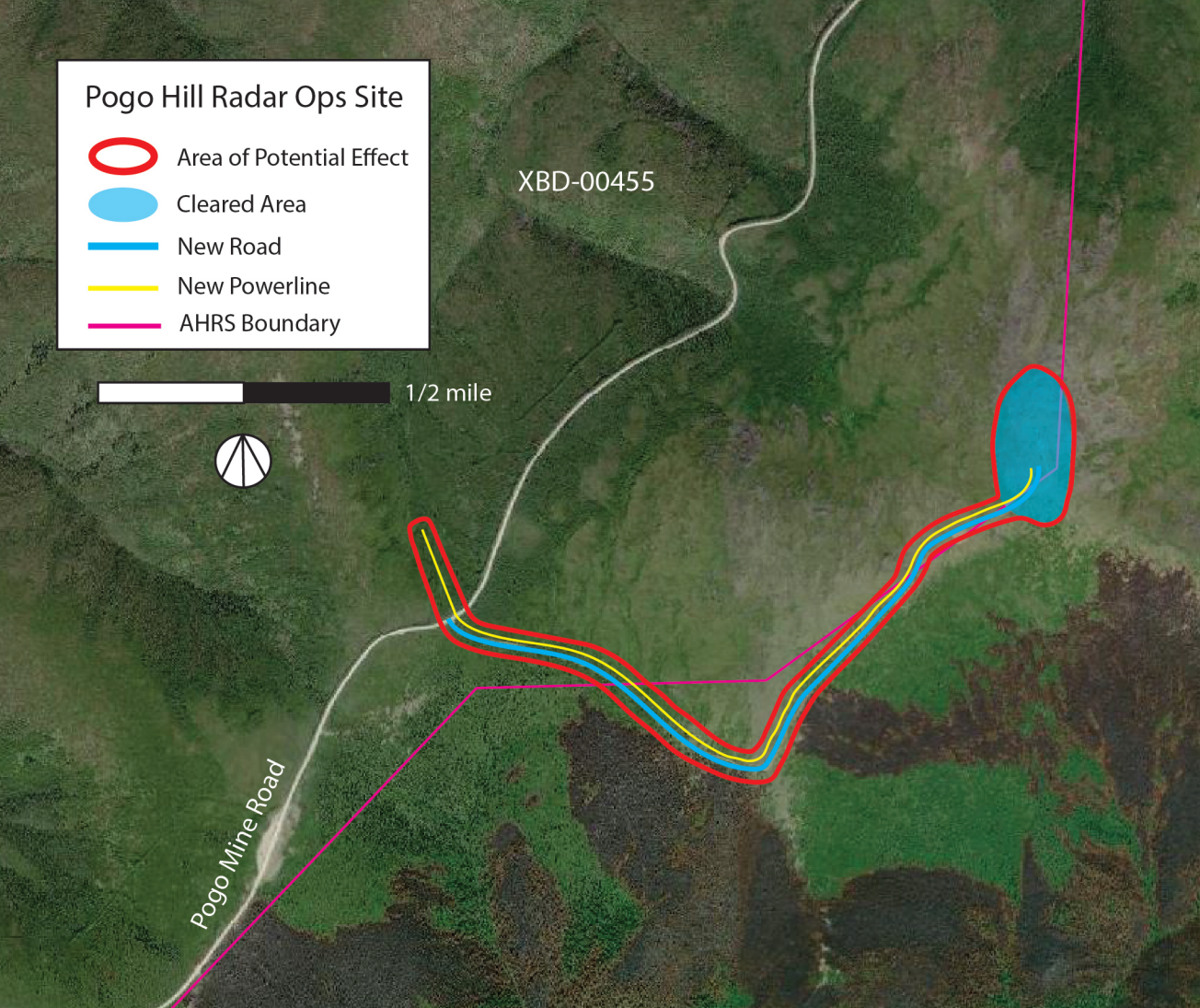

Gerstle River Radar Ops Site
Area of Potential Effect
Cleared Area
New Road
New Powerline
New Underground Powerline
1/2 mile
Tower Road
Gerstle River

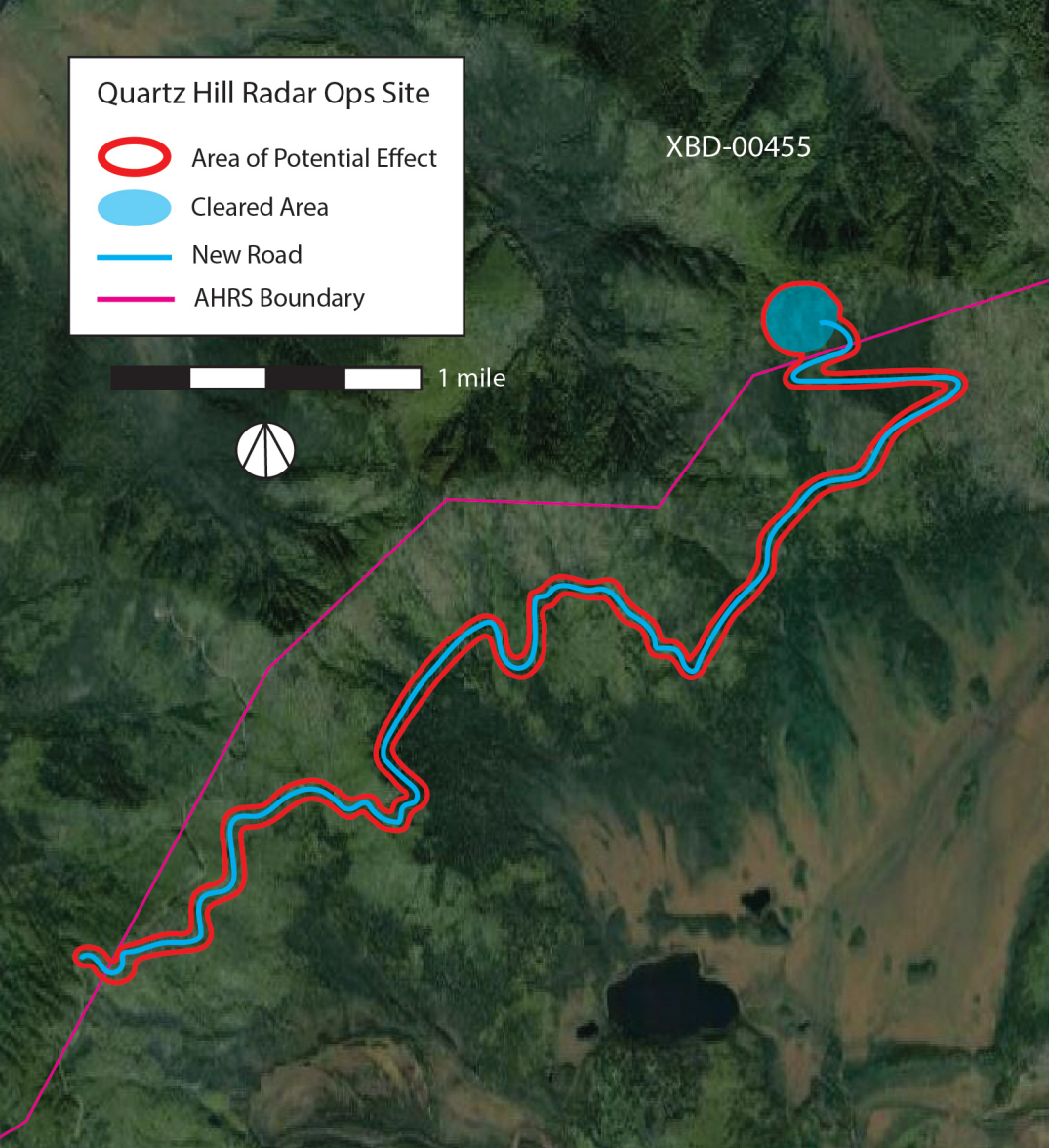

South Pole Hill Radar Ops Site
Area of Potential Effect
Cleared Area
New Road
New Powerline
1/2 mile
Quarry Road
Johnson Road


Engineer Hill Radar Ops Site
Area of Potential Effect
Cleared Area
New Road
New Powerline
AHRS Boundary
1/2 mile
FAI-01766


Birch Hill Radar Ops Site
Area of Potential Effect
Cleared Area
New Road
New Powerline
1/2 mile
Richardson Highway
Tanana River


Alaska Highway
Dry Creek Radar Ops Site
Area of Potential Effect
Cleared Area
New Road
1/2 mile


Pogo Hill Radar Ops Site
Area of Potential Effect
Cleared Area
New Road
New Powerline
AHRS Boundary
1/2 mile
XBD-00455
Pogo Mine Road


Quartz Hill Radar Ops Site
Area of Potential Effect
Cleared Area
New Road
AHRS Boundary
1 mile
XBD-00455

Tok Hill Radar Ops Site

Area of Potential Effect

Cleared Area

Road Improvements

New Powerline

AHRS Line

1/2 mile

Eagle Trail

TNX-00118

TNT

Tok Highway Cutoff Segment

Tok Cut-Off Highway

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Natural Resources
DIVISION OF PARKS AND OUTDOOR RECREATION
Office of History & Archaeology

550 West 7th Avenue, Suite 1310
Anchorage, AK 99501-3561
907-269-8700
http://dnr.alaska.gov/parks/oha

January 30, 2024

File No.: 3130-1R AF / 2023-01326

Brooks Lawler
Cultural Resources Manager
354th CES/CEIE
2310 Central Avenue, Suite 100
Eielson AFB, AK 99702
brooks.lawler@us.af.mil

Subject: 354th Range Squadron Radar Operations Sites

Dear Ms. Lawler:

The Alaska State Historic Preservation Officer (AK SHPO) received your request for concurrence (dated November 28, 2023) regarding the subject undertaking on December 8, 2023. Our office requested copies of the reports that supported the US Air Force (USAF) 's finding of effect on December 20, 2023. We received the reports titled *Archaeological Investigations of Proposed Air Force Radar Sites on USAG Alaska-Managed Lands* and *Cultural Resources Survey for the 354th Range Squadron Radar Operations Sites, AKV402* on December 20, 2023 and January 18, 2024, respectively. We reviewed the provided documentation pursuant Section 106 of the National Historic Preservation Act, and we offer the following comments for your consideration.

USAF requested concurrence from the AK SHPO that the seven-mile long Tok Cutoff Highway Segment (TNX-00293) is not eligible for listing in the National Register of Historic Places (NRHP). The historic context demonstrated that the property is directly associated with WWII and was a mission-critical resource for the US military, but the three miles of the segment within the APE lacked integrity. There are other factors that we believe should be considered to fully assess whether the property is eligible for listing in the NRHP. The scope of the investigation did not encompass the integrity of the bypassed road segment that was outside the APE nor did the investigation compare this segment to other segments of the Tok Cutoff or Alaska Highway.

Diminished integrity in some situations may not preclude eligibility for the NRHP. In this case, we recommend that a determination of NRHP eligibility assess the integrity of the whole segment and discuss how this segment compares to other segments of the Tok Cutoff. Our recommendation is based on the property's national significance, and the possibility that this segment may represent the best-preserved section of the Tok Cutoff in existence today. In consideration of the Tok Cutoff Highway Segment's national significance we recommend the USAF treat the property as eligible for the purposes of this undertaking. This will allow for a more detailed assessment of the property's integrity and NRHP eligibility in the future.

We believe a finding of no adverse effect is appropriate for the subject undertaking with the *assumed* eligibility for the NRHP of the Tok Cutoff Highway Segment (TNX-00293) as USAF does not plan on making any improvements or modifications to the property. This assumption of eligibility is only for the purposes of this project. No formal determinations on eligibility were made as a result of this review.

Please note that our office may need to re-evaluate our concurrence if changes are made to the project's scope or design, or comments are received from other consulting parties. As stipulated in 36 CFR 800.3, other consulting parties such as the local government and Tribes are required to be notified of the undertaking. Our response does not end the 30-day review period provided to other consulting parties.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the NRHP eligibility criteria (36 CFR 60.4), in consultation with our office.

Thank you for the opportunity to review and comment. Please contact Sarah Meitl at 907-269-8720 or sarah.meitl@alaska.gov if you have any questions or if we can be of further assistance.

Sincerely,

Judith E. Bittner
State Historic Preservation Officer

JEB:sjm

DEPARTMENT OF THE AIR FORCE
354TH FIGHTER WING (PACAF)
EIELSON AIR FORCE BASE, AK

26 February 2024

Ms. Brooks A Lawler
Cultural Resources Manager
354th CES/CEIE
2310 Central Avenue, Suite 100
Eielson AFB, AK 99702

Herbert Demit
President
Native Village of Tanacross
P.O. Box 76009
Tanacross, AK 99776

Dear President Demit:

I am writing to follow up regarding a letter sent to the Native Village of Tanacross about an Air Force Project planned off the Eielson Installation for which the Air Force is proposing to construct radar simulators on several high points distributed around the Richardson and Alaska Highways. This letter is intended to provide an update on the National Historic Preservation Act Section 106 cultural resource survey findings and allow for an opportunity for discussion. To recap the project, each of the radar simulator sites constitute nine discontinuous Areas of Potential Effect (APEs). The APEs are comprised of new single lane 12-foot (ft) wide access routes, new powerline routes cleared 30-ft, and the area to be cleared of vegetation around where pads to support the 8-ft x 33-ft trailer mounted radar will be installed. Buffers 100-ft wide were included on either side of the access and powerline route centerlines. The APEs do not include existing commercial quarries from which material will be obtained to improve the new access routes, or existing well-maintained road infrastructure that will not be altered by the undertaking.

The USAF is preparing an Environmental Assessment under the National Environmental Policy Act (NEPA) to evaluate potential environmental impacts associated with the proposed radar simulator site construction. Additionally, efforts to identify potential historic properties with the proposed site locations in accordance with Section 106 of the National Historic Preservation Act (NHPA) took place in the summer of 2023. Prior to this effort, archaeological investigations had only been conducted at one of the nine proposed radar ops sites. No known archaeological investigations had ever been conducted at seven of the proposed locations. In 1996 Eielson AFB conducted an installation-wide archaeological investigation which covered proposed radar ops site APE on Engineer Hill geared towards non-military cultural resource identification and evaluation. In order to identify potential historic properties in the APEs in accordance with 36 CFR § 800.4(b), cultural resources surveys were conducted at eight of the proposed radar ops sites between June and September of 2023. Two locations (Bridge to Terabithia, Gerstle River) were surveyed by Julie Esdale (PhD), Robert Nethken (BS), and Whitney McLaren (BA) of the Center for Environmental Management of Military Lands at Colorado State University (CEMML 2023). Six locations (Engineer Hill, Birch Hill, Dry Creek, Pogo Hill, Quartz Hill, Tok Hill) were surveyed by Aubrey Morrison (MA) and Haley McCaig (BA) of Cultural Resource Consultants, LLC (CRC). Both CEMML and CRC documented their cultural resources surveys with mapping-grade GPS units.

Results of the Section 106 survey have been presented in a report that will accompany the Environmental Assessment. Cultural resource surveys did not identify archaeological or historic sites

through pedestrian transects or subsurface testing at eight of the nine radar ops APEs. CRC archaeologists identified recent use cultural items and historic site within the APEs for Engineer Hill and Tok Hill radar ops sites, respectively. Thirty-six defensive fighting positions ("foxholes"), isolated can dump, and modern cabin complex were identified at Engineer Hill radar ops site. The cabin complex, appearing on aerial imagery post 1974, and 17 of the 36 defensive fighting positions were documented in the 1996 Archaeological Survey of Eielson AFB, and described as recent use sites, likely of military origin. Tok Hill radar ops site access will utilize one historic feature, a 3-mile segment of the original alignment of the Tok Cutoff Highway, and bisect a previously identified historic Moose/Caribou Fence and the historic Eagle Trail. CRC archaeologists also documented several cultural isolates including 1960s-era pull tab soda cans and six recent bark-stripped birch trees. While the historic Moose/Caribou Fence was unable to be relocated, the Eagle Trail appears to be used regularly by vehicle and ATV traffic. The findings have been reviewed USAF Cultural Resource Manager and Alaska State Historic Preservation Officer (SHPO). SHPO concurred with the findings of the Cultural Resource Survey that the project is not expected to have adverse effects on historic properties. SHPO recommended that the original Tok Cutoff Highway be *assumed* as eligible for the National Register of Historic Places for the purpose of this project. SHPO finds the determination of no adverse effect is appropriate for the project with the *assumed* eligibility of the Tok Cutoff Highway Segment as USAF does not plan on making any improvements or modifications to the property.

As the Eielson AFB Cultural Resource Manager, I am offering to discuss the proposed construction of radar simulator infrastructure at these nine locations in detail with you and would like to hear from you regarding any comments, concerns, and suggestions you may have.

If you have any questions, please contact Brooks Lawler, Cultural Resource Program Manager by phone 907-377-4253 or email brooks.lawler@us.af.mil. Or, Captain Sarah Larson, JPARC Program Manager, by phone at 907-377-3023 or email at sarah.larson.7@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely

Brooks Ann Lawler

BROOKS LAWLER, Cultural Resource Manager, 354 USAF

Below are figures that show the proposed radar site locations and their Areas of Potential Effect.

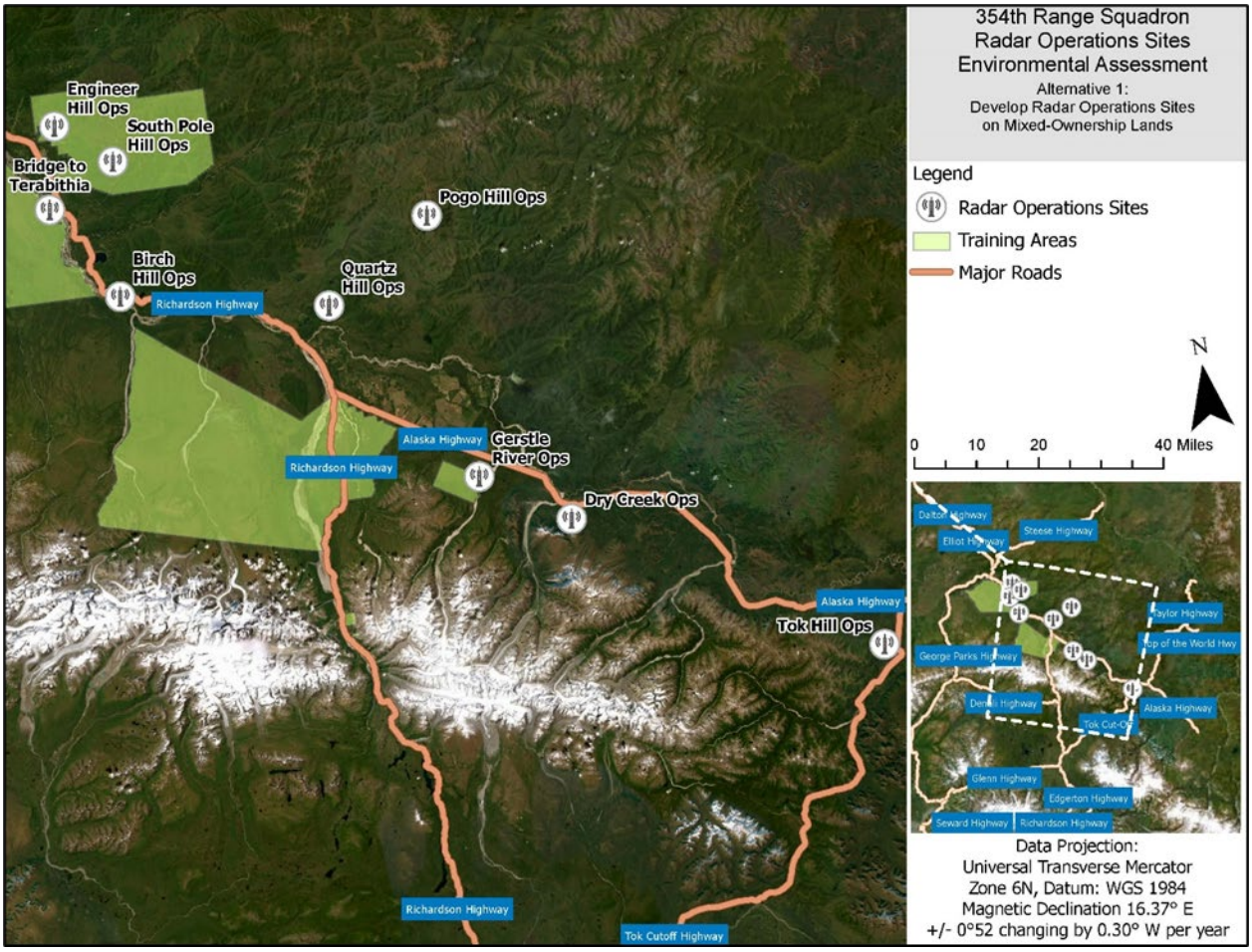


Figure 1. Overview of proposed radar locations.

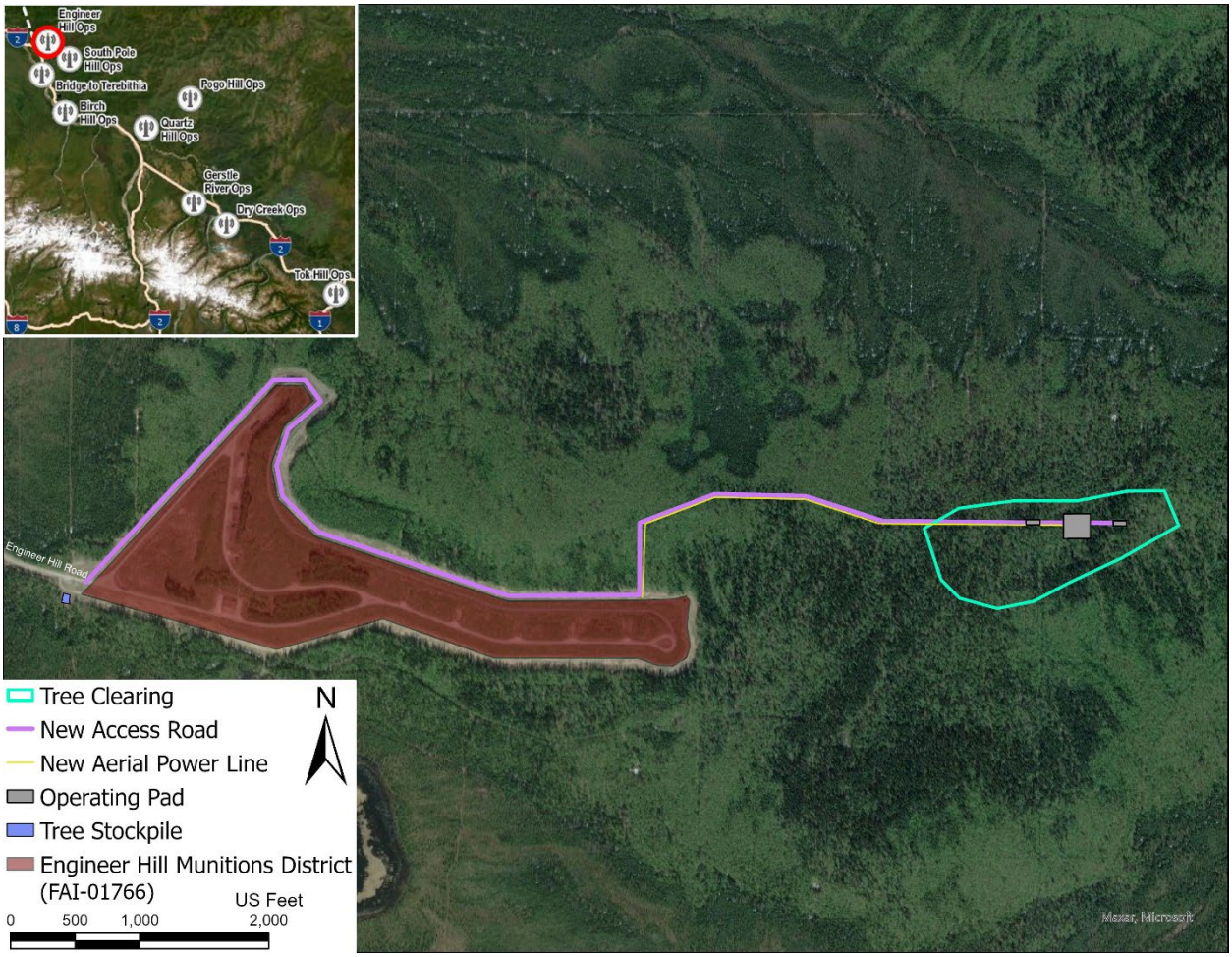


Figure 2. Proposed APE for Engineer Hill Radar Ops Site

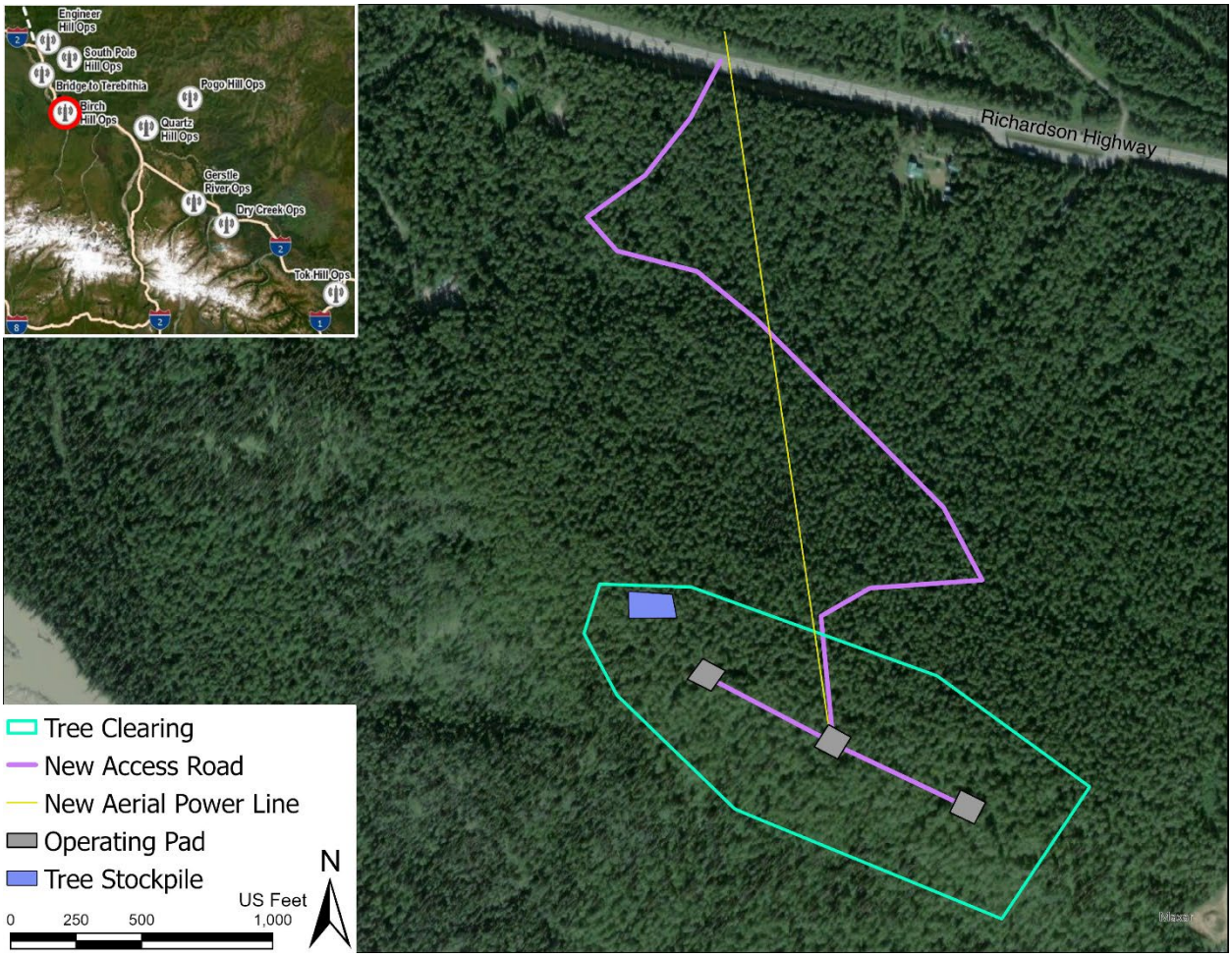


Figure 3. Proposed APE for Birch Hill Radar Ops Site

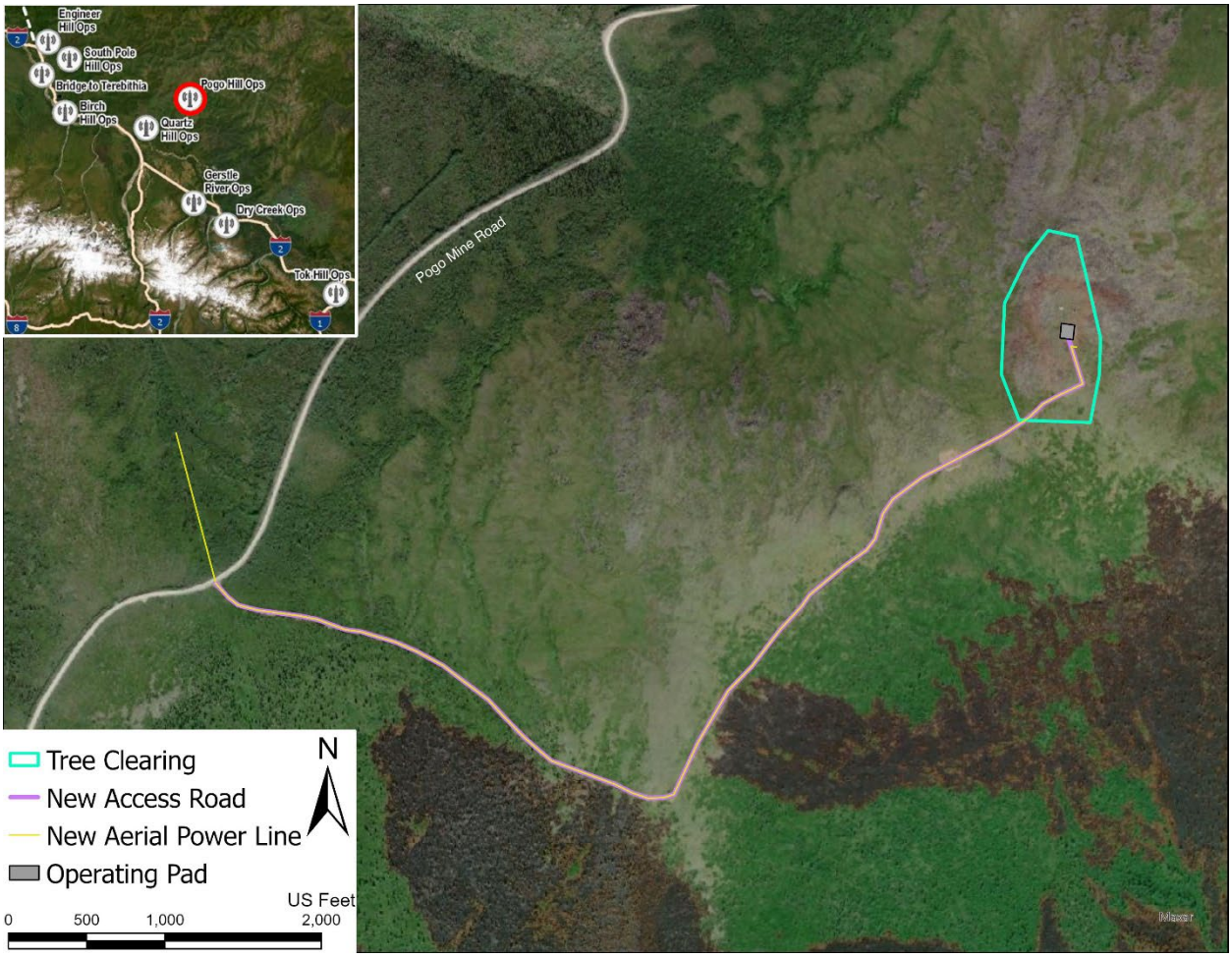


Figure 4. Proposed APE for Pogo Hill Radar Ops Site

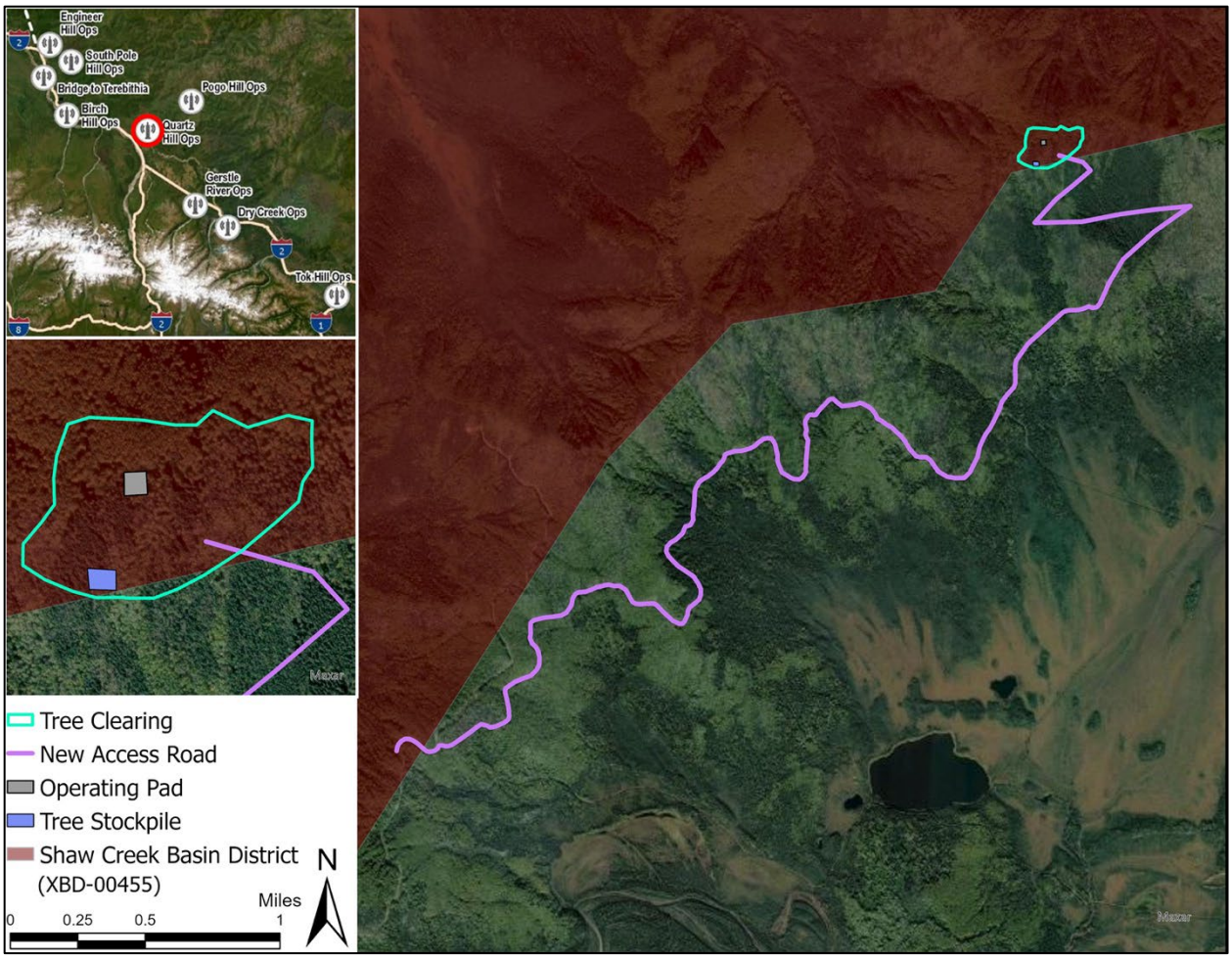


Figure 5. Proposed APE for Quartz Hill Radar Ops Site

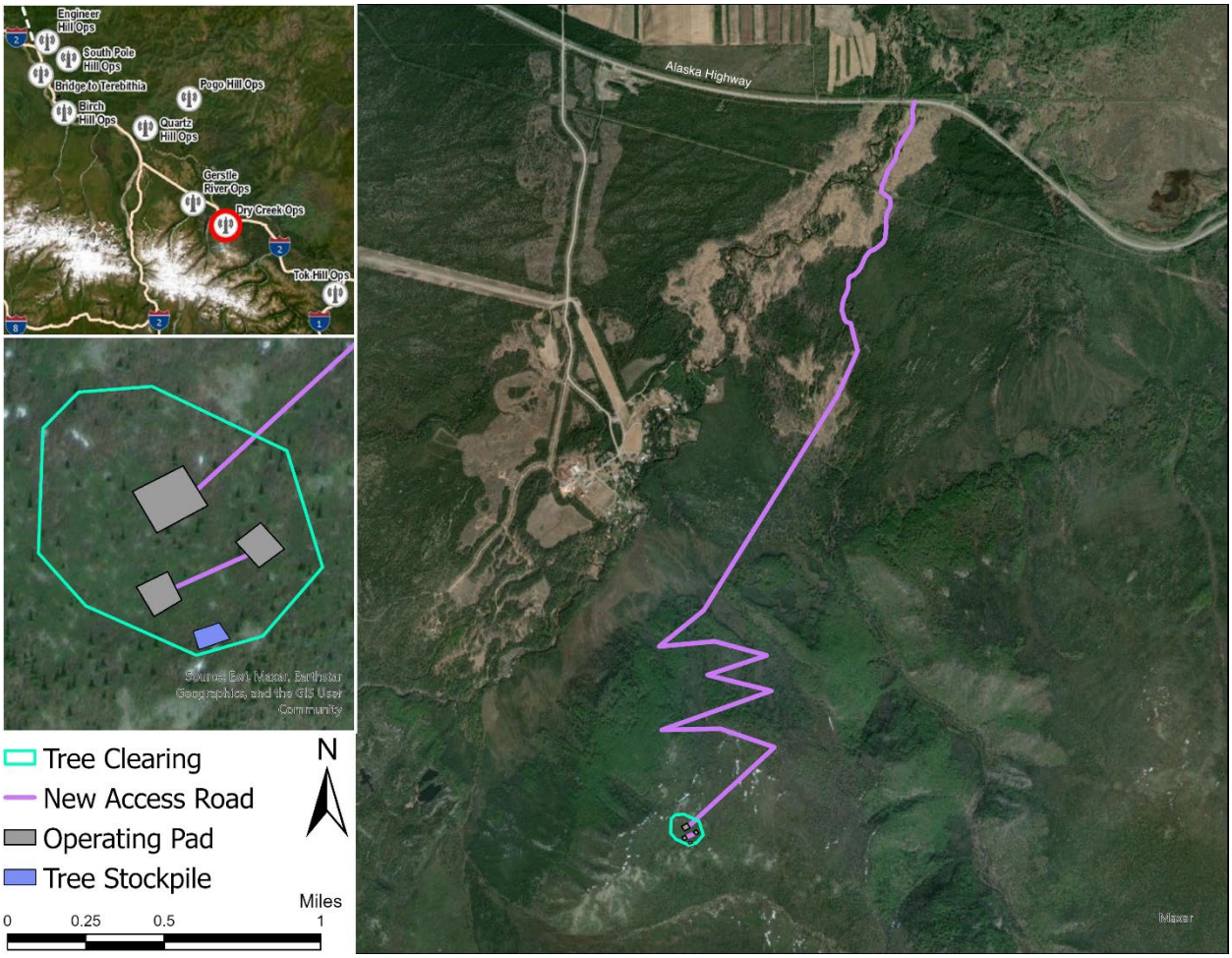


Figure 6. Proposed APE for Dry Creek Radar Ops Site

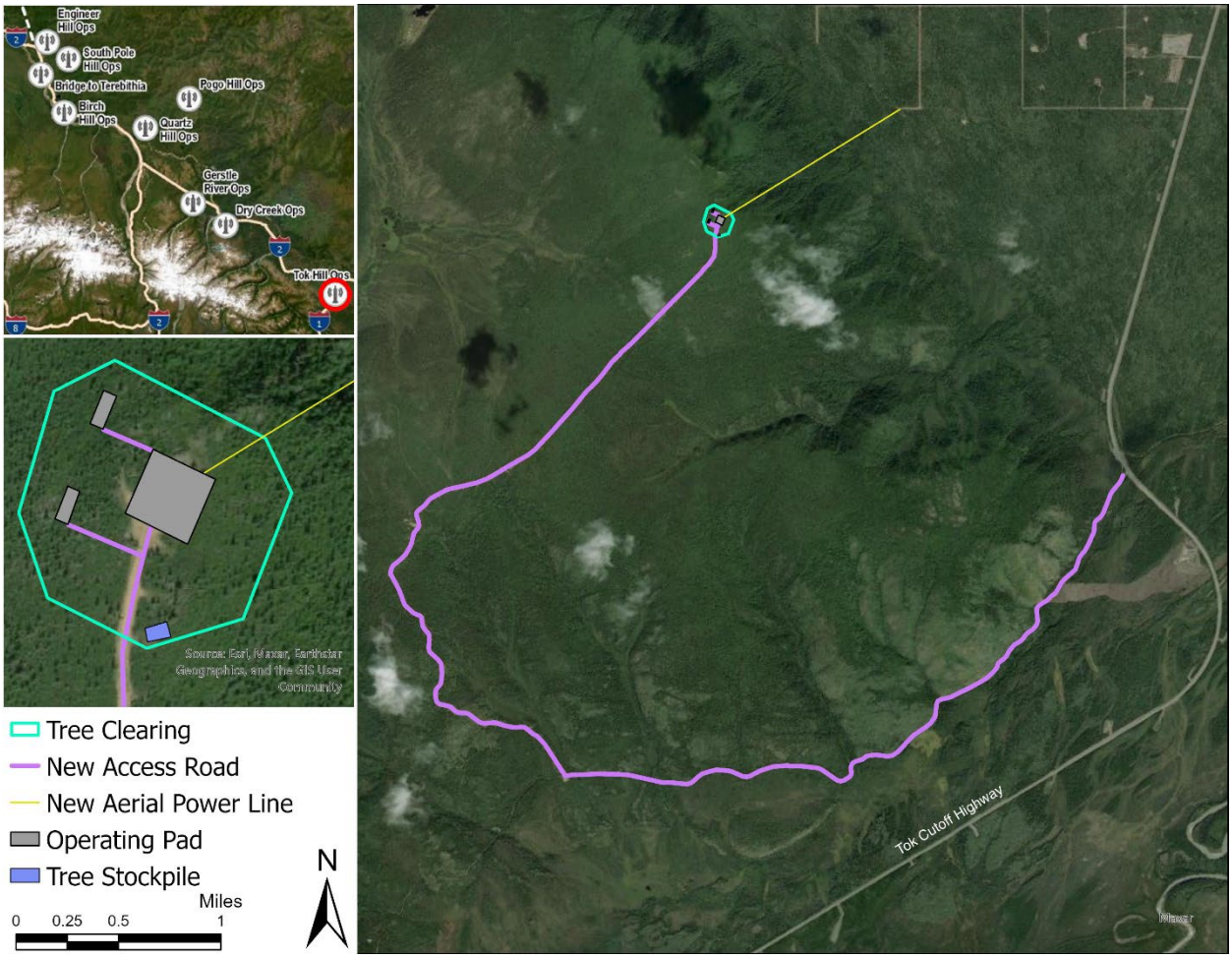


Figure 7. Proposed APE for Tok Hill Radar Ops Site

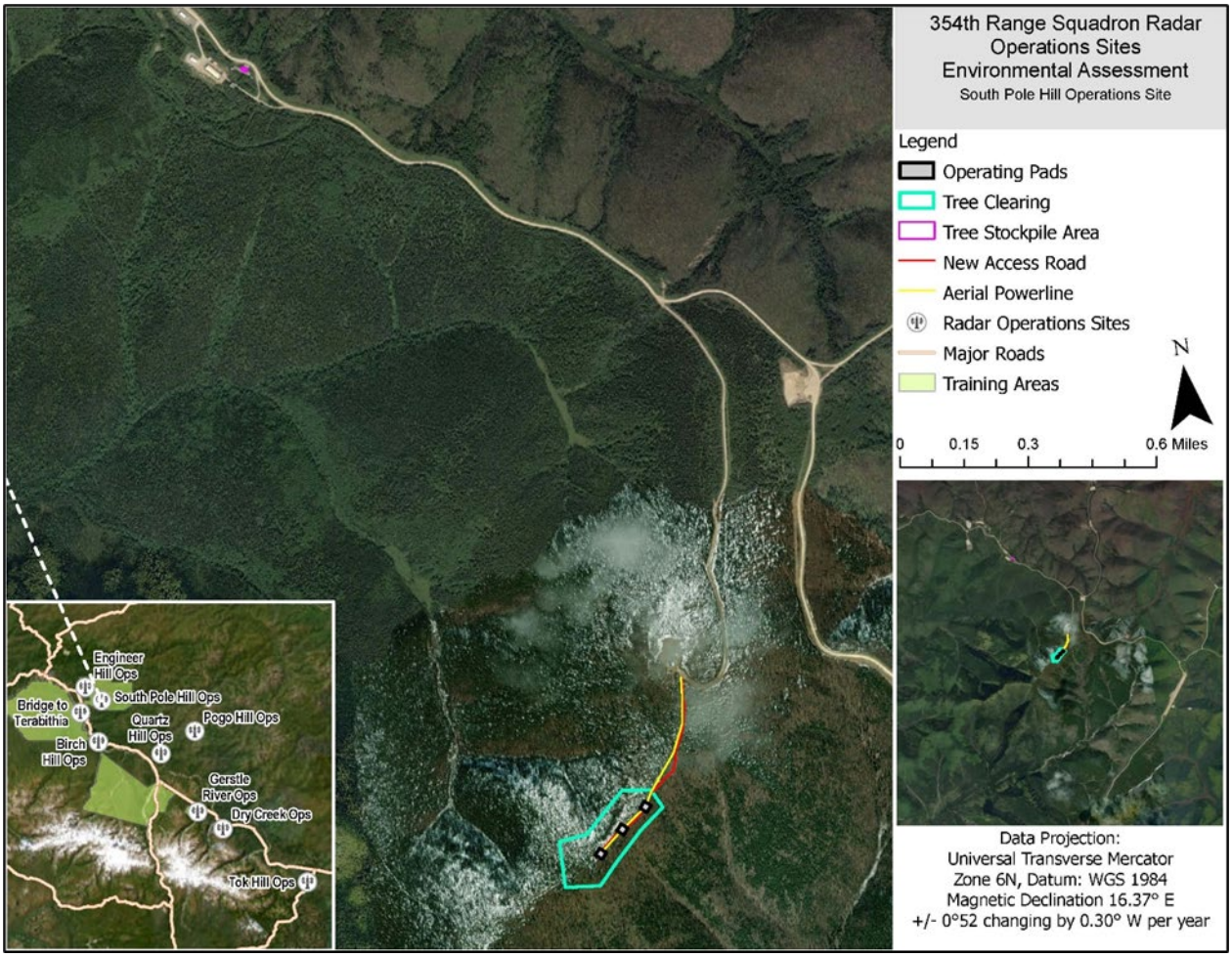


Figure 8. Proposed APE for South Pole Hill Radar Ops Site

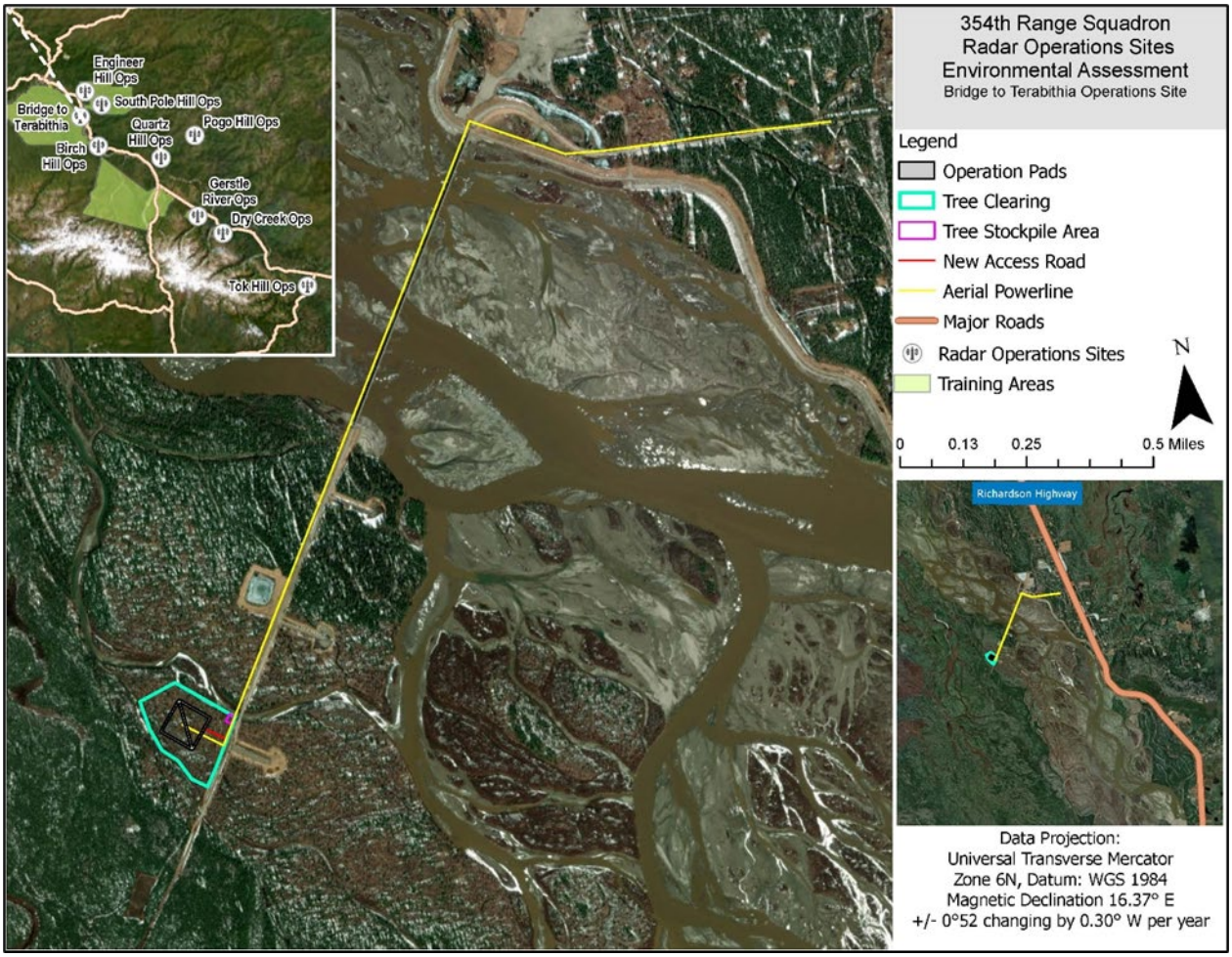


Figure 9. Proposed APE for Bridge to Terabithia Radar Ops Site

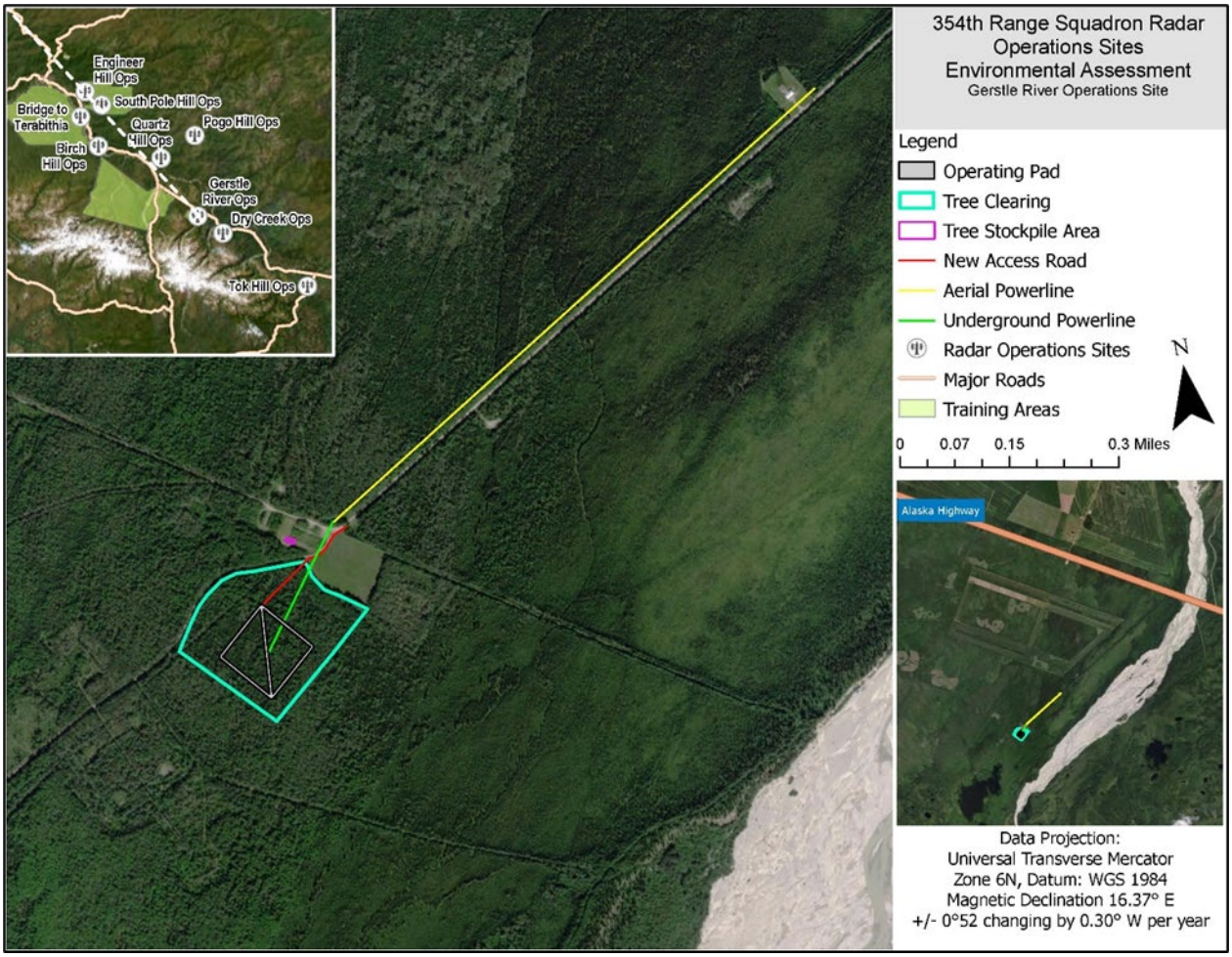


Figure 10. Proposed APE for Gerstle River Radar Ops Site

United States Fish and Wildlife Service

Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Northern Alaska Fish & Wildlife Field Office
101 12th Avenue
Room 110
Fairbanks, AK 99701-6237
Phone: (907) 456-0203 Fax: (907) 456-0208

In Reply Refer To:
Project Code: 2023-0121880
Project Name: AKV402 Radar Operation Sites

August 25, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Northern Alaska Fish & Wildlife Field Office
101 12th Avenue
Room 110
Fairbanks, AK 99701-6237
(907) 456-0203

PROJECT SUMMARY

Project Code: 2023-0121880
Project Name: AKV402 Radar Operation Sites
Project Type: Military Development
Project Description: The Proposed Action would construct radar simulator operating site infrastructure at nine locations on a mixture of Federal, State, and Fairbanks North Star Borough land. Each new radar simulator could operate independently, and the concurrent operation of each additional simulator increases the variety and effectiveness of training. The infrastructure would include gravel pads, access roads, power lines, generators, and fuel storage tanks. The land use designation for some of the lands selected for radar operating sites would be changed because of the Proposed Action.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@63.658444,-144.59565750000002,14z

Counties: Fairbanks North Star and Southeast Fairbanks counties, Alaska

ENDANGERED SPECIES ACT SPECIES

There is a total of 0 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

There are migratory birds in your project area. Please refer to Alaska's Bird Nesting Season for recommendations to minimize impacts to migratory birds, including eagles.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

THERE ARE MIGRATORY BIRDS IN YOUR PROJECT AREA. PLEASE REFER TO ALASKA'S BIRD NESTING SEASON FOR RECOMMENDATIONS TO MINIMIZE IMPACTS TO MIGRATORY BIRDS, INCLUDING EAGLES.

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Matthew Ferguson
Address: 2204 Third Street
City: JBER
State: AK
Zip: 99506
Email matthew.w.ferguson@usace.army.mil
Phone: 9077532711

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Air Force
Name: Jamie Burke
Email: jamie.burke.3@us.af.mil
Phone: 9073773313

Public Notices

Early Public Notice
Newspaper Affidavits and Comments

AFFP
00069000 NOTICE FOR EARLY PUBL

Affidavit of Publication

STATE OF ALASKA }
COUNTY OF FAIRBANKS
NORTH STAR BOROUGH } SS

Kaira Lum, being duly sworn, says:

That she is Affidavit Clerk of the Fairbanks Daily News-Miner, a daily newspaper of general circulation, printed and published in Fairbanks, Fairbanks North Star Borough County, Alaska; that the publication, a copy of which is attached hereto, was published in the said newspaper on

August 11, 2023, August 12, 2023

That said newspaper was regularly issued and circulated on those dates.
SIGNED:

Affidavit Clerk

Subscribed to and sworn to me this 12th day of August 2023.

Jennifer M Robinson, Notary Public, Fairbanks North Star Borough County, Alaska
My commission expires: February 11, 2026

00008250 00069344

Matthew Ferguson
US Army Corps of Engineers
P.O. Box 6898
JBER, AK 99506

STATE OF ALASKA
NOTARY PUBLIC
Jennifer M. Robinson
My Commission Expires February 11, 2026

00069344
NOTICE FOR EARLY PUBLIC REVIEW OF A PROPOSED ACTION WITHIN THE 100-YEAR FLOODPLAIN AND WETLANDS NEAR EIELSON AIR FORCE BASE, ALASKA - UNITED STATES AIR FORCE

The U.S. Air Force (USAF) is inviting public input on any practicable alternatives for a proposed activity within wetlands and the 100-year floodplain near Eielson Air Force Base (AFB), Alaska. The purpose of the Proposed Action is to improve 5th and 6th generation aircraft training effectiveness in the North Pacific operational theater. The Proposed Action involves the construction and operation of nine radar simulator sites along the Richardson Highway corridor. Work would involve vegetation clearing, access road construction, electrical utility development, operation pad development, attendant activities, and radar simulator site operation after construction is completed.

Two of the proposed radar simulator sites would be constructed in areas containing potential wetlands or floodplains. The USAF determined, pursuant the development and application of selection standards in accordance with 32 Code of Federal Regulation (CFR) 989.8, that there are no practicable alternatives without wetland or floodplain impacts that would meet the purpose and need of the Proposed Action. The project footprint in wetlands or floodplains would be minimized to the extent practicable and the USAF would procure the necessary permits from the managing entities to ensure the proposed work would not be contrary to the public interest or cause unacceptable floodplain impacts.

The USAF is performing environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969 to analyze the potential environmental impacts of the Proposed Action. This early public notice is required by Executive Order (EO) 11990, "Protection of Wetlands" and EO 11988, "Floodplain Management". The USAF prepared and made this notice available to the public in accordance with 32 CFR 989, USAF Manual 32-7064 for actions proposed within floodplains and wetlands. The USAF will also be coordinating with State and Federal regulatory agencies with special expertise regarding the Proposed Action, that may include United States Army Corps of Engineers, United States Fish and Wildlife Service, Alaska Department of Environmental Conservation, Alaska Department of Fish and Game, Alaska Department of Natural Resources, and State Historic Preservation Officer. Subsequent public notice required by NEPA will be made once the Proposed Project NEPA document is available for review and comment.

The USAF requests advance public comment to determine if there are any public concerns regarding the project's potential to impact to the 100-year floodplain and wetlands. Comments and inquiries should be emailed within 30 days of this notice directly to 354th Fighter Wing Public Affairs at: 907-377-2116 or 354fw.pa.publicaffairs@us.af.mil.
Publish: 8-11
& 8-12-2023

AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA
STATE OF ALASKA
FOURTH JUDICIAL DISTRICT

Before me, the undersigned, a notary public, this day personally appeared, Denise Wilhelm who, being first duly sworn according to law, says that he represents TriDelta, Incorporated, publisher of Delta Wind, a newspaper of general circulation published in Delta Junction in said Fourth Judicial District and State of Alaska, and that the advertisement of which the annexed is a true copy, was published in said newspaper on the following day(s):

8/10/2023

and that the rate charged is not in excess of the rate charged private individuals, with the usual discounts.

Denise Wilhelm
Denise Wilhelm

Subscribed and sworn before me this 12th **day of** February **, 2024.**

"Official Seal"
Notary Public
T.P. Holoday
State of Alaska
Commission #290310005 Expires 3/10/2024

T.P. Holoday
Notary Public in and for the State of Alaska
My commission expires: March 10, 2024

No public and agency comments were received in response to the Early Public Notice that was published in following newspapers and the Eielson AFB Environmental website:

- Fairbanks Daily News Miner, Fairbanks, Alaska
- Delta Wind, Delta Junction, Alaska
- https://www.eielson.af.mil/General-Information/Environmental/

Notice of Availability

Draft Environmental Assessment and Proposed Finding of No Significant Impact and Finding of No Practicable Alternative

Newspaper Affidavits and Comments

Public and agency comments received during the public and agency comment period will be included in Appendix A of the Final Environmental Assessment (EA). The Notice of Availability for the Draft EA and Proposed Finding of No Significant Impact (FONSI) and Finding of No Practicable Alternative (FONPA) was published in following newspapers and the Eielson AFB Environmental website:

- Fairbanks Daily News Miner, Fairbanks, Alaska
- Delta Wind, Delta Junction, Alaska
- https://www.eielson.af.mil/General-Information/Environmental/

The Draft EA and Proposed FONSI and FONPA were made available electronically on the Eielson AFB Environmental website:

- https://www.eielson.af.mil/General-Information/Environmental/

APPENDIX B

Air Conformity Applicability Model

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the ACAM analysis.

a. Action Location:

Base: EIELSON AFB
State: Alaska
County(s): Fairbanks North Star Borough
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Installation of Radar for New Aircraft Training Sites

c. Project Number/s (if applicable):

d. Projected Action Start Date: 9 / 2027

e. Action Description:

The proposed action will construct radar systems that create new threat operating sites for aircraft. Currently, all threats are located at Eielson AFB and represent only one lane of a fight. This does not meet the training requirements.

f. Point of Contact:

Name: Amanda Coleman
Title: GS-07, Air Program Manager
Organization: 354 CES/CEIE
Email: amanda.coleman.10@us.af.mil
Phone Number: 907-377-1815

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the GCR are:

____ applicable
_X_ not applicable

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (hsba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources*, and the *USAF Air Emissions Guide for Air Force Transitory Sources*.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action's potential impacts to local air quality. The insignificance indicators are trivial (de minimis) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (hsba.e., not exceeding any National Ambient Air Quality Standard (NAAQS)). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicators and are summarized below.

Analysis Summary:

2027

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.053	250	No
NOx	0.216	250	No
CO	0.144	250	No
SOx	0.044	250	No
PM 10	0.047	250	No
PM 2.5	0.047	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2028 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.161	250	No
NOx	0.649	250	No
CO	0.433	250	No
SOx	0.132	250	No
PM 10	0.141	250	No
PM 2.5	0.141	250	No
Pb	0.000	25	No
NH3	0.000	250	No

None of the estimated annual net emissions associated with this action are above the insignificance indicators; therefore, the action will not cause or contribute to an exceedance of one or more NAAQSs and will have an insignificant impact on air quality. No further air assessment is needed.

Amanda Coleman, GS-07, Air Program Manager — Oct 26 2023

Name, Title — **Date**

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
Base: EIELSON AFB
State: Alaska
County(s): Fairbanks North Star Borough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Installation of Radar for New Aircraft Training Sites

- Project Number/s (if applicable):

- Projected Action Start Date: 9 / 2027

- Action Purpose and Need:
The new radars are critical to training 5th generation aircraft against peer adversary nations. The new locations are critcal to provide a two lane fight for four sqaudrons of 5th generation aircraft on a daily basis.

- Action Description:
The proposed action will construct radar systems that create new threat operating sites for aircraft. Currently, all threats are located at Eielson AFB and represent only one lane of a fight. This does not meet the training requirements.

- Point of Contact
Name: Amanda Coleman
Title: GS-07, Air Program Manager
Organization: 354 CES/CEIE
Email: amanda.coleman.10@us.af.mil
Phone Number: 907-377-1815

- Activity List:

Activity Type		Activity Title
2.	Emergency Generator	Radar Construction and Operation for Aircraft Training Sites - Non-Emergency Generator
3.	Emergency Generator	Warm-up Generator Use

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Emergency Generator

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Fairbanks North Star Borough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Radar Construction and Operation for Aircraft Training Sites - Non-Emergency Generator

- Activity Description:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

New radar systems will be constructed at multiple sites. Since ACAM did not have a non-emergency generator listed as an activity, the emergency generator activity was chosen with operations of 246 hrs. per year. The yearly hours account for two assumptions:
1. Routine runtime for a year is 3 hours per week for 42 weeks, therefore, 126 hours.
2. Runtimes for exercises for a year is 12 hours for 10 weeks, therefore, 120 hours.

The proponent has determined two locations will have prime power generation from a generator and one location will have a temporary generator for 3 months, for backup power. Since all sites are incongruous from EAFB and from each other, each site will be evaluated separately during project planning for air permit applicability. Exact start date has not been determined.

- Activity Start Date
Start Month: 9
Start Year: 2027

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.156486
SO_x	0.131807
NO_x	0.645012
CO	0.430756

Pollutant	Emissions Per Year (TONs)
PM 10	0.140781
PM 2.5	0.140781
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.002597
N_2O	0.000519

Pollutant	Emissions Per Year (TONs)
CO_2	64.501200
CO_2e	74.597040

2.2 Emergency Generator Assumptions

- Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption
Emergency Generator's Horsepower: 456
Average Operating Hours Per Year (hours): 246

2.3 Emergency Generator Emission Factor(s)

- Emergency Generators Criteria Pollutant Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251		

- Emergency Generators Greenhouse Gasses Pollutant Emission Factor (lb/hp-hr)

CH_4	N_2O	CO_2	CO_2e
0.000046297	0.000009259	1.15	1.33

2.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year

AE_{POL}= (NGEN * HP * OT * EF_{POL}) / 2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

3. Emergency Generator

3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Fairbanks North Star Borough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Warm-up Generator Use

- Activity Description:

During the months of November-April a smaller generator is used to warm-up the main permanent non-emergency generator. This takes about 1-hour and happens before each use. The main generator will run twice a week for a duration of 1.5 hours, resulting in the the warm up generator needing to be ran for 2 hours per week in this the time period of Nov-April. Therefore, to estimate the emissions from the warm-up generator the total run time over the 24 week period will be 48 hours.

- Activity Start Date

Start Month: 11
Start Year: 2027

- Activity End Date

Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.004245
SO_x	0.000190
NO_x	0.003538
CO	0.002238

Pollutant	Emissions Per Year (TONs)
PM 10	0.000232
PM 2.5	0.000232
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.000015
N_2O	0.000003

Pollutant	Emissions Per Year (TONs)
CO_2	0.347328
CO_2e	0.347328

3.2 Emergency Generator Assumptions

- Emergency Generator

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Type of Fuel used in Emergency Generator: Gasoline
Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption
Emergency Generator's Horsepower: 13.4
Average Operating Hours Per Year (hours): 48

3.3 Emergency Generator Emission Factor(s)

- Emergency Generators Criteria Pollutant Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3
0.0132	0.000591	0.011	0.00696	0.000721	0.000721		

- Emergency Generators Greenhouse Gasses Pollutant Emission Factor (lb/hp-hr)

CH_4	N_2O	CO_2	CO_2e
0.000046297	0.000009259	1.08	1.08

3.4 Emergency Generator Formula(s)

- Emergency Generator Emissions per Year

$AE_{POL} = (NGEN * HP * OT * EF_{POL}) / 2000$

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the ACAM analysis.

a. Action Location:

Base: EIELSON AFB
State: Alaska
County(s): Fairbanks North Star Borough
Regulatory Area(s): NOT IN A REGULATORY AREA

b. Action Title: Installation of Radar for New Aircraft Training Sites

c. Project Number/s (if applicable):

d. Projected Action Start Date: 9 / 2029

e. Action Description:

The proposed action will construct radar systems that create new threat operating sites for aircraft. Currently, all threats are located at Eielson AFB and represent only one lane of a fight. This does not meet the training requirements.

f. Point of Contact:

Name: Amanda Coleman
Title: GS-07, Air Program Manager
Organization: 354 CES/CEIE
Email: amanda.coleman.10@us.af.mil
Phone Number: 907-377-1815

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the GCR are:

____ applicable
_X_ not applicable

Total reasonably foreseeable net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (hsba.e., no net gain/loss in emission stabilized and the action is fully implemented) emissions. The ACAM analysis uses the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the *USAF Air Emissions Guide for Air Force Stationary Sources*, the *USAF Air Emissions Guide for Air Force Mobile Sources*, and the *USAF Air Emissions Guide for Air Force Transitory Sources*.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of the proposed Action's potential impacts to local air quality. The insignificance indicators are trivial (de minimis) rate thresholds that have been demonstrated to have little to no impact to air quality. These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment" (hsba.e., not exceeding any National Ambient Air Quality Standard (NAAQS)). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutants is considered so insignificant that the action will not cause or contribute to an exceedance on one or more

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

NAAQS. For further detail on insignificance indicators, refer to *Level II, Air Quality Quantitative Assessment, Insignificance Indicators*.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicators and are summarized below.

Analysis Summary:

2029

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.008	250	No
NOx	0.031	250	No
CO	0.021	250	No
SOx	0.006	250	No
PM 10	0.007	250	No
PM 2.5	0.007	250	No
Pb	0.000	25	No
NH3	0.000	250	No

2030 - (Steady State)

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No

None of the estimated annual net emissions associated with this action are above the insignificance indicators; therefore, the action will not cause or contribute to an exceedance of one or more NAAQSs and will have an insignificant impact on air quality. No further air assessment is needed.

Amanda Coleman, GS-07, Air Program Manager — Oct 02 2023

Name, Title — **Date**

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
Base: EIELSON AFB
State: Alaska
County(s): Fairbanks North Star Borough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: Installation of Radar for New Aircraft Training Sites

- Project Number/s (if applicable):

- Projected Action Start Date: 9 / 2029

- Action Purpose and Need:
The new radars are critical to training 5th generation aircraft against peer adversary nations. The new locations are critcal to provide a two lane fight for four sqaudrons of 5th generation aircraft on a daily basis.

- Action Description:
The proposed action will construct radar systems that create new threat operating sites for aircraft. Currently, all threats are located at Eielson AFB and represent only one lane of a fight. This does not meet the training requirements.

- Point of Contact
Name: Amanda Coleman
Title: GS-07, Air Program Manager
Organization: 354 CES/CEIE
Email: amanda.coleman.10@us.af.mil
Phone Number: 907-377-1815

- Activity List:

Activity Type		Activity Title
2.	Emergency Generator	Radar Construction and Operation for Aircraft Training Sites - Temporary Non-Emergency Generator

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Emergency Generator

2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Fairbanks North Star Borough
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: Radar Construction and Operation for Aircraft Training Sites - Temporary Non-Emergency Generator

- Activity Description:

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

New radar systems will be constructed at multiple sites. Since ACAM did not have a non-emergency generator listed as an activity, the emergency generator activity was chosen with operations of 36 hrs accumulated over three months as a temporary generator. The total hours are calculated based on the assumption that the generator runtime is 3 hours per week for 12 weeks.

The proponent has determined two locations will have prime power generation from a generator and one location will have a temporary generator for 3 months, for prime power. Since all sites are incongruous from EAFB and from each other, each site will be evaluated separately during project planning for air permit applicability. Exact start date has not been determined.

- Activity Start Date
Start Month: 9
Start Year: 2029

- Activity End Date
Indefinite: No
End Month: 12
End Year: 2029

- Activity Emissions of Criteria Pollutants:

Pollutant	Total Emissions (TONs)
VOC	0.007633
SO_x	0.006430
NO_x	0.031464
CO	0.021012

Pollutant	Total Emissions (TONs)
PM 10	0.006867
PM 2.5	0.006867
Pb	0.000000
NH_3	0.000000

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Total Emissions (TONs)
CH_4	0.000127
N_2O	0.000025

Pollutant	Total Emissions (TONs)
CO_2	3.146400
CO_2e	3.638880

2.2 Emergency Generator Assumptions

- Emergency Generator
Type of Fuel used in Emergency Generator: Diesel
Number of Emergency Generators: 1

- Default Settings Used: No

- Emergency Generators Consumption
Emergency Generator's Horsepower: 456
Average Operating Hours Per Year (hours): 36

2.3 Emergency Generator Emission Factor(s)

- Emergency Generators Criteria Pollutant Emission Factor (lb/hp-hr)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3
0.00279	0.00235	0.0115	0.00768	0.00251	0.00251		

- Emergency Generators Greenhouse Gasses Pollutant Emission Factor (lb/hp-hr)

CH_4	N_2O	CO_2	CO_2e
0.000046297	0.000009259	1.15	1.33

2.4 Emergency Generator Formula(s)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Emergency Generator Emissions per Year

AE_{POL}= (NGEN * HP * OT * EF_{POL}) / 2000

AE_{POL}: Activity Emissions (TONs per Year)
NGEN: Number of Emergency Generators
HP: Emergency Generator's Horsepower (hp)
OT: Average Operating Hours Per Year (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hp-hr)

APPENDIX C

Environmental Justice Analysis

TABLE OF CONTENTS

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

CEJST	Climate and Economic Justice Screening Tool
CEQ	Council on Environmental Quality
EJScreen	Environmental Justice Screening and Mapping Tool
EO	Executive Order
EPA	Environmental Protection Agency
FNSB	Fairbanks North Star Borough

354TH Range Squadron Radar Operations Sites
Environmental Justice Analysis

1.0 Introduction

This Environmental Justice Analysis is to supplement the evaluation of Environmental Justice and Protection of the Children impacts from the proposed implementation of the Preferred Alternative of the Air Force's Proposed Action, *354TH Range Squadron Radar Operations Sites*. This should not be used as a standalone document.

2.0 Overview

Executive Order (EO) 12898, February 11, 1994, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of their actions on low-income, minority, and Tribal populations, to the greatest extent practicable and permitted by law. An Environmental Justice analysis typically includes:

- Identification of any minority and/or low-income status communities in the areas of the operations sites;
- Identification of any adverse environmental or human health impacts anticipated from the action; and,
- Determination of whether those impacts would disproportionately affect minority and/or low-income communities.

An EO associated with Environmental Justice is EO 13045, April 23, 1997, Protection of Children from Environmental Health Risks and Safety Risks, which directs Federal agencies to identify and address environmental health and safety risks that may disproportionately affect children, to the greatest extent practicable and permitted by law. This analysis typically includes a determination of whether the identified adverse environmental or human health impacts anticipated from the Preferred Alternative would disproportionately affect children.

Another executive order associated with Environmental Justice is EO 14096, April 21, 2023, Revitalizing our Nation's Environmental Justice for All, which directs Federal agencies to advance environmental justice by implementing and enforcing the Nation's environmental and civil rights laws as well as investing in communities. EO 14096 builds upon EO 12898 and reaffirms the Federal government's commitment to Environmental Justice. Federal guidance on implementation of this EO is anticipated later in 2023.

This analysis employs the Council on Environmental Quality's (CEQ's) Climate and Economic Justice Screening Tool (CEJST) and the Environmental Protection Agency's (EPA's) Environmental Justice Screening and Mapping Tool (EJScreen) to provide a consistent government identification of communities with environmental justice concerns. Note, to calculate an environmental justice index, EJScreen uses a formula to combine a single environmental factor with the demographic index (average of low income and people of color populations). Explanations of what each index means can be found at the EPA's website, "Overview of Environmental Indicators in EJScreen" (EPA 2023).

3.0 Engineer Hill and South Pole Hill Operations Sites

CEJST uses the Fairbanks North Star Borough (FNSB) Tract Number 02090001800 as their unit of analysis, while EJScreen uses Tract Number 0209098010 for the Engineer Hill and South Pole Hill Operations Sites. EJScreen lists a total population of this block group as 3,497, while CEJST lists the total population as 3,425. Both use percentiles to indicate how local residents compare to the other populations in the Nation or State. For example, the "48

percentile" for "Low Income" shown in Table 1 means that people living in the FNSB have an income level equal to or higher than 48 percent of people living in the United States. In general, an indicator is of concern in an environmental justice analysis if it is at or above the 90th percentile (CEQ 2023).

One of the socioeconomical indicators associated with the FNSB Tract Number 02090001800 labeled as "Under Age 5" is above the 90th percentile when compared to the Nation (Table 1). The CEJST screen does not consider this tract area to be disadvantaged. It should be noted that this tract census area includes Eielson Air Force Base, which includes a population of 2,610 people as of the 2020 Decennial Census.

Table 1. Socioeconomical Indicators for the FNSB (Engineer Hill & South Pole Hill Operations Sites)

Indicator	Compared to Nation	Compared to State
Demographic Index	51 percentile	51 percentile
People of Color	53 percentile	46 percentile
Low Income	48 percentile	58 percentile
Unemployment Rate	87 percentile	83 percentile
Limited English Speaking	63 percentile	71 percentile
Less than High School Education	45 percentile	60 percentile
Under Age 5	91 percentile	89 percentile
Over Age 64	0 percentile	1 percentile

Source: (EPA 2023)

The existing environmental and human health risks for the FNSB Tract Number 02090001800 included two risks above the 90th percentile (Table 2). This was "Flood Risk" under the Climate Change category and "Proximity to Superfund Sites" under the Legacy Pollution category.

Table 2. Existing Environmental Conditions and Human Health Risks for the FNSB (Engineer Hill & South Pole Hill Operations Sites)

Category	Existing Risk	Compared to Nation
Climate Change	Agriculture Loss Rate	38 percentile
	Building Loss Rate	15 percentile
	Population Loss Rate	36 percentile
	Flood Risk	**96 percentile**
	Wildfire Risk	No data available
Energy	Energy Cost	6 percentile
	Particulate Matter 2.5	No data
Health	Asthma	46 percentile
	Diabetes	0 percentile
	Heart Disease	0 percentile
	Low Life Expectancy	No data
Housing	Housing Cost	75 percentile
	Lack of Green Space	No data
	Lack of Indoor Plumbing	86 percentile
	Lead Paint	6 percentile
Legacy Pollution	Abandoned Mine Land	No
	Formally Used Defense Site	Yes
	Proximity to Hazardous Waste Facilities	44 percentile
	Proximity to Risk Management Plan Facilities	9 percentile
	Proximity to Superfund Sites	**95 percentile**
Transportation	Diesel Particulate Matter Exposure	1 percentile
	Transportation Barriers	18 percentile
	Traffic Proximity and Volume	2 percentile

Category	Existing Risk	Compared to Nation
Water & Wastewater	Underground Storage Tanks and Releases	2 percentile
	Wastewater Discharge	No data available

Source: (CEQ 2023)

None of the environmental justice indices are above the 90th percentile when compared to the Nation (Table 3).

Table 3. Environmental Justice Index for the FNSB (Engineer Hill & South Pole Hill Operations Sites)

Index	Compared to Nation	Compared to State
Particulate Matter 2.5	Not applicable	Not applicable
Ozone	Not applicable	Not applicable
Diesel Particulate Matter	2 percentile	36 percentile
Air Toxics Cancer Risk	34 percentile	57 percentile
Air Toxics Respiratory Hazard Index	53 percentile	62 percentile
Toxic Releases to Air	17 percentile	53 percentile
Traffic Proximity	11 percentile	16 percentile
Lead Paint	27 percentile	40 percentile
Superfund Proximity	76 percentile	86 percentile
Risk Management Plan Facility Proximity	29 percentile	55 percentile
Hazardous Waste Proximity	57 percentile	82 percentile
Underground Storage Tanks	0 percentile	0 percentile
Wastewater Discharge	Not applicable	Not applicable

Source: (EPA 2023)

4.0 Bridge to Terabithia Operations Site

Both EJScreen and CEJST use the FNSB Tract Number 02090001100 as their unit of analysis for the Bridge to Terabithia Operations Site. EJScreen lists a total population of this tract as 10,846, while CEJST lists the total population as 10,016 (CEQ 2023).

One of the socioeconomical indicators associated with the FNSB Tract Number 02090001100 listed as “Under Age 5” is above the 90th percentile when compared to the Nation (Table 4). The CEJST screen does not consider this tract area to be disadvantaged. It should be noted that this tract census area includes Fort Wainwright Army Base, which includes a population of 9,798 people as of the 2020 Decennial Census.

Table 4. Socioeconomical Indicators for the FNSB (Bridge to Terabithia Operations Site)

Indicator	Compared to Nation	Compared to State
Demographic Index	64 percentile	72 percentile
People of Color	58 percentile	54 percentile
Low Income	69 percentile	83 percentile
Unemployment Rate	39 percentile	26 percentile
Limited English Speaking	59 percentile	66 percentile
Less than High School Education	17 percentile	21 percentile
Under Age 5	97 percentile	98 percentile
Over Age 64	0 percentile	0 percentile

Source: (EPA 2023)

The existing environmental and human health risks for the FNSB Tract Number 02090001100 included three risks above the 90th percentile (Table 5). This was “Flood Risk” under the Climate Change category, “Housing Cost” under the Housing category, and “Proximity to Superfund Sites” under the Legacy Pollution category.

Table 5. Existing Environmental Conditions and Human Health Risks for the FNSB (Bridge to Terabithia Operations Site)

Category	Existing Risk	Compared to Nation
Climate Change	Agriculture Loss Rate	15 percentile
	Building Loss Rate	3 percentile
	Population Loss Rate	4 percentile
	Flood Risk	**97 percentile**
	Wildfire Risk	No data available
Energy	Energy Cost	8 percentile
	Particulate Matter 2.5	No data available
Health	Asthma	54 percentile
	Diabetes	0 percentile
	Heart Disease	0 percentile
	Low Life Expectancy	No data available
Housing	**Housing Cost**	**91 percentile**
	Lack of Green Space	No data
	Lack of Indoor Plumbing	65 percentile
	Lead Paint	11 percentile
Legacy Pollution	Abandoned Mine Land	Yes
	Formally Used Defense Site	No
	Proximity to Hazardous Waste Facilities	52 percentile
	Proximity to Risk Management Plan Facilities	37 percentile
	Proximity to Superfund Sites	**93 percentile**
Transportation	Diesel Particulate Matter Exposure	28 percentile
	Transportation Barriers	48 percentile
	Traffic Proximity and Volume	21 percentile
Water & Wastewater	Underground Storage Tanks and Releases	5 percentile
	Wastewater Discharge	No data available

Source: (CEQ 2023)

None of the environmental justice indices are above the 90th percentile when compared to the Nation (Table 6).

Table 6. Environmental Justice Index for the FNSB (Bridge to Terabithia Operations Site)

Index	Compared to Nation	Compared to State
Particulate Matter 2.5	Not applicable	Not applicable
Ozone	Not applicable	Not applicable
Diesel Particulate Matter	51 percentile	70 percentile
Air Toxics Cancer Risk	76 percentile	78 percentile
Air Toxics Respiratory Hazard Index	87 percentile	84 percentile
Toxic Releases to Air	37 percentile	85 percent
Traffic Proximity	44 percentile	59 percentile
Lead Paint	32 percentile	47 percentile
Superfund Proximity	84 percentile	92 percentile
Risk Management Plan Facility Proximity	26 percentile	60 percentile
Hazardous Waste Proximity	70 percentile	91 percentile
Underground Storage Tanks	44 percentile	49 percentile
Wastewater Discharge	Not applicable	Not applicable

Source: (EPA 2023)

5.0 Birch Hill Operations Site

Both EJScreen and CEJST use the FNSB Tract Number 02090001700 as their unit of analysis for the Birch Hill Operations Site. EJScreen lists a total population of this tract as 965, while CEJST lists the total population as 1,143 (CEQ 2023).

None of the socioeconomical indicators associated with the FNSB Tract Number 02090001700 are above the 90th percentile when compared to the Nation (Table 7). The CEJST screen does not consider this tract area to be disadvantaged.

Table 7. Socioeconomical Indicators for the FNSB (Birch Hill Operations Site)

Indicator	Compared to Nation	Compared to State
Demographic Index	25 percentile	15 percentile
People of Color	31 percentile	12 percentile
Low Income	34 percentile	38 percentile
Unemployment Rate	0 percentile	0 percentile
Limited English Speaking	0 percentile	0 percentile
Less than High School Education	12 percentile	14 percentile
Under Age 5	19 percentile	10 percentile
Over Age 64	42 percentile	56 percentile

Source: (EPA 2023)

The existing environmental and human health risks for the FNSB Tract Number 02090001700 included three risks above the 90th percentile (Table 8). This was "Flood Risk" under the Climate Change category, "Energy Cost" under the Energy category, and "Lack of Indoor Plumbing" under the Housing category.

Table 8. Existing Environmental Conditions and Human Health Risks for the FNSB (Birch Hill Operations Site)

Category	Existing Risk	Compared to Nation
Climate Change	Agriculture Loss Rate	42 percentile
	Building Loss Rate	3 percentile
	Population Loss Rate	8 percentile
	Flood Risk	**92 percentile**
	Wildfire Risk	No data available
Energy	**Energy Cost**	**94 percentile**
	Particulate Matter 2.5	No data available
Health	Asthma	49 percentile
	Diabetes	25 percentile
	Heart Disease	37 percentile
	Low Life Expectancy	No data available
Housing	Housing Cost	24 percentile
	Lack of Green Space	No data available
	Lack of Indoor Plumbing	**95 percentile**
	Lead Paint	25 percentile
Legacy Pollution	Abandoned Mine Land	No
	Formally Used Defense Site	Yes
	Proximity to Hazardous Waste Facilities	12 percentile
	Proximity to Risk Management Plan Facilities	4 percentile
	Proximity to Superfund Sites	54 percentile
Transportation	Diesel Particulate Matter Exposure	0 percentile
	Transportation Barriers	72 percentile
	Traffic Proximity and Volume	6 percentile
Water & Wastewater	Underground Storage Tanks and Releases	7 percentile
	Wastewater Discharge	No data available

Source: (CEQ 2023)

None of the environmental justice indices are above the 90th percentile when compared to the Nation (Table 9).

Table 9. Environmental Justice Index for the FNSB (Birch Hill Operations Site)

Index	Compared to Nation	Compared to State
Particulate Matter 2.5	Not applicable	Not applicable
Ozone	Not applicable	Not applicable
Diesel Particulate Matter	0 percentile	11 percentile
Air Toxics Cancer Risk	3 percentile	18 percentile
Air Toxics Respiratory Hazard Index	14 percentile	28 percentile
Toxic Releases to Air	11 percentile	38 percentile
Traffic Proximity	5 percentile	6 percentile
Lead Paint	28 percentile	45 percentile
Superfund Proximity	43 percentile	46 percentile
Risk Management Plan Facility Proximity	8 percentile	25 percentile
Hazardous Waste Proximity	16 percentile	40 percentile
Underground Storage Tanks	0 percentile	27 percentile
Wastewater Discharge	Not applicable	Not applicable

Source: (EPA 2023)

6.0 Pogo Hill, Quartz Hill, and Gerstle River Operations Sites

Both EJScreen and CEJST use the Southeast Fairbanks Census Tract Number 02240000400 as their unit of analysis for the Pogo Hill, Quartz Hill, and Gerstle River Operations sites. EJScreen lists a total population of this tract as 4,282, while CEJST lists the total population as 4,436 (EPA 2023).

Although none of the socioeconomical indicators associated with the Southeast Fairbanks Census Tract Number 02240000400 are above the 90th percentile when compared to the nation (Table 10), it is important to note that the Federal government considers all Alaska Native Villages to be disadvantaged communities. Therefore, the CEJST screen considers this location to be partially disadvantaged due one Alaska Native Village that is Federally-recognized (CEQ 2023).

Table 10. Socioeconomical Indicators for the Southeast Fairbanks Census Area (Pogo Hill, Quartz Hill, & Gerstle River Operations Sites)

Indicator	Compared to Nation	Compared to State
Demographic Index	35 percentile	28 percentile
People of Color	37 percentile	19 percentile
Low Income	45 percentile	54 percentile
Unemployment Rate	82 percentile	75 percentile
Limited English Speaking	68 percentile	78 percentile
Less than High School Education	33 percentile	41 percentile
Under Age 5	71 percentile	64 percentile
Over Age 64	31 percentile	41 percentile

Source: (EPA 2023)

The existing environmental and human health risks for the Southeast Fairbanks Census Tract Number 02240000400 included two risks above the 90th percentile (Table 11). This was “Flood Risk” under the Climate Change category and “Lack of Indoor Plumbing” under the Housing category.

Table 11. Existing Environmental Conditions and Human Health Risks for the Southeast Fairbanks Census Area (Pogo Hill, Quartz Hill, & Gerstle River Operations Sites)

Category	Existing Risk	Compared to Nation
Climate Change	Agriculture Loss Rate	No data available
	Building Loss Rate	3 percentile
	Population Loss Rate	89 percentile
	Flood Risk	**91 percentile**

Category	Existing Risk	Compared to Nation
	Wildfire Risk	No data available
Energy	Energy Cost	77 percentile
	Particulate Matter 2.5	No data available
Health	Asthma	37 percentile
	Diabetes	13 percentile
	Heart Disease	28 percentile
	Low Life Expectancy	45 percentile
Housing	Housing Cost	9 percentile
	Lack of Green Space	No data available
	Lack of Indoor Plumbing	**95 percentile**
	Lead Paint	27 percentile
Legacy Pollution	Abandoned Mine Land	No
	Formally Used Defense Site	Yes
	Proximity to Hazardous Waste Facilities	15 percentile
	Proximity to Risk Management Plan Facilities	0 percentile
	Proximity to Superfund Sites	5 percentile
Transportation	Diesel Particulate Matter Exposure	0 percentile
	Transportation Barriers	7 percentile
	Traffic Proximity and Volume	3 percentile
Water & Wastewater	Underground Storage Tanks and Releases	16 percentile
	Wastewater Discharge	No data available

Source: (CEQ 2023)

None of the environmental justice indices are above the 90th percentile when compared to the Nation (Table 12).

Table 12. Environmental Justice Index for the Southeast Fairbanks Census Area (Pogo Hill, Quartz Hill, & Gerstle River Operations Sites)

Index	Compared to Nation	Compared to State
Particulate Matter 2.5	Not applicable	Not applicable
Ozone	Not applicable	Not applicable
Diesel Particulate Matter	0 percentile	5 percentile
Air Toxics Cancer Risk	4 percentile	27 percentile
Air Toxics Respiratory Hazard Index	45 percentile	50 percentile
Toxic Releases to Air	11 percentile	39 percentile
Traffic Proximity	7 percentile	11 percentile
Lead Paint	32 percentile	50 percentile
Superfund Proximity	5 percentile	29 percentile
Risk Management Plan Facility Proximity	0 percentile	6 percentile
Hazardous Waste Proximity	3 percentile	31 percentile
Underground Storage Tanks	0 percentile	31 percentile
Wastewater Discharge	Not applicable	Not applicable

Source: (EPA 2023)

7.0 Dry Creek and Tok Hill Operations Sites

Both EJScreen and CEJST use the Southeast Fairbanks Census Tract Number 02240000100 as their unit of analysis of the Dry Creek and Tok Hill Operations Sites. EJScreen lists a total population of this tract as 2,567 while CEJST lists the total population as 2,442 (CEQ 2023).

Although none of the socioeconomical indicators associated with the Southeast Fairbanks Census Tract Number 02240000100 are above the 90th percentile when compared to the nation (Table 13), it is important to note that the Federal government considers all Alaska Native Villages to be disadvantaged communities. Therefore, the CEJST screen considers this location

to be disadvantaged due to the five Alaska Native Villages that are Federally-recognized (CEQ 2023).

Table 13. Socioeconomical Indicators for the Southeast Fairbanks Census Area (Dry Creek & Tok Hill Operations Sites)

Indicator	Compared to Nation	Compared to State
Demographic Index	66 percentile	73 percentile
People of Color	60 percentile	58 percentile
Low Income	69 percentile	83 percentile
Unemployment Rate	82 percentile	76 percentile
Limited English Speaking	0 percentile	59 percentile
Less than High School Education	64 percentile	81 percentile
Under Age 5	74 percentile	68 percentile
Over Age 64	66 percentile	81 percentile

Source: (EPA 2023)

The existing environmental and human health risks for the Southeast Fairbanks Census Tract Number 02240000100 included several risks above the 90th percentile (Table 14). This was "Population Loss Rate" and "Flood Risk" under the Climate Change category, "Energy Cost" under the Energy category, and "Lack of Indoor Plumbing" under the Housing category.

Table 14. Existing Environmental Conditions and Human Health Risks for the Southeast Fairbanks Census Area (Dry Creek & Tok Hills Operations Sites)

Category	Existing Risk	Compared to Nation
Climate Change	Agriculture Loss Rate	No data available
	Building Loss Rate	0 percentile
	Population Loss Rate	**96 percentile**
	Flood Risk	**94 percentile**
	Wildfire Risk	No data available
Energy	**Energy Cost**	**93 percentile**
	Particulate Matter 2.5	No data available
Health	Asthma	79 percentile
	Diabetes	69 percentile
	Heart Disease	83 percentile
	Low Life Expectancy	67 percentile
Housing	Housing Cost	10 percentile
	Lack of Green Space	No data available
	Lack of Indoor Plumbing	**99 percentile**
	Lead Paint	21 percentile
Legacy Pollution	Abandoned Mine Land	No
	Formally Used Defense Site	Yes
	Proximity to Hazardous Waste Facilities	0 percentile
	Proximity to Risk Management Plan Facilities	0 percentile
	Proximity to Superfund Sites	1 percentile
Transportation	Diesel Particulate Matter Exposure	0 percentile
	Transportation Barriers	24 percentile
	Traffic Proximity and Volume	3 percentile
Water & Wastewater	Underground Storage Tanks and Releases	10 percentile
	Wastewater Discharge	No data available

Source: (CEQ 2023)

None of the environmental justice indices are above the 90th percentile when compared to the Nation (Table 15).

Table 15. Environmental Justice Index for the Southeast Fairbanks Census Area (Dry Creek & Tok Hill Operations Sites)

Index	Compared to Nation	Compared to State
Particulate Matter 2.5	N/A	N/A
Ozone	N/A	N/A
Diesel Particulate Matter	0 percentile	5 percentile
Air Toxics Cancer Risk	0 percentile	18 percentile
Air Toxics Respiratory Hazard Index	0 percentile	22 percentile
Toxic Releases to Air	3 percentile	19 percentile
Traffic Proximity	7 percentile	10 percentile
Lead Paint	51 percentile	73 percentile
Superfund Proximity	0 percentile	32 percentile
Risk Management Plan Facility Proximity	0 percentile	9 percentile
Hazardous Waste Proximity	0 percentile	27 percentile
Underground Storage Tanks	32 percentile	50 percentile
Wastewater Discharge	N/A	N/A

Source: (EPA 2023)

8.0 Conclusion and Determinations

In accordance with EO 12898, Federal agencies are required to identify any adverse environmental or human health impacts anticipated from a Proposed Action, and to determine whether those impacts would disproportionately affect minority and/or low-income communities. Additionally, in accordance with EO 13045, Federal agencies are required to identify any impacts that would disproportionately affect children. In these determinations, the Southeast Fairbanks Census Area Pogo Hill, Quartz Hill, and Gerstle River Operations Sites (Tract Number 02240000400) and Dry Creek and Tok Hill Operations Sites (Tract Number 02240000100) have been identified as partially or fully disadvantaged communities. These operations sites will herein be written as, “the Preferred Alternative disadvantaged communities”.

The following Preferred Alternative activities would be the most likely to result in an increase in Environmental Justice Indices:

- Construction activities;
- Construction and post-construction traffic to and from the operations sites; and,
- Post-construction operation of temporary generator and permanent generators with associated gasoline generators to support Yukon Enhanced Training Initiatives training.

Construction activities that increase indices would be temporary and generally only last for the duration of the construction phase. These activities would predominantly include but not be limited to heavy equipment operation, temporary diesel generator operation at the Tok Hill Operations Site, community gravel pit operations, potential wastewater discharge, and increased traffic to and from the operations sites for construction purposes.

Upon completion of the construction phase, the Preferred Alternative would operate the Yukon Enhanced Training Initiative systems at the operations sites. Two of these operations sites would be permanently powered by diesel generators that would produce air pollutant emissions and potentially increase Environmental Justice Indices. This would include air pollutant emissions from gasoline generators that would be used to warm the diesel generators when necessitated by low temperatures. Furthermore, the operations sites would increase traffic to these remote areas by increasing accessibility with the new gravel access roads that would be

used by operators to reach the operations sites. These roads would also be available to and used by other site users. Gravel roads are known to be a main source of fugitive dust (i.e., particulate matter 2.5) emissions in rural Alaska.

Both construction and operation of the Preferred Alternative would most likely increase air pollutant emissions and potential of wastewater discharge that are associated most closely with the Environmental Justice Indices: particulate matter 2.5, ozone, diesel particulate matter, and wastewater discharge. These increases are not anticipated to increase any one index over the 90th percentile and would be minor at most. The rational for this assessment is that the operations sites are in remote locations removed from nearby communities and generally coincide with other land uses in the region. Furthermore, the increases would not have a significant adverse impact to the environmental or human health impacts due to their location and duration in the environment before dissipating.

Determination under EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Due to the remote location of the operations sites and temporary nature of impacts, it was determined that the Preferred Alternative would not have any significant adverse environmental or human health impacts or adverse impacts that would disproportionately affect minority and/or low-income communities.

Determination under EO 13045, Protection of Children from Environmental Health Risks and Safety Risks

Children are not anticipated to be in the area where the Preferred Alternative would be constructed except when doing recreational activities with an adult. Thus, it was determined that the Preferred Alternative would not have any disproportionate adverse impacts on the health or safety risks to children.

9.0 References

Council on Environmental Quality (CEQ). 2023. Climate and Economic Justice Screening Tool. Online Mapper, https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5. Accessed September 25, 2023.

Environmental Protection Agency (EPA). 2023. Environmental Justice Screening and Mapping Tool (Version 2.2). Online Mapper, https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5. Accessed September 25, 2023.

APPENDIX D

Notice of Availability

PUBLIC NOTICE

NOTICE OF AVAILABILITY

DRAFT ENVIRONMENTAL ASSESSMENT AND PROPOSED FINDING OF NO SIGNIFICANT IMPACT AND FINDING OF NO PRACTICABLE ALTERNATIVE FOR

354TH RANGE SQUADRON RADAR OPERATIONS SITES EIELSON AIR FORCE BASE, ALASKA

An Environmental Assessment (EA) has been prepared to analyze the impacts of the United States Air Force (Air Force) Proposed Action, *354TH Range Squadron Radar Operation Sites*. The purpose of this Proposed Action is to improve F-35 Lightning II Joint Strike Fighter training effectiveness in the North Pacific operational theater. The development of nine new operation sites with modern radars on Federal, State, and Fairbanks North Star Borough lands would modernize the Joint Pacific Alaska Range Complex and enable realistic training that is representative of the current threat environment. Thus, the Proposed Action is critical to the Air Force's readiness and mission capabilities. Eielson Air Force Base would operate radars at the Proposed Action operation sites at various sites throughout Interior Alaska.

The EA, prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA; evaluates potential impacts of alternative actions on the environment including the No-action Alternative. Based on this analysis, the Air Force has prepared a Proposed Finding of No Significant Impact (FONSI) and Finding of No Practicable Alternative (FONPA).

The Draft EA and Proposed FONSI and FONPA, dated DATE, are available for review and can be access electronically on the Eielson Air Force Base Environmental website at: https://www.eielson.af.mil/General-Information/Environmental/.

You are encouraged to submit comments through DATE. Comments should be provided to the Eielson Air Force Base Public Affairs Office by email at:

354FW.PA.PUBLICAFFAIRS@US.AF.MIL.

Accommodations for Individuals with disabilities will be made upon request. Individuals requesting accommodations should contact the Eielson Air Force Base Public Affairs Office at the aforementioned email or by phone at (907) 377-2116.

PRIVACY ADVISORY NOTICE

PUBLIC COMMENTS ON THIS DRAFT EA ARE REQUESTED PURSUANT TO NEPA, 42 UNITED STATES CODE 4321, ET SEQ. ALL WRITTEN COMMENTS RECEIVED DURING THE COMMENT PERIOD WILL BE MADE AVAILABLE TO THE PUBLIC AND CONSIDERED DURING THE FINAL EA PREPARATION. PROVIDING PRIVATE ADDRESS INFORMATION WITH YOUR COMMENT IS VOLUNTARY AND SUCH PERSONAL INFORMATION WILL BE KEPT CONFIDENTIAL UNLESS RELEASE IS REQUIRED BY LAW. HOWEVER, ADDRESS INFORMATION WILL BE USED TO COMPILE THE PROJECT MAILING LIST AND FAILURE TO PROVIDE IT WILL RESULT IN YOUR NAME NOT BEING INCLUDED ON THE MAILING LIST.