Chapter 3
Affected Environment and Environmental Consequences

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

Chapter 3.0 of this Environmental Impact Statement (EIS) presents the environmental consequences for each of the six definitive and six programmatic proposals described in Chapter 2.0. Each proposal section has a subsection for each resource. The resource subsection presents details of the affected environment needed to address specific aspects of the proposal, the appropriate impact assessment methodology, and the analysis of environmental consequences for each proposal alternative. The level of detail and analysis for each resource topic was determined by the anticipated level of impact from the screening assessment conducted for each of the proposals under evaluation in this EIS, as described in Chapter 1.0, Section 1.5.2.

In accordance with the National Environmental Policy Act (NEPA)-implementing regulations adopted by the Army and Air Force, the impact assessments for each definitive proposal alternative in this final EIS were influenced by comments received from the general public; Federal, State, and local government organizations and officials; and other interested organizations during the public scoping and draft EIS public review and comment periods, respectively.

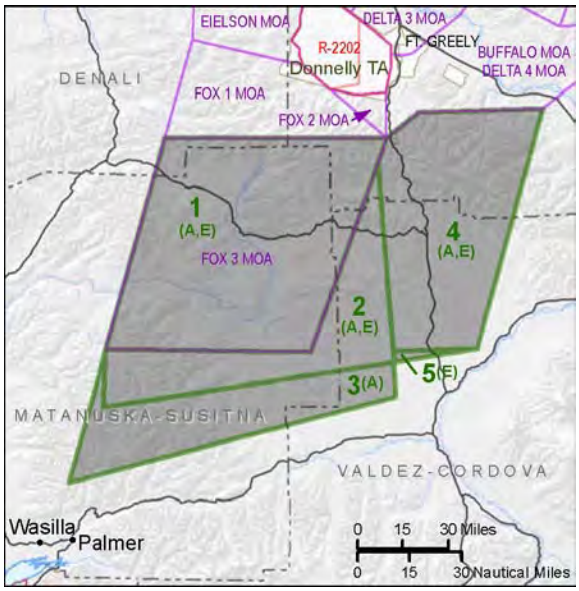
The Army and Air Force currently incorporate several existing mitigations into their ongoing mission activities using existing Special Use Airspace (SUA) and training areas affected by the JPARC proposals based on previous NEPA actions. These measures serve the purpose of reducing impacts on a range of physical, natural and human resources. Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures*, provides additional information about these ongoing measures and practices for the Army and Air Force in Alaska.

The Army and Air Force proponents of the JPARC proposed actions have considered additional mitigations to avoid or reduce potential impacts that may result from implementing the six definitive proposals in this EIS. Proposed mitigations are provided throughout Chapter 3.0 of the final EIS, immediately following the impact assessment of each resource for each proposed action, and are also compiled and listed in Appendix K. The proposed mitigations in the final EIS represent the planned final decisions by the Army and Air Force to avoid, reduce, or implement management actions to address significant adverse impacts and are included to provide the public, government agencies and officials, and other interested organizations with necessary information on the selected mitigations and to request input on these mitigations during the final EIS stage. The decision document (i.e., the Record of Decision [ROD]) for this EIS will identify mitigations that would be adopted and implemented by the Army and Air Force as part of the proposed actions. Decision makers have given serious consideration to adopting mitigations and best management practices (BMPs) that allow implementation of the proposed actions without compromising their purpose and need, while identifying and adopting mitigations to protect the environment to the degree deemed reasonable and practicable.

The ROD will not adopt mitigations for the programmatic proposals evaluated in Chapter 3.0. However, it may provide recommendations for future planning that concern siting, criteria, measures, and mitigations that might apply based on those used for similar actions for by the various military Services and the analysis in the EIS. These recommendations are included in the impact assessments of the various resources for the programmatic proposals and may be considered and applied in future planning for these actions.

3.1 FOX 3 MOA EXPANSION AND NEW PAXON MOA (DEFINITIVE)

The U.S. Air Force proposes to expand the Fox 3 Military Operations Area (MOA) and establish a new, adjacent Paxon MOA to provide the vertical and horizontal airspace structure needed to better accommodate low-altitude threat and multi-axis mission activities during Joint Pacific Alaska Range Complex (JPARC) training exercises. (Refer to the gray-shaded area in the map to the right.) The combined area for the expanded Fox 3 MOA and new Paxon MOA proposal overlies a total of about 7.5 million acres (11,772 square miles) of which less than 1 percent is military-owned land. Two alternatives are under consideration for this proposal. On the inset map, Alternative A is composed of areas 1, 2, 3, and 4. Alternative E is composed of areas 1, 2, 4, and 5. Alternative E reduces the amount of airspace by approximately 1.164 million acres (1,820 square miles) by moving area 3 to the north by 20 NM.



Because the proposed airspace activities pose minimal risk on the ground, the proposals do not include restrictions on surface activities. As noted in the resource analyses, only minimal effects at most would occur on ground safety, physical resources, water resources, cultural resources, and infrastructure and transportation (ground) for this proposal. Information in the following subsections is focused on resources with medium and high potential for impacts.

Following the impact assessment for each resource, the final mitigations are listed that have been selected by the Army and Air Force to avoid, reduce, or implement management actions for potential significant adverse impacts from implementing the proposed action. These are included to provide the public and other agencies with necessary information on the final mitigations proposed by the Army and Air Force.

3.1.1 Airspace Management and Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.

3.1.1.1 Affected Environment

The airspace alternatives described in Chapter 2.0, to include the expanded Fox 3 and Paxon MOAs, were designed to meet the minimum lateral and vertical parameters necessary to support the varying air-to-air and air-to-ground flight maneuvers conducted during JPARC exercises and routine training activities. The general region where airspace is proposed for the different JPARC projects includes general aviation aircraft activities, which are considered among the highest in the United States due to the heavy reliance on these operations for subsistence, medical support, and other demands. Historically, commercial, military, and general aviation operations within this region have been reasonably compatible considering the (1) current airspace structure that segregates these operations, (2) effectiveness of the Air Traffic Control (ATC) system in managing the air traffic, (3) close cooperation between military scheduling agencies and the Federal Aviation Administration (FAA) in coordinating airspace use, and (4) availability of the Special Use Airspace Information Service (SUAIS) and other available sources that provide the daily active status of the Alaska SUA.

The following sections, coupled with information provided in Appendix D, Airspace Management, describe representative baseline uses of all military and civil aviation activities within the region encompassing the proposed airspace for each Alternative shown in Figure 3-1 and Figure 3-2. These figures show the airspace proposals relative to the aeronautical features depicted on the Fairbanks and Anchorage Sectional Charts and the Alaska Instrument Flight Rules (IFR) Enroute High Altitude (H-1) Chart (FAA 2011-1, 2011-2, 2011-3).

Table B-2 (in Appendix B) defines those aviation and airspace terms most commonly used throughout this EIS. Further definitions and descriptions of all airspace classifications are included in Appendix D, *Airspace Management*.

MILITARY AIRSPACE USE

MOAs/ATCAAs

As described in Appendix B, Section B.1.1, and Appendix D, *Airspace Management*, MOAs are established at altitudes up to but not including 18,000 feet above mean sea level (MSL) (flight level [FL] 180) for the purpose of separating certain nonhazardous military flight activities from IFR traffic. The lower MOA altitude limits, such as those established in Alaska, are based on terrain elevation, underlying land uses, civil aviation needs, and other considerations that are collectively intended to minimize adverse effects while optimizing opportunities for meeting key mission training requirements. Air Traffic Control Assigned Airspace (ATCAA) areas overlie most of the Alaska MOAs from FL180 to FL310 or higher altitudes assigned by the FAA Anchorage Air Route Traffic Control Center (ARTCC), to provide the higher-altitude airspace commonly used in conjunction with the MOAs for both major flying exercise (MFE) and routine training flight maneuvers. Many mission types and flight maneuvers are typically conducted in the upper MOA altitudes and within the ATCAAs, depending on the performance capabilities and mission requirements of the individual aircraft types. As is publicized to the aviation community, the FAA has granted a Part 91 exemption that permits the Air Force and other Service participants in joint air operations to conduct lights-out training. This training is conducted in the JPARC MOAs between late October and late February and normally occurs 3 to 4 nights per week. A NOTAM is issued in advance of these operations and procedures are in place to monitor the airspace for nonparticipants and immediately cease lights-out operations if any hazard exists.

Appendix D, *Airspace Management*, Table D–3, lists the representative portions of a sortie duration in which each aircraft type typically operates within the different MOA and ATCAA altitudes noted in this table. The times spent at lower altitudes by fighter-type aircraft are typically longer in a restricted area where air-to-ground activities occur. This table reflects the portions of flight time at those lower altitudes from the perspective of the different airspace proposals presented in this EIS.

Analysis of the documented annual operations data for the more commonly used SUA areas generally indicates that about half of all annual sortie-operations are conducted during those annual 60-day, twice-daily time periods of MFEs. Other flight operations throughout the year are routine training missions, conducted an average of 240 flying days per year, generally between 7:00 a.m. and 7:00 p.m. About a fourth of those routine training operations extend into the evening hours (7:00 p.m. to 10:00 p.m.) to meet nighttime training requirements.

Table 3-1 compares the representative use of the existing Fox 3 MOA/ATCAA and the existing Paxon ATCAA (FL180 and above) by MFEs only over 60 days annually versus the routine training within these two areas conducted an average of 240 days annually. As noted in this table, MFE flight activities such as the RED FLAGs typically end by 7:00 p.m., while routine training is more likely to extend into the nighttime hours (after 7:00 p.m.) The actual number of flying days and daily sortie-operations will vary from year to year, depending on such factors as budget constraints, the number of scheduled MFEs, weather conditions, and aircrew combat readiness training requirements. Routine training occurs during the MFE flying days but at reduced levels from the averages listed in Table 3-1.

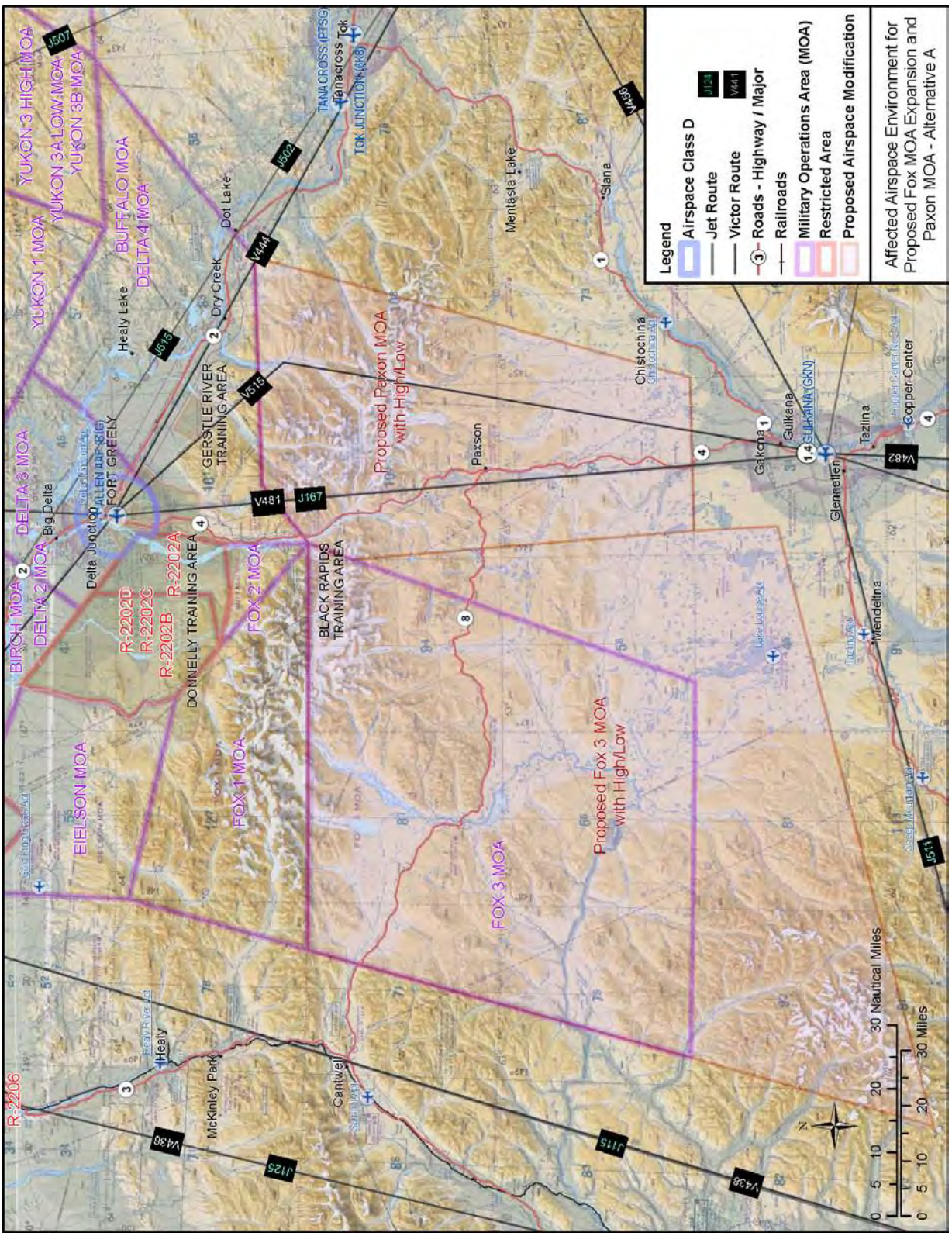


Figure 3-1. Affected Airspace Environment for Proposed Fox 3 MOA Expansion and Paxon MOA – Alternative A

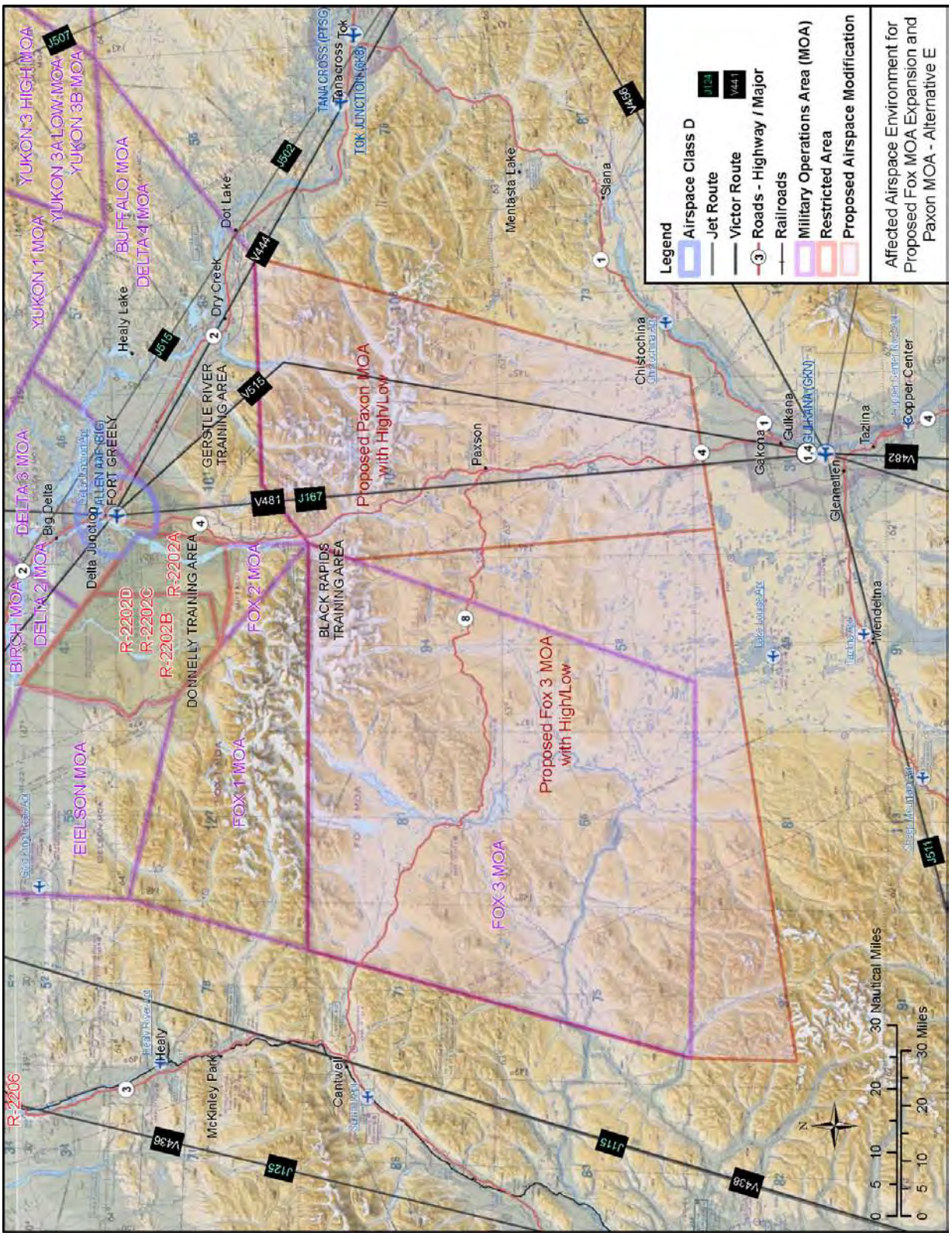


Figure 3-2. Affected Airspace Environment for Proposed Fox 3 MOA Expansion and Paxon MOA – Alternative E

Table 3-1. Representative Average Use of the Existing Fox 3 MOA/Air Traffic Control Assigned Airspace and Paxon Air Traffic Control Assigned Airspace

Flight Activity	Average Sortie-Operations							
	Annual Total		Average Daily Total		Average Daytime (7:00 a.m. to 7:00 p.m.)		Average Nighttime (7:00 p.m. to 10:00 p.m.)	
	Fox 3	Paxon	Fox 3	Paxon	Fox 3	Paxon	Fox 3	Paxon
MFE (60 flying days)	5,334	3,770	89	63	89	63	MFEs typically end by 7:00 p.m.	
Routine training (240 flying days)	4,543	3,212	19	13	14	10	5	3

Key: MFE=major flying exercise; MOA=Military Operations Area.

As discussed above, the altitudes at which aircraft typically operate during a MOA sortie mission vary by aircraft types, their performance capabilities, and combat mission roles. The altitude distributions shown in Appendix D, *Airspace Management*, Table D–3, indicate that fighter aircraft generally operate below 5,000 feet above ground level (AGL) less than 10 percent of the sortie duration time, which minimizes their mission presence within the lower altitudes normally used by Visual Flight Rules (VFR) aircraft.

The larger extent of SUA required for MFEs and the greater number of flight operations conducted during those exercise periods may require that IFR aircraft be routed around that airspace when active unless weather or other flight conditions could dictate that ATC direct this traffic through the SUA. In such cases, ATC would separate this traffic laterally and/or vertically from military aircraft operations. As the FAA has indicated and daily averages in Table 3-1 help substantiate, the higher-level operations during the MFEs have the greater potential to affect air traffic in the region than the lower-density routine training operations that occur on a daily basis throughout the year.

Military Training Routes

Several Military Training Routes (MTRs) transit throughout this region, including VFR routes (VR-) used only under VFR conditions and IFR routes that may be flown under both VFR and IFR conditions. Those MTRs transiting the affected environment are depicted on Sectional Aeronautical Charts and described along with avoidance areas in the U.S. Department of Defense (DoD) Flight Information Publication AP/1B. The general location, description, and representative annual use of each MTR are included in Appendix D, *Airspace Management*, Figure D-2 and Table D–4. MTRs are low-level corridors approved for subsonic airspeeds in excess of 250 knots and are typically used for tactical training missions while transiting to and from MOAs or restricted areas. As noted in Table D-4, many of the Alaska MTRs have very limited use with the higher use VR-937 and VR-941 averaging about six operations each flying day. Nonparticipating aircraft are not prohibited from flying within an MTR; therefore, military pilots must exercise see-and-avoid procedures while conducting low-level missions along these routes. The proposed actions would not affect the current structure or use of these routes; therefore, they are not addressed any further in the Airspace Management and Use discussions, in Chapter 3.0.

Other Military Airspace Uses

Other airspace used for military flight training in this region includes aerial refueling routes and a low-altitude tactical navigation (LATN) area. Refueling routes (orbits) are located at higher altitudes within the JPARC airspace and are scheduled and used for refueling operations in support of both MFE and routine training missions. The LATN area, shown in Figure D-2, consists of a large rectangular expanse of airspace encompassing much of the JPARC airspace and is used mostly by C-17 and C-130 aircraft for nonhazardous, low-level training. These aircraft are limited to 300 feet AGL and above

during daylight (1,000 feet AGL at night) and airspeeds of 250 knots (288 statute miles per hour) while operating within this LATN area and are precluded from flying over the same points more than once per day. Aircraft are required to avoid airfields, towns, noise-sensitive areas, and wilderness areas by prescribed vertical and/or horizontal distances. Aerial refueling routes and LATN areas are not shown on Aeronautical Charts. The proposed actions would not affect the current structure and use of either; therefore, they are not discussed any further in the Airspace Management and Use discussions in Chapter 3.0.

Civil Aviation Airspace Use

Commercial and general aviation activities throughout the region include airlines, cargo, air charter, subsistence support, flight instruction, air ambulance, recreational flying, law enforcement, fire surveillance and suppression, and other such operations potentially affected by both current and proposed SUA activities**.** Commercial air traffic follow IFR procedures at higher altitudes while under the positive control of the ATC system; general aviation aircraft typically operate under VFR procedures at lower altitudes (below 10,000 feet MSL) while visually maintaining a safe distance from terrain, obstructions, and other aircraft. VFR aircraft may request flight following from ATC but they are not subject to the positive control of the ATC system. The following sections describe those Federal airways, jet, and Area Navigation (RNAV) routes, corridors, public airports, private airfields, and other areas used by commercial and general aviation aircraft within the affected environment. Those FAA facilities providing ATC services and positive control of SUA use in this region include the Anchorage ARTCC and the Fairbanks and Anchorage Terminal Radar Approach Control (TRACON) facilities. Discussions of the existing and proposed airspace uses considered, as appropriate, the airspace and transfer points used by these facilities to manage en route and airport air traffic.

Federal Airways

Federal airways in this region include VOR ("Victor" airways) expressed as V123; RNAV, expressed as T123; and colored airways, expressed as A12, B12, G12, or R12. Each type of route is served by a different navigational aid source for guiding aircraft along these routes: high-frequency transmitter (Victor), global positioning system (GPS) for RNAV routes, and low-frequency transmitter (colored). Unless otherwise noted, these airways extend from 1,200 feet AGL up to but not including 18,000 feet MSL, with lateral boundaries of 4 nautical miles (NM) on each side of the centerline. This places airways within the same altitude structure as MOAs and those restricted area altitudes below FL180. IFR aircraft operating along an airway are assigned altitudes in 1,000-foot increments (MSL) by ATC to maintain the required separation between these aircraft. VFR aircraft can also navigate along an airway but would do so at altitudes 500 feet above or below the IFR altitudes, so as to maintain adequate vertical and visual separation from the IFR traffic. Following an airway in this manner does not require VFR aircraft to be in contact with ATC.

Table 3-2 lists those airways within the region having segments that transit through or adjacent to the existing and proposed airspace. This table includes data provided by the FAA on the average daily use and the minimum altitudes typically assigned by ATC to IFR aircraft along those route segments unless an aircraft is otherwise climbing/descending while transitioning to/from the Fairbanks and Anchorage airports. The FAA notes that the altitudes assigned along these airways can fluctuate rather significantly on a daily basis, depending on the existence of jet streams or other conditions that may affect altitude assignments. The higher-density MFE sortie-operations, during their daily exercise periods, have the greater potential to affect IFR traffic and may require that ATC reroute some aircraft around the active SUA. The FAA has indicated that, overall, the current impact of these military operations on IFR traffic flows is minimal, with the possible exception of the Delta MOA and ATC's ability to gain immediate access to this MOA airspace if needed for priority traffic. Military activities are always suspended when necessary to accommodate those priorities. Potential impacts are minimized to the greatest extent

possible through advanced planning and scheduling of the SUA use and real-time coordination between the FAA and the responsible military range control/using agency.

Table 3-2. Federal Airway Use in the Affected Environment for JPARC Airspace Proposals

Federal Airways	Segment Proximity to Proposed Airspace	Typical Minimum Altitude Assigned by ATC (feet MSL)	Average Daily Use
V444/T232 A2/A15	Adjacent to RLOD extended R-2202 and new BAX restricted area	8,000	2
V456/G11	Adjacent to Fox 3 MOA	10,000 and above while climbing/descending from Anchorage	10 (jet stream–dependent)
V438/T227	Adjacent to Fox 3 MOA	10,000 and above while climbing/descending to/from Anchorage and Fairbanks	Up to 30
V481/T226/B25	Adjacent to/crosses new BAX restricted area subdivisions	6,000	3
V515	Crosses new Paxon MOA and new BAX restricted area	12,000	0

Key: ATC= Air Traffic Control; BAX=Battle Area Complex; MOA=Military Operations Area; MSL=mean sea level; RLOD=Realistic Live Ordnance Delivery.

Source: FAA Anchorage Air Route Traffic Control Center, June 30, 2011.

National initiatives are under way as part of the FAA NextGen program to implement greater use of RNAV airways so as to allow GPS-equipped aircraft to fly at lower altitudes to destinations without land-based navigational systems. The Alaska Airmen's Association estimates 4,000 aircraft will have this equipment installed in the next 5 years, and the FAA is continuing to consult with Alaska aviation system users to identify and prioritize those RNAV routes that will best serve all aviation interests. The potential future effects the existing and proposed SUA may have on the NextGen initiative are yet to be determined (Alaska Department of Transportation and Public Facilities [ADOT&PF] 2010-1).

Jet and RNAV Routes

Jet routes extend from FL180 up to FL450 in Class A airspace, have no defined widths, and are used more extensively by IFR jet aircraft. Jet routes are within the same altitude range as ATCAAs and restricted airspace above FL180. Most IFR air traffic transits jet/RNAV routes at FL240 and above, which is above the altitudes used by military aircraft for any length of time during most mission activities. Use of higher altitudes is coordinated in advance with the FAA so that ATC can plan accordingly in providing the required vertical or lateral separation from the military aircraft. Advanced SUA scheduling and real-time coordination between Anchorage ARTCC, Fairbanks TRACON, and range scheduling agencies have minimized the impacts of any military operations on these routes throughout this region.

Several high-altitude RNAV (Q) routes coincide with the jet routes in this affected region to permit appropriately equipped aircraft to fly more direct routing where practical while not conflicting with jet route traffic. Flight safety along Q routes is ensured through a combination of aircraft navigation accuracy, route separation, and ATC radar monitoring and communications.

Table 3-3 lists the jet and RNAV routes near or within the existing and proposed SUA that are used by IFR air traffic between the Anchorage and Fairbanks International Airports and various contiguous United States (CONUS) and international destinations. En route air traffic operates at FL180 to FL450

along these routes within the affected region, unless otherwise climbing or descending through lower altitudes while transitioning to/from the Anchorage and Fairbanks airports. The average daily use and the typical minimum altitudes assigned by ATC for each route are noted in Table 3-3.

Table 3-3. Jet/Area Navigation Route Use in Affected Area for JPARC Airspace Proposals

Jet/RNAV Route	Segment Proximity to Proposed Airspace	Typical Minimum Altitude Assigned by ATC (feet MSL)	Average Daily Use
J-115/Q-43	Adjacent to west Fox 3 MOA/ATCAA boundary	10,000 to FL350 climbing/descending to/from Anchorage and Fairbanks	30-40
J-124/511	Adjacent to southern Fox 3 MOA/ATCAA boundary	Departing Anchorage up to FL380	Up to 30 jet stream–dependent
J-167	Transits Paxon ATCAA and new BAX restricted area	Climbing/descending phase of flight to FL380	3
J-502/515	Adjacent to Paxon MOA/ATCAA northeast boundary	At or above FL200, climbing/descending from Fairbanks	6-12
Northern Control Area Route – FL280 and above			
NCA-22	Transits expanded R-2205 (DMPTR)	At or above FL290	6 jet stream–dependent

Key: ATC=Air Traffic Control; ATCAA=Air Traffic Control Assigned Airspace; BAX=Battle Area Complex; DMPTR=Digital Multi-Purpose Training Range; FL = flight level; MOA=Military Operations Area; MSL=mean sea level; NCA=Northern Control Area; RNAV=Area Navigation.

Source: FAA Anchorage Air Route Traffic Control Center Letter, June 30, 2011.

As discussed for the Federal airways, the higher-density MFE aircraft operations have the greater potential for impacts on IFR air traffic flows. The FAA indicates such impacts have been minimal but, if necessary and depending on the route of flight, aircraft may be rerouted through the southern portion of the Paxon and Fox 3 ATCAAs south of the 63° North Latitude line between FL320 and FL350. Aircraft operating north of this line must remain west of the Fox and Eielson MOAs/ATCAAs (FAA 2011-4).

VFR Air Traffic

Scoping and draft EIS comments from the general aviation community indicated that many VFR flight activities occur within the affected environment in both population and tourist centers, as well as in remote areas where recreational, hunting, mining, and other special interests may only be accessible by air. Those areas identified as having considerable such VFR flight activities include but are not limited to Delta; Paxson; Lake Louise; Tangle Lakes; the Denali, Alaska, and Richardson Highways; Isabel Pass; Gulkana River; Talkeetna; the Tolsona and Crosswinds Lakes; Copper River Basin; and the Chickaloon/Sheep Mountain Pass.

The number of VFR aircraft flights operating between the various destinations and along the common flyways throughout this region is not available from the FAA or other sources. Therefore, it is not possible to reasonably quantify the higher-density operations within these areas during the different seasonal peak periods. However, it is generally known that a higher number of flights normally occur during the tourist and hunting seasons in the summer and fall. The data shown in Appendix D, *Airspace Management*, Table D–5, for the regional public airport operations provide some measure of the number of flights that may operate within those locales generally served by each airport. Scoping and draft EIS comments indicate that most general aviation aircraft operate below 3,000 feet AGL within this region.

Federal Aviation Regulation (FAR) Part 135 requires that Air Taxi and Air Charter pilots operate at 500 feet AGL and above. A large number of these Part 135 flights operate out of Fairbanks International.

VFR aircraft commonly use flight routes that follow familiar land references to minimize travel distances and provide safe clearance from obstacles and congested areas. The Richardson Highway, Alaska Highway, and Birch VFR corridors shown in Figure B-1 (in Appendix B) enable VFR aircraft to transit through areas that separate them from military operations in the surrounding MOA airspace. Richardson Highway leads through passes that aircraft commonly use to access areas between Fairbanks and south-central Alaska. VFR aircraft also follow the George Parks Highway, and helicopters are known to conduct low-altitude flights along the trans-Alaska oil pipeline.

While VFR aircraft are not restricted from flying through an active MOA, Aircraft Owners and Pilots Association surveys indicate that more than half of VFR pilots elect to deviate around SUA (Williams 2012). The Eielson Air Force Base (AFB) and Joint Base Elmendorf-Richardson (JBER) Midair Collision Avoidance pamphlets and other informational sources emphasize the potential risks of flying through a MOA and encourage pilots to exercise extreme caution while flying within, near, or below this active airspace. Prior to entering any MOA, pilots are encouraged to obtain information regarding its active use since the status of these areas may change on a frequent basis. The scheduled and near real-time JPARC SUA status is available through the Fairbanks Flight Service Station (FSS) and its satellite FSS locations. Notices to Airmen (NOTAMs) cover airspace throughout Alaska, and the SUAIS covers areas east of Fairbanks and near Delta Junction in the Yukon 1, 2, and 3 MOAs, and in the Birch, Buffalo, Delta, and Eielson MOAs. Additionally, this service can be provided to anyone within radio range near or within R-2202, R-2211, and the MTRs that transit this area. This service assists pilots with preflight planning and helps provide situational awareness while operating within or near the SUA areas. SUAIS capabilities and the manner in which this service is provided are outlined in an FAA agreement and Air Force procedures, included as a discussion topic at Alaska Civilian/Military Aviation Council (ACMAC) meetings, and communicated through the SUAIS Pamphlet and other means. Any changes to these capabilities and the areas serviced by the SUAIS are appropriately addressed and communicated through those same venues.

Pilots may also obtain the status of JPARC SUA use through the Eielson Range Control (ERC) function. Pilots can contact the ERC directly or receive recorded information on scheduled airspace use outside of those daily periods when the ERC is staffed. Advanced information on airspace use can also be obtained by contacting the 353rd Combat Training Squadron at Eielson AFB. ERC advisory services are limited to information regarding the airspace activity status and approximate positions of known civil and military aircraft. The ERC has radar sites to provide radar coverage from Fairbanks to south of Delta Junction in the areas of the Alaska and Richardson Highways. This coverage has limited capabilities for detecting smaller aircraft not equipped with transponders.

Traffic advisories may be available through the Fairbanks or Anchorage radar ATC facilities within their respective areas of responsibility and as radio and radar coverage and controller workload permit. This advisory service requires that aircraft be equipped with a radio and transponder and pilots be familiar with the ATC radio frequencies and basic communication protocols needed to obtain this service. Controllers may be able to provide traffic advisories, safety alerts, general navigation guidance, or emergency assistance, as necessary, to increase their awareness of other air traffic in the area so that actions can be taken, as needed. Such advisory services may not always be available within all active MOAs and they do not relieve pilots of their responsibility to exercise “see and avoid” procedures, remain in visual flight weather conditions, and comply with FARs. Military pilots are also responsible for maintaining situational awareness at all times so as to remain clear of any nonparticipating aircraft observed operating through an active MOA.

Public Airports and Charted Private Airfields

Appendix D, *Airspace Management,* lists and depicts all the public airports and charted private airfields within approximately 25 to 30 NM of the JPARC proposed airspace, as well as the most recently reported operations data for the public facilities. Those public airports within the vicinity of the proposed Fox 3 and Paxon MOAs include Fairbanks International, Tok Junction, North Pole, Paxson, Gulkana, Copper Center, Tolsona Lake, Tazlina, Sheep Mountain, Palmer Muni, Wasilla, and Talkeetna. Of these, Fairbanks International is the only public airport having a control tower. Many of these airports are located along the Alaska, Richardson, Denali, and Glenn Highways.

Many charted and uncharted private airfields and floatplane sites exist beneath or within the general vicinity of the proposed expanded Fox 3 and Paxon MOAs. They include but may not be limited to Summit Lake Lodge, Mankomen Lake, Crosswind Lake, Farrars, Victory, King, Shirley Lake, Rustic Wilderness, Montana Creek, Secluded Lake, Carl's Landing, Birth Creek, and Bald Mountain. These airfields are all unattended and not for public use. No operations data are reported for these airfields; however, such privately owned facilities normally have few based aircraft and flight activities. Regardless, these more-limited operations and their aviation purposes may be subject to the same potential impacts as the public airport aircraft operations in this region.

Several scoping comments referenced aviation growth in Alaska and the potential effects the proposed airspace actions may have on this growth. The September 2010 *Alaska Aviation System Plan* provides estimates on the future aviation growth within the different boroughs relative to overall U.S. statistics (ADOT&PF 2010-2). This plan suggests the total number of based aircraft in Alaska will increase from 6,076 in 2008 to 7,271 by 2030, and hours flown will increase roughly from 700,000 in 2008 to 931,000 in 2030. The average annual increase in total aircraft operations at the airports addressed in this aviation system plan is projected to be just under 0.9 percent. Operations in the Matanuska-Susitna Borough are projected to grow the most rapidly (2.3 percent), followed by Anchorage (1.7 percent) and the Fairbanks North Star Borough (FNSB) and North Slope Borough (both at 1.4 percent). The system plan also indicates that U.S. military operations have declined since they peaked in 2002 following the 9/11 attacks and that FAA national projections assume no change in the number of military aircraft operations conducted at civilian airfields. This is consistent with JPARC expectations that future military flight operations with the proposed airspace actions would not increase significantly above current representative levels. System Plan forecasts show that, despite the recent disruptions from high fuel costs and the economic recession, aviation demand in Alaska is expected to resume growth, with higher levels occurring in more urbanized areas and less growth in rural areas (ADOT&PF 2010-2).

3.1.1.2 Impact Assessment Methodology

Establishment of new MOA and restricted area airspace would require rulemaking or nonrulemaking actions, as applicable, in each case per requirements in FAA Orders 1050.1 and 7400.2 (FAA 2006, 2011-5). This requires the FAA to complete an aeronautical study that examines the potential impacts of each SUA proposal on the safe and efficient use of airspace and ATC procedures. A draft concept of the airspace proposals is typically presented to the FAA during the initial planning processes and, as feasible, the FAA study of the finalized proposals is normally performed concurrently with the draft EIS review processes. Such study includes an overview of the existing airspace structure and use and an analysis of the proposed actions on the existing air traffic environment, to include (1) IFR and VFR en route operations, (2) public airports and charted private airfields, (3) ATC services, and (4) other airspace proposals and cumulative impacts in the region. This analysis also considers measures to mitigate or avoid, minimize, or reduce any impacts of these actions. Pending the FAA's formal analysis of each preferred airspace proposal, these criteria were used in the EIS impact assessments as a general basis for

identifying the potential environmental consequences of the JPARC proposals on all airspace uses. The FAA will consider these consequences as part of their aeronautical study analyses.

PUBLIC SCOPING ISSUES

A number of public scoping concerns raised by the general aviation community focused primarily on the adverse effects of lower-altitude military flights in the proposed new airspace, which may conflict with their present ability to transit relatively unhindered through this airspace. Such issues were included among those identified in the airspace management analyses as requiring an appropriate level of attention to mitigate potentially significant impacts.

METHODOLOGY

The potential consequences of the JPARC airspace proposal alternatives on all airspace uses were assessed by overlaying the proposed airspace on the current airspace environment, considering the competing aviation interests within each affected area, and determining the extent of any potential impacts on these competing interests.

The airspace management sections describe the current representative annual uses of the existing airspace and provide projected estimates of future activities in the proposed airspace. MFEs typically generate the highest daily use of the existing SUA and would also be projected to do the same under the proposed action. Therefore, the airspace impact analysis considers MFE operational periods as presenting the greater potential for any impacts on other airspace uses in the region. Appendix D, *Airspace Management*, Table D–2, indicates the annual representative number of sortie-operations for each MOA/ATCAA and restricted area.

As noted earlier, one aircraft sortie typically conducts mission activities within multiple SUA areas during the course of its mission and counts as a single sortie-operation within each. Therefore, the total shown for each airspace in this table reflects those multiple sortie-operations by single aircraft sortie missions. The portion of time each sortie mission spends within an individual SUA area differs depending on the flight profiles of individual mission types.

Operations data for the Federal airways, jet routes, public airports, and other airspace uses, as available from the FAA and other available sources, were also considered in assessing the extent of any potential impacts of the proposed actions and projected operations on these individual airspace uses in each affected area.

EVALUATION CRITERIA

The evaluation criteria considered the extent to which the different alternative SUA proposals could potentially affect the safe, orderly, and expeditious flow of all air traffic within each area. Pending further review of each airspace proposal by the FAA, impacts are qualified as minimal where there would be little or no adverse effects on other airspace uses; moderate where there may be a potential for adverse but not significant adverse impacts such as some measurable flight delays or diversions; and significant where there is a high probability of limiting or restricting other airspace uses during key periods when greater measures would be needed to mitigate such impacts. Any potential effects on flight safety and operations were considered to be a direct impact, regardless of the level of significance. Indirect impacts may involve increased time and attention to flight planning efforts, greater fuel/maintenance costs, and those factors that could necessitate a delay or rerouting of IFR or VFR air traffic around an active MOA/ATCAA and/or restricted area.

As noted previously, impact assessments are based on a more general perspective, whereas the FAA aeronautical study will explore the preferred airspace alternative actions in greater depth to determine the significance of any specific impacts on other airspace uses and what measures or proposal modifications can be considered to mitigate such impacts.

The airspace discussions make reference to potential impacts on civil and military air traffic when SUA is activated. Activation refers to those designated time periods that have been coordinated and scheduled for individual SUA use with the controlling FAA facility. Scheduled SUA activation periods are publicized in NOTAMs and the SUAIS and provided as real-time ATC and FSS advisories to ensure public awareness of military activities in this airspace.

The Anchorage ARTCC manages and controls joint use of the JPARC airspace, when activated, through standard ATC separation practices and the processes stipulated in a Letter of Agreement or Memorandum of Understanding (MOU) with the responsible Air Force or U.S. Army Alaska (USARAK) agency. Therefore, altitude restrictions may be placed on military aircraft within a MOA or ATCAA, as necessary, to accommodate both transiting civil IFR traffic and military training within that airspace. Any procedures and practices to mitigate the potential impacts of an airspace proposal on all airspace uses would be examined by the FAA, Air Force, USARAK, and other affected interests, as appropriate, in the EIS and aeronautical study review processes.

3.1.1.3 Environmental Consequences

3.1.1.3.1 Alternative A

The potential consequences of this proposal consider how the differing military activities and their typical operating characteristics may affect civilian aviation operations in this affected area. In all cases, FAA and military coordination procedures must ensure that priority is given to any wildland fire, Medevac, emergency, or other critical service flights requiring access through any airspace environment, both existing and any future areas that may be established as a result of the JPARC proposals.

MILITARY AIRSPACE USE

Proposed MOA/ATCAA Use

As noted previously, the annual number of aircraft sortie-operations would not increase significantly above the representative baseline levels described in Section 3.1.1.1 for both MFEs and other routine training. This baseline is inclusive of up to six annual MFEs, routine training operations, and the recent basing of six additional F-22s concurrent with the drawdown of F-15 aircraft at JBER. With the expanded Fox 3 MOA being closer to JBER, it is estimated that about half of the current Stony MOA fighter sorties would be conducted in the Fox 3 MOA/ATCAA if this proposal is implemented. Table 3-4 reflects that adjustment for the estimated annual and daily use of the Fox 3 and Paxon MOAs under this proposal. Since both the Fox 3 and Paxon MOAs would be used to accommodate most all training activities, it is assumed under a maximum case scenario that MFE and routine training sortie operations would be generally the same within both MOAs, as reflected in Table 3-4. Under the Night Joint Training (NJT) proposal, MFE (RED FLAG) sessions would be conducted during the extended hours up to 10 nights annually with the number of sortie operations being about half of those shown in this table for the daytime operations.

As discussed in Chapter 2.0, the intent of this proposal is to provide a greater expanse of airspace in which to more widely diversify the mission flight profiles that would be more characteristic of a combat environment. With no significant increase in representative operational levels in this airspace, the higher

density MFE aircraft sorties would be dispersed over a greater area on a daily basis than what currently occurs.

Use of the proposed airspace complex for the six annual MFEs would be planned, coordinated, and publicized well in advance through those means currently used to ensure all concerned are informed of the scheduled MFE periods and the MOAs and restricted areas to be used for these exercise activities. As noted in the Chapter 2.0, the routine training operations conducted throughout the year in the proposed Paxon MOA would be limited to 14,000 feet MSL and above. This MOA status would be available through the SUAIS and other means currently used to inform civilian pilots of Air Force flight activities within the central Alaska SUA.

Table 3-4. Estimated Average Use of the Proposed Fox 3 and Paxon MOAs/Air Traffic Control Assigned Airspace

Flight Activity	Estimated Average Aircraft Sortie Operations (includes Stony MOA portion)							
	Annual Total		Average Daily Total		Average Daytime (7:00 a.m. to 7:00 p.m.)		Average Nighttime (After 7:00 p.m.)	
	Fox 3	Paxon	Fox 3	Paxon	Fox 3	Paxon	Fox 3	Paxon
MFE (60 flying days)	6,009	6,009	100	100	100	100	50 plus during proposed NJT MFEs	
Routine training (240 flying days)	5,118	5,118[1]	22	22[1]	16	16[1]	6	6[1]

[1] Paxon routine training sorties limited to 14,000 feet MSL and above.

Key: MFE=major flying exercise; MOA=Military Operations Area; MSL=mean sea level; NJT=Night Joint Training.

Other Military Airspace Uses

As noted in Section 3.1.2, it is not anticipated that the structure and use of the MTRs, LATN areas, or ARs would be affected by any of the proposed JPARC airspace actions. Therefore, they are not included in the discussion of environmental consequences for these proposals.

CIVIL AVIATION AIRSPACE USE

The extent to which Alternative A may affect civil aviation airspace use would vary with the locations, altitudes, and times of day both higher-density military and civil aviation activities would occur within the areas affected by this proposal, as addressed below.

Federal Airways

The Federal airways potentially affected by this alternative and their reported average use are described in Section 3.1.1.1 and shown in Figure 3-1. The aircraft altitude distributions shown in Appendix D, *Airspace Management*, Table D–3, indicate that approximately 30-40 percent of fighter aircraft and up to 50 percent of cargo aircraft sortie missions would typically operate within those altitudes used by airway traffic (below FL180). The following addresses the potential impacts of the proposed action on each airway, considering the distances and altitudes needed to separate airway traffic from MOA operations.

- V 438/T 227 is approximately 15 NM west of and parallel to the existing and proposed Fox 3 MOA boundaries with the Minimum Enroute Altitude (MEA) being 10,000 feet MSL along this segment. The MEA is the lowest published altitude along a route segment that assures obstacle clearance and radio navigation signal and ATC communications coverage. FAA data indicate an average of up to 30 IFR flights transit this airway on a daily basis. When active, the

Fox 3 MOA should have minimal impacts on the en route airway traffic given the procedures currently used by ATC to separate this airway traffic from the Eielson, Fox 1, and Fox 3 MOAs. However, the lower portion of this proposed airspace may infringe upon that airspace currently used by the Anchorage ARTCC or Approach Control to route climbing/descending air traffic between this airway and Anchorage International or other destinations within this region.

- V 456/G11 is approximately 10 NM south of and parallel to the proposed Fox 3 MOA southern boundaries with an MEA of 10,000 feet MSL along that segment. FAA data indicate an average of 10 daily IFR flights transit this airway segment. When active, the closer proximity of the southern Fox 3 MOA boundary to this route may have a moderate impact on the airspace needed by ATC to route climbing/descending air traffic to/from Anchorage, Gulkana, and other destinations.
- V 481/T 226/B 25 transits the airspace proposed for the Paxon MOA and would be approximately 10 NM east of and parallel to the proposed Fox 3 eastern boundary. The MEA for this segment is 12,000 feet MSL with altitudes as low as 6,000 feet MSL being assigned by ATC, as needed, for the 3 average daily flights that transit this airway and/or are transitioning to an airport within the region. Use of the Paxon MOA during the MFE active time frames may have a significant impact by closing these low altitude routes when this MOA is active, while impacts of the expanded Fox 3 MOA use on this route would be minimal.
- V 515 also transits the proposed Paxon MOA with an MEA of 12,000 feet MSL. FAA data indicate there is very little use of this airway, therefore, any impacts of the active Paxon MOA on V 515 may be minimal.
- V 444/T232/A2/A15 borders the northeast corner of the proposed Paxon MOA and has an MEA of 5,000 feet MSL along this segment. FAA data indicate an average of 3 daily IFR flights transit this airway with altitudes assigned by ATC being at 8,000 feet MSL and above. The active use of the Paxon MOA may have a moderate impact on this airway use.

Overall, this alternative may have moderate to significant impacts on airway IFR traffic and/or the airspace used by Anchorage ARTCC and/or Fairbanks TRACON to transition arriving/departing air traffic between any one of these airways and an airport environment. The FAA has expressed concerns that the Paxon MOA, when active, would result in the closure of three airways (V481, V515, and V444) forcing small or low flying aircraft to fly VFR between Gulkana/Northway to Delta Junction/Fairbanks. This may be problematic if these aircraft are unable to circumnavigate the MOA due to the high terrain in the surrounding area. The lack of low altitude radar and frequency coverage in some areas could also affect ATC's ability to track/monitor those smaller or low flying aircraft transiting between airports in this region while operating off the established airways.

The extent of any impacts would depend on the daily use of the expanded Fox 3 and new Paxon MOAs relative to the airway traffic and those options available for ATC to separate this IFR traffic from the active MOA airspace and military operations. Those airways transiting the Paxon MOA would be most impacted with their closure during the higher density MFE and routine training periods that could require those airway flights to be delayed or rerouted, as necessary, to avoid this active airspace. Advanced planning and real-time coordination between military scheduling agencies and the FAA would continue to be used to minimize impacts during those more problematic periods. The specific impacts on air traffic flows and ATC system capabilities and those measures that could be considered for minimizing those impacts on all airspace uses will be further examined by the FAA in the aeronautical study of the preferred alternative.

Jet/RNAV Routes

Use of the jet routes potentially affected by this alternative are noted in Section 3.1.1.1 and shown in Figure 3-1. Those military aircraft operating at FL180 and above in the ATCAAs overlying the existing/proposed MOAs present the greater potential for any impacts on this route traffic. The aircraft altitude distributions shown in Appendix D, *Airspace Management*, Table D–3, indicate the typical use of those higher altitudes between FL180 and FL270 by fighters and other aircraft operating within the jet route structure.

The following describes the potential impacts the proposed MOAs/ATCAAs may have on those routes in closest proximity to this airspace:

- J167 transits above the proposed Paxon MOA through the existing Paxon ATCAA and approximately 10 NM east of the proposed Fox 3 MOA/ATCAA eastern boundaries. FAA data indicates a daily average 3 IFR flights operate on this route at altitudes up to FL380 while en route or climbing/descending to/from the Anchorage and Fairbanks International airports. This airspace proposal would not impact the higher altitude en route traffic that would be above and clear of the MOA/ATCAA operations (generally FL270 and below) but may have some impact on those aircraft that would be either transiting or climbing/descending through those lower altitudes. In such cases, there may be minimal impacts on this air traffic if necessary for ATC to restrict their altitude or alter their route of flight to any lengthy extent to avoid the military operations in the Paxon and adjacent Fox 3 MOA/ATCAA. Those procedures and practices currently used by Anchorage ARTCC to separate route traffic from the Paxon ATCAA operations may continue to be an option for minimizing any impacts from this proposal.
- J124-511 transits south of and parallel to the southern boundaries of the proposed Fox 3 MOA/ATCAA. FAA data indicates an average of up to 30 IFR flights transit this route daily with FL380 being the typical minimum altitude assigned by ATC for departing Anchorage airport traffic. Activation of the Fox 3 MOA/ATCAA would have minimal impacts on this higher altitude route traffic while there may be moderate impacts on the altitudes and airspace bordering the Fox 3 MOA/ATCAA southern boundary used by ATC to transition climbing/descending air traffic between this jet route and Anchorage International or other regional airports.
- J-115/Q-43 transits approximately 20 NM west of the existing and proposed Fox 3 MOA/ATCAA. FAA data indicates an average 30-40 daily IFR flights transit this route at altitudes up to FL350 while en route and at 10,000 feet MSL and above when climbing/descending to/from the Anchorage and Fairbanks airports. While this route is distant from the proposed MOA/ATCAA boundaries, there are FAA concerns over this MOA expansion potentially affecting airspace currently used to transition air traffic into the Anchorage and Fairbanks areas. Therefore, this proposal may have minimal impacts on this air traffic flow, depending the altitudes/airspace needed by ATC to route this air traffic during the active MOA/ATCAA periods. Measures currently used by Anchorage ARTCC to manage and separate this traffic from the Eielson, Fox 1, and Fox 3 MOAs/ATCAAs may minimize such impacts from this proposal.
- J-502/515 transits adjacent to the northeast corner of the proposed Paxon MOA and the existing Paxon ATCAA that overlies this proposed airspace. FAA data indicate an average of 6-12 daily IFR flights transit this route at altitudes at FL200 and above unless otherwise climbing or descending through lower altitudes when transitioning to/from Fairbanks International. Activation of this proposed MOA should have minimal effects on this route traffic considering those measures currently used by the Anchorage ARTCC to separate this route traffic from the Paxon ATCAA operations. Operations in this ATCAA would not be increasing significantly beyond current representative levels.

Overall, this alternative may have minimal to moderate impacts on those jet/RNAV routes transiting within or in close proximity to the expanded Fox 3 and Paxon MOA/ATCAA boundaries. The FAA has noted that the proposed southern boundaries of the Fox 3 MOA/ATCAA could impact the sequencing of north and southbound air traffic flows between the Anchorage and Fairbanks areas whereas northbound traffic is sequenced to east of V438 and J115 while southbound traffic is sequenced between Talkeetna and Anchorage. As indicated above, the FAA also has concerns over the more limited airspace that would be available between the southern Fox 3 boundary and Anchorage TRACON's northern terminal airspace boundary for spacing and sequencing air traffic between Anchorage and Gulkana.

The extent of any potential impacts would depend on the daily MFE time periods and altitudes utilized for the Fox 3 and Paxon MOA/ATCAA activities relative to the IFR en route and airport transitioning air traffic, and those ATC options for separating this air traffic from the Fox 3 and Paxon MOA/ATCAA military operations. Currently, commercial flights can be routed south of the 63 degree latitude corridor between FL320 and FL350 to remain clear of the Fox 3 MOA/ATCAA operations. The continued use of this corridor and/or other means currently used to separate jet/RNAV route traffic from military operations will be examined in the FAA's aeronautical study of the preferred airspace alternative.

VFR Air Traffic

The majority of the high density VFR air traffic that flies through this affected environment generally operates at 5,000 feet AGL and below along those common flyways that provide good ground visual references and direct routing that keep these aircraft clear of high terrain, obstacles, and, as desired, active MOA airspace. The SUAIS and other standing procedural and communicative measures have given civil aviation pilots a reasonable sense of awareness as to where and when military activities are being conducted in the current SUA with relatively few issues with this compatible airspace use. However, scoping concerns strongly suggest this would change with the proposed airspace action. Expanding the airspace in this manner with much lower altitudes would require increased vigilance by both military and civilian pilots to maintain continued awareness of each other's presence while sharing this MOA airspace when it is in use. The Air Force is sensitive to that concern and would limit activation of the low sector to those mission needs that require the use of those lower altitudes. As proposed, only the Paxon high altitude sector would be utilized for routine training while MFEs would be conducted in both the low and high sectors. Scheduled or real-time use of the low and high altitude sectors would be publicized through the SUAIS and other advisory services.

The potential for any interactions between military and VFR aircraft in the proposed Fox 3 and Paxon MOAs would depend on the daily densities, time frames, altitudes, and locations of both the military and VFR aircraft operations. While daily VFR flights through this affected airspace cannot be characterized or quantified, representative MOA use provides some estimate of the daily number of military aircraft that would occur in this airspace. The daily averages listed in Table 3-4 coupled with the typical MOA altitudes flown by the different aircraft types (shown in Appendix D, *Airspace Management*, Table D–3) provide a general sense of the military operations that may be encountered at the lower altitudes used by the vast majority of VFR air traffic (typically at 10,000 feet AGL and below). A-10s, helicopters, and cargo aircraft (C-130 and C-17) spend a greater portion of a sortie mission at those lower altitudes while only about 10–20 percent of a fighter aircraft sortie mission is conducted at those altitudes. Again, routine training sorties in the Paxon MOA would be well above (14,000 feet MSL and above) those altitudes flown by the vast majority of VFR air traffic outside those periods when MFEs are not in progress.

Nighttime routine training sortie-operations would be considerably less (about one-fourth of the daily averages) during those time frames when VFR operations are also much reduced. While these operational averages will vary on a daily basis, they suggest that relatively few daily flights would be flown at the lower altitudes over the more widely dispersed airspace proposed under this alternative, thus minimizing

interactions between military and VFR aircraft within this expanded MOA airspace. Existing mitigations along with other similar measures would be considered by the Air Force, as necessary, to avoid airports or other high use air traffic areas that could be impacted by lower altitude military flights in those areas.

Information regarding the scheduled and real-time use of the proposed airspace would be available through the SUAIS, ERC, NOTAMs, ATC and FSS to increase pilot awareness of the daily flight activities. All pilots are encouraged to make maximum use of these resources to help increase flight safety and minimize flight risks for all concerned. VFR pilots are also always encouraged to file VFR flight plans to increase general awareness of their flight activities. It is contingent upon all civil and military pilots during MOA operations to exercise greater situational awareness using see and avoid practices. Military pilots use both visual observation and onboard radar systems that "see" transponder equipped aircraft well beyond visual range so as to take necessary actions to avoid any nonparticipating aircraft within this airspace. Because aircraft without transponders cannot always be observed by onboard radar systems, FAA and other aviation safety concerns encourage VFR pilots to equip their aircraft with transponders.

While VFR aircraft can operate through an active MOA, scoping comments and other informal indicators suggest that an increasing segment of this aviation community may elect to avoid an active MOA. This may create impacts if these pilots would cancel or delay their flights, or otherwise fly increased travel distances around an active MOA to avoid this active airspace. Taking such actions may particularly impact those business and other aviation interests having a timely need to provide subsistence or other support to areas affected by this proposed airspace, while active. Such impacts resulting from a VFR pilot's decision to avoid an active MOA may be difficult to mitigate.

Several standing procedures and practices have been implemented as a result of the 1997 *Final Environmental Impact Statement, Alaska Military Operations Areas* (*Final Alaska MOA EIS*) ROD mitigations and other initiatives to better accommodate VFR air traffic in this region to include designated corridors, no-fly zones, and avoidance areas for the common VFR routes, airfields, and other flight sensitive locations used by VFR air traffic (Air Force 1997-1). These mitigation measures and other actions would be considered by the Air Force in conjunction with concerned stakeholders to identify additional actions that could be taken to minimize any adverse effects of this airspace proposal on general aviation. The ACMAC and other stakeholder outreach initiatives have been and will continue to be a key means for addressing airspace concerns affecting the safe, compatible use of the airspace in this region.

Public Airports and Private Airfields

Appendix D, *Airspace Management*, Table D–5 lists the public airports and charted private airfields/airstrips in the affected environment and Section 3.1.1.1 noted those that are in close proximity to and potentially affected by the proposed Fox 3 and Paxon MOAs. It is recognized that other uncharted private airstrips exist in the affected region that could not be included in this table. While many of these charted and uncharted airfields have few based aircraft and reported operations, and no instrument capabilities, each serves an important purpose in serving the varying aviation needs of rural Alaska. The 11th Air Force (11th AF) Airspace Handbook contains flight restrictions to include a 3 NM or 1,500 feet AGL avoidance (typical) from those airfields/airstrips that underlie the existing airspace as also included in Appendix D (Air Force 2006-2). The 11th AF Airspace and Range team may add, increase, reduce, or remove avoidance areas identified in the Handbook as situations dictate (e.g., a mine and its air operations cease to exist). Reports of any observed intrusions on these avoidance areas are strongly encouraged so that appropriate actions can be taken to reinforce pilot compliance with these restrictions. The Air Force would coordinate with airport owners/operators and the FAA to consider any additional flight restrictions that may be required to minimize any effects of this proposed airspace expansion on airfield arrival/departure operations and traffic patterns. As discussed previously, the ACMAC, Alaska Airmen's

Association, and other concerned stakeholders would continue to be informed on JPARC airspace matters while seeking means to minimize any effects on airport operations.

3.1.1.3.2 Alternative E

The proposed airspace structure shown in Figure 3-2 for this alternative is reduced in size by approximately 1.164 million acres (1,840 square miles) from that proposed for Alternative A. As shown in this figure, the proposed Paxon MOA southern boundary is adjusted slightly to the south so as to be aligned with the overlying Paxon ATCAA boundary and the Fox 3 MOA/ATCAA boundary. This provides a more uniform alignment for both military and civil aviators to be aware of while operating/navigating along this MOA boundary.

This alternative provides a greater distance between the proposed Fox 3 MOA and the airways/jet routes, airports, and population centers located south of this proposed airspace. The distance between the proposed Paxon MOA boundary and the Gulkana airport would be slightly reduced under this alternative, as addressed further in this analysis.

MILITARY AIRSPACE USE

Proposed MOA/ATCAA Use

The estimated use of the proposed expanded Fox 3 and new Paxon MOAs and the overlying ATCAAs for both MFE and routine training activities would be the same as described for Alternative A and listed in Table 3-4. As noted previously, future operations are not expected to increase significantly above current representative levels. This alternative would also include relocating about half of the JBER sorties currently conducted in the Stony MOAs to the expanded Fox 3 and Paxon MOAs, when prudent to do so, to reduce the transit time and distance for training activities that can be accomplished more effectively within the expanded MOAs.

As noted for Alternative A, MFE activities would occur in both the Fox 3 and Paxon low and high sectors for a maximum of 60 days per year while routine training in the Paxon MOA would be strictly limited to 14,000 feet MSL and above during the 240 average annual flying days.

CIVIL AVIATION AIRSPACE USE

This alternative would have reduced potential effects on civil aviation airspace use than discussed for Alternative A, considering the greater separation this proposal has from the higher aviation use areas, as noted below.

Federal Airways

The airways potentially affected by this proposal include V481/T 226/B 25, V515, and V444, which transit within or near the airspace proposed for the Paxon MOA. Although FAA data indicates there are relatively few daily flights along these routes, they could not likely be used during those two daily 2.5-hour timeframes when MFE activities are conducted (up to 60 days per year). Use of these airways during other times of the year when routine training is conducted may be limited to 13,000 feet MSL and below, as necessary, to maintain required IFR vertical separation from the MOA operations. The extent to which this may impact airway use during the daily training periods would depend upon ATC's need to assign higher altitudes to IFR aircraft transiting these routes. The FAA's concerns noted in Alternative A on the effects that closure of these three airways may have on air traffic transiting between Gulkana/Northway and Delta Junction/Fairbanks would still exist under this alternative.

The airways to the west and south of the existing/proposed Fox 3 boundaries should be sufficiently distant and separated from those airways so as to have minimal effects on their use. The more northerly

distant proposed boundary should also not have impacts on the terminal airspace used by the FAA to separate and sequence airport air traffic through this area.

Overall, the minimal to moderate impacts that this alternative may have on the airway structure is more limited to those routes potentially affected by the proposed Paxon MOA.

Jet/RNAV Routes

The jet/RNAV routes potentially affected by this alternative are J-167 and J-502/515, which transit through or adjacent to the existing Paxon ATCAA that overlies the proposed Paxon MOA. As discussed for Alternative A, use of the Paxon MOA/ATCAA may have some minimal effect on those lower altitudes (FL180–270) that ATC may assign while climbing/descending air traffic through this airspace. Otherwise, en route traffic operating at higher altitudes (above FL270) would normally be above and unaffected by Paxon ATCAA operations. It is not anticipated that military aircraft operations would increase significantly with this proposed action, to include routine training activities at 14,000 feet MSL and above. Therefore, any effects that the proposed Paxon MOA use may have on the jet/RNAV routes should not differ from that experienced by ATC on the current daily use of the Paxon ATCAA for both MFE and routine training flight activities.

The adjusted Fox 3 MOA boundary proposed for this alternative is sufficiently distant from the jet routes that were discussed in Alternative A as being potentially affected. Therefore, the proposed Fox 3 MOA expansion and proposed Paxon MOA should have minimal impacts on the jet/RNAV route structure in this region.

VFR Air Traffic

The potential impacts that this alternative would have on VFR air traffic would be generally the same as discussed for Alternative A but to a somewhat lesser extent, considering the reduced area encompassed by the proposed Fox 3 MOA. The southern boundary of this proposed MOA would be more distant from those areas between Glennallen and Anchorage where much of the VFR traffic typically operates and would be unaffected by this alternative. VFR aircraft that have a need to travel to the more remote areas within the Fox 3 MOA airspace may be affected by the presence of MFE and routine training operations at those lower altitudes. Impacts on VFR aircraft operating within the proposed Paxon MOA would be the same as discussed for Alternative A while MFE operations are in progress. Routine training flights at 14,000 feet MSL and above within this MOA should have no impact on VFR traffic at the lower altitudes typically flown by those aircraft.

As discussed previously, the potential for any military/civil aircraft interactions could be reduced through preflight planning and use of the SUAIS, ERC, NOTAMs, and other advisory services provided by ATC to avoid those times that the proposed airspace high/low sectors are activated. Any changes or enhancements to these service capabilities are addressed, as appropriate, through FAA agreements, Air Force procedures, and public notifications.

Public Airports and Private Airfields

The proposed Fox 3 MOA under this alternative would be more distant from public airports and private airfields that would be potentially affected by the Alternative A proposal. Therefore, many of the airports/airfields listed in Table D-5 of Appendix D, *Airspace Management*, for that area should not be adversely affected by this alternative. The southern Paxon MOA boundary would be somewhat less distant from the Gulkana airport than proposed for Alternative A but would still be clear of the Class E controlled airspace containing instrument procedures for this airfield.

As noted for Alternative A, the Air Force would coordinate with airport owners/operators and the FAA to discuss any flight restrictions or other considerations that may be required to minimize any adverse effects that this proposal may have on airfield arrival/departure operations and traffic patterns.

3.1.1.3.3 No Action Alternative

This alternative proposes no changes to the current boundaries and altitudes of the existing Fox 3 MOA. As no significant increases in the current military flight operations are projected for the future, it is not expected that the No Action Alternative would affect the current military and civil aviation airspace uses within the region, and they would remain as under current existing conditions.

3.1.1.4 Mitigations

The preceding analysis of effects on airspace management has identified potential adverse impacts on civil aviation airspace use. The following mitigations are proposed to manage and reduce these impacts.

- **Special Use Airspace Information System.** Continue SUAIS in all areas where radio coverage exists; this includes a majority of the area beneath the proposed Fox 3 and Paxon MOAs. The SUAIS Letter of Agreement with the FAA will be updated to include current radio sites and any new MOAs to be covered by the system.
- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.

3.1.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.2.

3.1.2.1 Affected Environment

The areas beneath the proposed Fox 3 MOA expansion and new Paxon MOA are predominantly rural with very low population density, and noise levels can be assumed to be low. Ambient noise in a quiet residential setting is approximately 45 decibels (dB) day-night average noise level (DNL) (EPA 1974), while sound levels in geographically remote areas can be much lower. The vast majority of the affected environment consists of rural areas and areas with no permanent human habitation in which ambient noise levels (i.e., noise not generated by military operations) would be below 45 dB DNL. Sound sources in geographically remote areas include natural sounds, such as wind and bird calls, and occasional noise generated by vehicles, such as snowmachines and small aircraft.

Under representative baseline conditions, time-averaged subsonic noise level (i.e., the onset rate–adjusted day-night average sound level, or "L_{dnmr}") beneath the Fox 3 MOA/ATCAA is approximately 39 dB. The area that would be beneath the Paxon MOA under the proposed action is currently beneath the existing Paxon ATCAA. Baseline noise levels beneath the ATCAA are approximately 37 dB L_{dnmr}. The Paxon ATCAA has a "floor" altitude of 18,000 MSL and is used for routine and exercise operations. Aircraft training operations do not normally occur after 10:00 p.m.

Table 3-5 lists noise levels associated with several representative military aircraft types, as well as a generic single-engine aircraft typical of civilian aircraft operating in the region. Under baseline conditions, the area beneath the Paxon ATCAA experiences overflights of a wide variety of military aircraft types, while areas not currently beneath military training airspace may experience occasional civilian aircraft overflights, as typified by the single-engine aircraft listed in Table 3-5.

Supersonic aircraft operations are permitted in the existing Fox 3 MOA/ATCAA down to 5,000 feet AGL or 12,000 feet MSL, whichever is higher. In the center of the airspace unit, the supersonic noise level is a C-weighted day-night average noise level (CDNL) of 61 dB, and an average of about 4.6 sonic booms are heard per day under representative baseline conditions during a busy month. Aircraft operations in the Paxon ATCAA are approximately the same as for the Fox 3 MOA/ATCAA. Sonic boom intensity depends on a number of factors, including aircraft type and airspeed, maneuvers conducted (e.g., dive, climb, turn) and atmospheric conditions. Peak overpressure levels associated with several aircraft types are listed in Table 3-6. Sonic booms generated by aircraft during maneuvers, rather than straight and level flight, sometimes generate sonic booms up to five times more intense, but these booms are focused over a much smaller ground area.

Table 3-5. Sound Exposure Level (in Decibels) at Altitude (in Feet) Under the Flight Track Associated with Representative Aircraft Types

Aircraft Type	Airspeed[1]	Feet AGL[1]						
		300	500	1,000	2,000	5,000	10,000	20,000
	(knots)	(in decibels)						
F-15C	520	116	112	107	101	91	80	65
F-15E[2]	450	107	103	98	92	84	76	66
F-22	450	120	116	111	105	95	86.4	76
F-16C[2]	450	116	112	106	100	91	83	72
F-18A	500	118	114	108	101	89	77	62
B-1B	550	116	112	107	101	92	82	70
C-17	230	103	99	92	84	72	63	53
C-130J	235	104	100	94	88	78	69	60
KC-135R	300	N/A	N/A	N/A	N/A	N/A	70	60
Single-engine, variable-pitch propeller-driven aircraft (generic)	160	87	84	79	74	67	61	53

[1] Level flight, cruise configuration.
[2] equipped with Pratt and Whitney PW-229 engine(s)
Key: AGL=above ground level; N/A=not applicable.

Table 3-6. Sonic Boom Peak Overpressures for Aircraft at Mach 1.2 Level Flight (in pounds per square foot)

Aircraft	Altitude (feet)				
	5,000	10,000	20,000	30,000	40,000
F-15C	9.4	5.4	2.9	1.9	1.5
F-16	7.6	4.4	2.3	1.5	1.2
F-18	8.8	5.0	2.7	1.7	1.3
F-22	9.7	5.6	3.0	2.0	1.6

Source: Air Force 2006-1

3.1.2.2 Impact Assessment Methodology

Methods used to estimate noise levels and impacts associated with those noise levels are described briefly in this section and in greater detail in Appendix E, *Noise*. Noise impacts several resource areas. Noise impacts on biological resources, cultural resources, land use, socioeconomics, and environmental justice will be discussed in the sections of this EIS dealing specifically with those resource areas.

Time-averaged subsonic aircraft noise levels were assessed using the program MRNMAP (MOA-Range NOISEMAP), individual sonic boom event noise levels were assessed using CABoom, and time-averaged supersonic noise levels were assessed using BOOMAP (Plotkin and Grandi 2002). All three computer programs were developed by the U.S. Department of Defense (DoD) but have also been approved for use in these roles by the FAA's Office of Environment and Energy.

The primary metric used for assessment of impacts from aircraft noise is DNL. Numerous sociological surveys have shown DNL and its variants, L_{dnmr} and CDNL, to be good predictors of public annoyance, the most common impact associated with exposure to elevated noise levels (Fidell et al. 1991; CHABA 1981; Schultz 1978; Stusnick et al. 1992). While the response of individuals to a certain level of noise is highly variable and impossible to predict accurately, the probability of a negative response among groups of individuals can be predicted with a fair degree of accuracy. Table 3-7 lists the percentage of the population highly annoyed by elevated subsonic aircraft overflight noise levels, as measured in dB L_{dnmr}, and supersonic noise levels as measured in dB CDNL.

Table 3-7. Relation Between Annoyance and Day-Night Average Sound Levels

dB DNL	% Highly Annoyed	dB CDNL
45	0.83	42
50	1.66	46
55	3.31	51
60	6.48	56
65	12.29	60
70	22.10	65

Key: DNL=day-night average sound level;
CDNL=C-weighted day-night average sound level.

Federal agencies have established 65 dB DNL as a threshold to determine residential land use compatibility around airports, highways, or other transportation corridors (FICUN 1980; FICON 1992). The FAA, which has special expertise and authority in the area of aviation-related noise, has defined a significant noise impact as one that would occur if analysis shows that the proposed action will cause noise-sensitive areas to experience an increase in noise of 1.5 dB DNL or more at or above 65 dB DNL noise exposure when compared to the No Action Alternative for the same time frame. A DNL of 55 dB was identified by the U.S. Environmental Protection Agency (EPA) as a level "requisite to protect the public health and welfare with an adequate margin of safety" (EPA 1974). At this noise level, noise may be heard, but there is no risk to public health or welfare. A DNL of 75 dB is a threshold above which effects other than annoyance cannot be categorically discounted (CHABA 1977).

Time-averaged noise metrics such as DNL do not directly describe noise levels associated with individual overflight events, and secondary metrics are used to provide a more-complete picture of noise levels. Noise levels associated with subsonic overflights of aircraft types that would use the proposed airspace areas frequently are described using the sound exposure level (SEL) metric. The average number of sonic booms is described for each portion of the affected area and the overpressure levels as measured in pounds per square foot is presented for several aircraft in a standard flight configuration. Laboratory tests

of glass (White 1972) have shown that properly installed window glass will typically not break at overpressures below 10 pounds, even when subjected to repeated booms. However, sonic boom structural damage is possible at lower overpressures, particularly if the affected structure is old or in poor condition. Sonic booms have not been shown to result in direct physical injuries; the loudest sonic boom ever recorded (144 pounds per square foot) did not cause any injuries to researchers present (Nixon 1968).

Scoping results indicated that the population in the region of influence (ROI) is concerned about noise and particularly about noise in areas that are currently quiet. For this analysis, noise impacts would be expected to be perceived as significant if airspace noise levels were to exceed 65 dB L_{dnmr} or 62 dB CDNL and increase by greater than 1.5 dB. Noise impacts would also be considered potentially significant if substantial increases in noise level (i.e., greater than 10 dB) were to occur in areas that are currently very quiet.

Reviewers also expressed concern about potential impacts of subsonic and supersonic noise on fish eggs and young fish including those at hatcheries. A review of literature on the topic suggests that increased mortality would not occur as a result of aircraft noise. Stadler and Woodbury (2009) found that small fish (less than 2 grams) are not physically injured by in-water noise levels below 183 dB sound pressure level. The loudest proposed aircraft overflights would generate noise levels approximately 28 dB below this threshold. In 1973, Rucker reported no increase in egg mortality after eggs were exposed to sonic booms, even when exposure occurred at the most sensitive developmental stage.

3.1.2.3 Environmental Consequences

The sound levels presented in this section are predictions. Actual noise levels would vary due to temperature inversions, humidity, distance to the aircraft, number of aircraft generating the noise, and other factors specific to a particular noise event.

3.1.2.3.1 Alternative A

Under Alternative A, the Paxon MOA would be established and the existing Fox 3 MOA would be expanded to better accommodate military training operations. All subdivisions of the proposed Fox 3 MOA as well as the new Paxon MOA would have an established minimum flight altitude at 500 feet AGL.

Subsonic aircraft noise levels beneath the Paxon MOA/ATCAA would increase from 37 to 54 dB L_{dnmr}. Noise levels beneath all subunits of the expanded Fox 3 MOA would increase from 39 dB L_{dnmr} (in areas under the existing Fox 3 MOA/ATCAA) or ambient sound levels (in areas not beneath military airspace) to 49 dB L_{dnmr}. In areas currently beneath training airspace, the aircraft types flying overhead would not be expected to change relative to the types using the airspace currently, but the aircraft would fly at lower altitudes as a result of "floor" altitude decrease. Decreasing altitudes would result in increased individual overflight noise events (see Table 3-5). Persons affected by increased noise levels would be more likely to be annoyed by the noise. Individual aircraft overflights at relatively low altitudes would generate noise levels that could potentially disrupt activities such as conversation. Aircraft operations in SUAs such as the proposed Fox 3 and Paxon MOAs occur throughout the volume of the airspace. Low time-averaged noise levels reflect the fact that low-altitude overflights at any given location on the ground would be relatively infrequent. Time-averaged noise levels beneath the proposed airspace areas would not exceed 54 dB L_{dnmr}, remaining below the EPA-identified noise level "requisite to protect the public health and welfare with an adequate margin of safety". However, increases in noise levels in areas not currently overlain by MOAs would be greater than 10 dB and would be expected to be easily noticeable, particularly because the ambient noise level in the ROI is low.

Supersonic noise levels beneath the existing Fox 3 MOA/ATCAA and Paxon ATCAA would increase by less than 1dB, remaining at 61 dB CDNL. The average number of sonic booms per day near the center of the Fox 3 MOA/ATCAA airspace would increase by less than one per day from 4.6 per day to 5.2. Areas near but not currently beneath the Fox 3 MOA/ATCAA occasionally experience sonic booms when sonic booms sometimes propagate to ground areas outside the area overlain by the airspace. However, this is relatively rare and sonic booms would become a much more frequent occurrence in areas that would become included in Fox 3 MOA under Alternative A. In these areas, increases in supersonic noise levels would be highly noticeable. Increases in supersonic noise would be expected to result in annoyance in affected persons. Areas beneath the proposed Paxon MOA are currently overlain by the Paxon ATCAA which permits supersonic training. Supersonic noise levels beneath the proposed Paxon MOA would increase by less than 1 dB CDNL and from 4.6 to 5.2 sonic booms per day near the center of the airspace.

Increases in subsonic noise levels exceed significance thresholds established for this project and are of particular concern in areas where baseline noise levels are extremely low. While the intensity of the proposed noise levels does not exceed widely accepted impact thresholds, below which significant noise impacts do not typically occur, the context and degree of change are such that the change would be easily noticed and would be expected to be considered to be significant by a substantial percentage of the affected population.

The risk of hearing loss associated with proposed training operations would be negligible. With regard to the likelihood of noise-induced hearing loss, the duration of sound is as important as its level. Beneath training airspace, the duration of intense noise events is typically short. High noise levels from low-altitude flight are, of course, a concern and have been specifically studied.

Nixon (1993) measured changes in human hearing from noise representative of low-flying aircraft on MTRs. The potential effects of aircraft flying along MTRs are of particular concern as the maximum overflight noise levels can exceed 115 dB, with a rapid increase in noise level exceeding 30 dB per second. In that study, participants were first subjected to four overflight noise exposures at A-weighted levels of 115 dB to 130 dB. One-half of the subjects showed no change in hearing levels, one-fourth had a temporary 5-dB increase in sensitivity, and one-fourth had a temporary 5-dB decrease in sensitivity. In the next phase, participants were subjected to up to eight successive overflights, separated by 90-second intervals, at a maximum level of 130 dB until a temporary shift in hearing was observed. The temporary hearing threshold shift showed a decrease in sensitivity of up to 10 dB.

Ising (1999) measured temporary threshold shifts of 115 test subjects between 18 and 50 years old after laboratory exposure to military low-altitude flight noise. The results indicate that repeated exposure to military low-altitude flight noise with maximum noise levels greater than 114 dB may have the potential to cause permanent noise-induced hearing loss, especially if the noise level increases rapidly.

The most pertinent result was that of Nixon, who showed no ill effects from a sequence of four successive exposures up to 130 dB but hearing damage risk at twice that exposure. Ising replicated the result that hearing damage risk is associated with repeated exposure to this type of noise event. In the proposed action, exposure to single events at this level will be rare, and exposure to multiple events comparable to (or even approaching) those in Nixon's study will not occur. The primary adverse effect would be surprise or startle, as stated in this EIS.

3.1.2.3.2 Alternative E

Under Alternative E, Fox 3 would be expanded, but not by as much as under Alternative A, and the floor altitude would be decreased from 5,000 AGL to 500 AGL. Also, under this alternative, Paxon MOA would also be created with a floor altitude of 500 AGL. Beneath Fox 3 MOA/ATCAA, subsonic noise levels would increase from 39 to 50 dB L_{dnmr}. Noise levels beneath Paxon MOA/ATCAA would increase

from 37 to 54 dB L_{dnmr}. Under Alternatives A and E there would be equivalent number of aircraft operations in Paxon and Fox. However, under Alternative E Paxon is smaller in size, and as a result training operations would be more concentrated, leading to higher calculated subsonic noise levels.

Increases in supersonic noise levels would be the same as for Alternative A.

3.1.2.3.3 No Action Alternative

Under the No Action Alternative, there would be no change to existing airspace structure or existing baseline training operations. No change in noise levels would occur and they would remain as under current existing conditions.

3.1.2.4 Mitigations

Noise impact mitigation measures, including designated avoidance areas and public information exchange procedures currently in effect would continue under all proposed actions. Limitations on the number of MFEs permitted per year and the dates on which MFEs can occur would remain in effect. Additional discussion on noise management actions and noise sensitive areas can be found in Appendix B, *Definition of the Resources and Regulatory Settings*, at Section B.2.3.5.

No mitigations are identified for this resource, but are identified for affected resources in Sections 3.1.8.4 (Biological Resources), 3.1.10.4 (Land Use/Public Access/Recreation), and 3.1.12.4 (Socioeconomics).

3.1.3 Safety

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.3.

3.1.3.1 Affected Environment

FLIGHT SAFETY

Flight safety is a significant concern for all aviation activities and serves as the primary basis for all regulations, procedures, and practices that govern how, when, and where aircraft operations are conducted. This was one of the concerns raised in the scoping comments and was also of utmost importance to the military in formulating the different airspace proposals presented in this EIS. Recent military and civilian aircraft mishaps in Alaska have also drawn more attention to aircraft and aviation flight safety concerns.

The risks most prevalent to flight safety include the potential for aircraft mishaps (i.e., equipment malfunctions, weather conditions, or pilot error), near misses/midair collisions between military and civil aviation, and bird/wildlife-aircraft strike hazard (BASH). The following sections address each of these risk categories and those program initiatives and practices implemented to ensure and improve upon flight safety for all concerned in the affected airspace environment.

Aircraft Mishap Potential

DoD defines and tracks aircraft mishaps within the Class A, B, and C categories as discussed in Appendix B, Section B.3.1.1. Most Class A mishaps occur around airfields and in low-altitude flight profile. The higher potential for mishaps outside of the airfield environment is high-performance maneuvering such as what occurs in SUA. The 11th AF has experienced two Class A mishaps during the past 3 fiscal years. Any significant increase or reduction in the number of flying hours flown could result in a proportional change in the aircraft mishap potential.

This existing SUA airspace environment has relatively low population densities with flight exclusionary/no-fly zones established around those population centers pilots avoid while operating at low altitudes. The brief amount of time an aircraft flies over any specific geographic area limits the probability of an aircraft mishap within a populated area.

Air Force and Army flight safety regulations and programs address aircrew responsibilities for following proper safety practices, responses to aircraft malfunctions, and other actions aimed at conducting flight activities in the safest manner possible. These are constantly reinforced through training, preflight briefings, and other initiatives. The military also maintains detailed emergency and mishap response plans that assign agency responsibilities and prescribe actions to be taken in response to major mishaps. These actions are exercised periodically to ensure all responders are aware of their responsibilities.

Near Miss/Midair Collision Potential

Scoping comments highlighted concerns over flight safety as it relates to interactions between military and civil aviation within the existing and proposed airspace. Discussions with pilots, hunters, fishermen, and recreationists flying within the affected environment indicated that, although they occasionally see a military aircraft, they were generally at altitudes beneath those aircraft and all concerned practiced see-and-avoid measures.

A near miss is generally considered to be any circumstance in flight where the distance separating two aircraft is considered by either pilot to have constituted a hazardous situation involving a risk of collision. Historical data indicate there have been few reported near misses and no midair collisions within the existing JPARC airspace. Those that have occurred over the years have been between general aviation recreational aircraft operating at low altitudes around an airfield environment. Safe flight operations within the JPARC airspace can be attributed to pilot safety consciousness, the initiatives described in Section 3.1.1 for awareness of SUA scheduled and real-time use, established VFR corridors, and flight advisory services.

The Air Force has initiated projects to expand radar and radio capabilities within the JPARC SUA with the installation of three additional relay systems that has expanded this coverage throughout the Fox, Eielson, and Yukon MOAs. Substantial areas of the Fox and Buffalo MOAs did not have radar coverage; however, radar system enhancements have improved the ability of ERC to track and monitor aircraft activity within that airspace. The ERC currently has no radar capability below 5,000 feet AGL in the areas proposed for the Fox 3 and Paxon MOAs. Although not all general aviation aircraft are equipped with transponders, improved capabilities for exchanging information on use of the MOAs can also improve flight safety, efficiency, and emergency coverage within the affected environment for all military and civil aviation operations.

Both Eielson AFB and JBER have midair collision avoidance programs and brochures accessible through their respective home websites that provide information aimed at helping increase pilot awareness of the training airspace and activities. Air Force participation in the ACMAC and other such forums with aviation stakeholders also provides a means of discussing, resolving, and promoting flight safety matters.

Bird/Wildlife-Aircraft Strike Hazards

Bird/wildlife-aircraft strikes constitute a safety concern because they can result in damage to aircraft, injury to aircrews, or crash-related injury to local human populations. Aircraft may encounter birds at altitudes up to 30,000 feet MSL or higher. However, most birds fly close to the ground. Migratory waterfowl (e.g., ducks, geese, swans) are the most hazardous birds to low-flying aircraft because of both their size and propensity for migrating in large flocks at different altitudes and times of day. These birds typically migrate at night in the fall and spring and generally fly between the altitudes of 1,000 to 2,500 feet AGL.

Raptors, shorebirds, gulls, songbirds, and other birds also pose a hazard to flight safety. The history of bird-aircraft strikes in restricted areas shows that strikes involving raptors have resulted in the majority of Class A and Class B aircraft mishaps. In Alaska, migration periods for waterfowl and raptors are from August to October and from April to May. In general, flights above 1,500 feet AGL would be above the altitudes typical for most migrating and wintering raptors. Sandhill cranes can be a flight hazard in the Delta Junction area where they tend to roost at night on sandbars from early August until late October and fly in large groups during the day. They flush when rotary-winged aircraft approach them at low altitudes and have the potential to fly into the rotors.

Statistics indicate that about 97 percent of reported bird strikes occur below 3,000 feet AGL with nearly half of those occurring below 500 feet AGL. About half of those bird strikes occur within the airfield environment and half at low altitudes during other phases of flight. The 11th AF Safety Office indicates there were five BASH mishaps in Alaska between 2007 and 2011 but none resulted in any Class A mishaps (Flynn 2012). The last major aircraft mishap resulting from a bird strike in Alaska occurred at Elmendorf AFB in 1995 when a departing E-3 Airborne Warning and Control System aircraft struck a flock of Canadian geese that were ingested into the aircraft's engines.

There are continuous efforts by the airport operators and other aviation interests to understand and predict bird movements and habitat use around airfield environments to better identify periods of increased risk and limit the potential for bird-aircraft strikes. Groups such as the Alaska Bird Observatory and Bird Strike Committee USA are consulted to obtain information on bird activities in both the airfield and training airspace environments. While studies indicate that the higher levels of bird activities occur in the spring and fall, there are continuing efforts to better model and predict the likelihood of bird activities within those areas and altitudes where both civil and military aircraft typically operate. Information from these studies is used to update and enhance military BASH programs to better respond to those periods and locations of greater risk for a bird/wildlife-aircraft strike.

The Air Force has developed procedures for minimizing the occurrence of bird/wildlife-aircraft strikes that include means for monitoring and reacting to heightened risks of bird strikes. As these risks increase, limits are placed on low-altitude flight activities. Pilots are also briefed on the increased bird-strike potential when a higher level of bird sightings is reported around the airfield and within the training airspace, normally during the spring and fall migration periods.

GROUND SAFETY

This proposed action is limited to flight operations and does not include ground-related activities, such as air-to-ground ordnance training. Consequently, impacts on ground safety are not expected. Aircraft from Eielson AFB and JBER that would utilize the expanded Fox 3 MOA and new Paxon MOA are supported by existing munitions storage areas at Eielson AFB and JBER, respectively. Ordnance is handled and stored in accordance with Air Force Manual 91-201, *Explosives Safety Standards* (Air Force 2011-2), and all munitions maintenance is carried out by trained, qualified personnel using Air Force-approved technical data.

Chaff and defensive flares are managed as ordnance. Chaff and flares are authorized for use by 11th AF crews in existing MOAs and ATCAAs. Use is governed by detailed operating procedures to ensure safety. Air Force altitude restrictions for flare use in Alaskan airspace are above 5,000 feet AGL from June through September and above 2,000 feet AGL for the rest of the year. These altitude restrictions substantially reduce any risk of a fire from training with defensive flares. Chaff, which is ejected from an aircraft to reflect radar signals, consists of fibers of aluminum-coated silica thinner than human hair packed into approximately 4-ounce bundles. When ejected, chaff forms a brief electronic "cloud" that temporarily masks the aircraft from radar detection. Although the chaff may be ejected from the aircraft using a small pyrotechnic charge, the chaff itself is not explosive. Depending on the chaff used, plastic or

nylon pieces, a felt piece, and 2-inch by 3-inch squares of parchment paper can fall to the ground with each released chaff bundle.

Each defensive flare consists of small pellets of highly flammable material that burn rapidly at extremely high temperature. Flares provide a heat source other than the aircraft's engine exhaust to mislead heat-sensitive or heat-seeking targeting systems and decoy them away from the aircraft. The flare ignites upon ejection from the aircraft and burns completely within approximately 3.5 to 5 seconds, or approximately 400 to 500 feet from its release point. The existing use of flares as defensive countermeasures results in small plastic, nylon, and aluminum-coated Mylar pieces falling to the ground. Flare residual materials are generally light with a high surface to weight ratio. This results in essentially no likelihood of a flare end cap, piston, or wrapper causing injury in the highly unlikely event residual material from a flare struck a person or an animal.

The only exception could be the flare safe & initiation (S&I) device, which falls with the force of a medium-sized hailstone. Calculations of the likelihood of an S&I device striking an individual take into consideration the population density under the airspace, the number of flares deployed, and the amount of time the population was outside and unprotected even by a hat. If, for example, a population has an average density of 0.5 persons per square mile and is exposed 50 percent of the time under an airspace the size of the proposed Fox 3/Paxon MOA, and if 2,000 flares were deployed annually in the airspace, the expected strikes of a hailstone-sized S&I device to a person would be 1 in 16,000 years. In other words, it is extremely unlikely that anyone would be struck with the force of a medium-sized hailstone as a result of existing or proposed training with flares in the airspace.

3.1.3.2 Impact Assessment Methodology

The elements of this proposed action that could potentially affect safety are evaluated based on the degree to which the action increases or decreases safety risks to the public or the risks of damage to private property. Ground, fire, and flight safety are also assessed in terms of the potential for increased indirect impact risk and the capability for management of such risk through appropriate response to potential emergencies.

FLIGHT SAFETY

The potential impacts of the proposed airspace actions on flight safety in the affected environments are addressed from the perspectives of aircraft mishaps, near misses and midair collisions, and bird/wildlife-aircraft strikes. The analyses of each area are further examined relative to aircraft mishap statistics, the level of military and civil aviation activities within the affected environments and measures that have been implemented to reduce conflicts between these activities, and the existence of bird/wildlife within the areas and altitudes at which aircraft typically operate. For example, the potential for an increase in the number of aircraft Class A mishaps from flight operations or bird/wildlife-aircraft strikes were evaluated by considering projected aircraft sorties with aircraft mishaps and bird/wildlife-aircraft statistics under baseline conditions presented in the Affected Environment discussions.

GROUND SAFETY

Aircrews in Alaskan airspace train on air-to-ground ranges within existing restricted airspace. Air Force safety standards require safeguards on weapons systems and ordnance to ensure against inadvertent releases. All munitions mounted on an aircraft, as well as the guns, are equipped with mechanisms that preclude release or firing without activation of an electronic arming circuit. Detailed operating procedures published by the air-to-ground ranges that support 11th AF training ensure that all safety standards are met for the type of ordnance delivered and the delivery profile associated with that ordnance.

DoD Explosives Safety Board 6055.9-Standard (DoD 1999) and Air Force Manual 91-201, *Explosives Safety Standards* (Air Force 2011-2), represent DoD and Air Force guidelines for complying with explosives safety. These regulations, as well as Air Force Instruction (AFI) 91-204 (Air Force 2008-1), identify explosives safety mishaps that involve both explosive and chemical agents. Explosives include ammunition, propellants (solid and liquid), pyrotechnics, chaff and defensive flares, warheads, explosive devices, and chemical substances and associated components that present real or potential hazards to life, property, or the environment.

3.1.3.3 Environmental Consequences

3.1.3.3.1 Alternative A

FLIGHT SAFETY

Scoping comments would suggest that Alternative A presents the greater potential threat to flight safety than the other airspace proposals being considered in this EIS. The following considers any increased potential for aircraft mishaps, near misses/midair collisions, and bird-aircraft strike hazards that could result from the greater areas and lower altitudes proposed under this alternative.

Aircraft Mishap Potential

The potential for any aircraft mishaps under this alternative would be low to moderate. Considering that the number of aircraft operations and flying days/hours by both MFE and routine training activities are not projected to increase significantly over current levels with this proposed action, the aircraft mishap potential should not increase. The two military aircraft mishaps that occurred in 2010 are not representative of the overall flight safety record the Air Force has experienced in Alaska over the years. However, statistics indicate that most Class A mishaps occur around airfields, as happened with the C-17 mishap, and in a low-altitude flight profile or high-performance maneuvering area such as where the F-22 mishap occurred.

The probability of an aircraft crash into a populated area is extremely low and, as noted previously, the areas covered by the expanded Fox 3 MOA and the proposed new Paxon MOA have relatively low population densities. The limited amount of time aircraft would operate over this greater expanse of airspace should reduce the probability of a mishap in a populated area. This probability is further reduced by the flight restrictions that are currently established over populated areas that would also be considered for any such areas beneath the proposed airspace. The programs and procedures in place to help pilots operate their aircraft safely and respond responsively to aircraft malfunctions would continue to minimize the aircraft mishap potential, while preparedness of military and civil emergency responders would help minimize the environmental impacts if a mishap were to occur.

Near Miss/Midair Collision Potential

The potential for any near misses or midair collisions under this alternative would be moderate to significant. One of the greatest concerns in this military operations environment is the potential for a near miss or midair collision between VFR aircraft and low-altitude, high-speed military aircraft. Sections 3.1.1.1 and 3.1.1.3 discuss this potential relative to the average daily number of MFE and routine training flights that would occur over the more dispersed airspace proposed under this alternative. The number of aircraft that may operate below 5,000 feet AGL during daily MFE or routine training sessions would vary with the aircraft type, the number of aircraft participants, and the type of mission being performed during each session. Appendix D, *Airspace Management*, Table D-3 provides an estimate of the percentage of time during a sortie mission each aircraft type typically operates within the altitude blocks shown. The higher percentage of time within those lower altitudes are normally by cargo type aircraft, rotary-wing aircraft, and A-10s, which constitute a lesser portion of the daily/annual sorties

within the JPARC MOAs. The vast majority of those daily/annual operations are conducted by higher-speed fighter aircraft (F-15s, F-16s, and F-22s) that spend less than 10 percent of their time below 5,000 feet AGL. Given the estimated daily average sorties discussed in Section 3.1.1 and the percentages noted in Table D-3, this provides some general perspective on what flight activities may occur at the lower proposed altitudes. Since both MFEs and routine training would only be conducted at the lower altitudes in the Fox 3 MOA, the greater number of aircraft that could be encountered at low altitudes would be in that MOA only since routine training operations must remain at 14,000 feet MSL and above in the proposed Paxon MOA.

No midair collisions and few reported near misses have occurred within the existing JPARC airspace. Continued pilot attentiveness to safe flight practices, maintenance of situational awareness, and use of available communications for tracking the scheduled and near real-time status of the SUAs would help maintain a safe flying environment for all concerned. As noted in Section 3.1.1.1, SUAIS capabilities and the manner in which this service is provided are outlined in an FAA agreement and Air Force procedures and communicated through the SUAIS Pamphlet and other means. Any changes to those capabilities and the current or future areas in which this service is provided would be appropriately addressed and communicated through those same venues.

The Air Force would expand existing VFR corridors, such as along the Richardson Highway, and establish new flight avoidance areas, as necessary, to further enhance flight safety within those areas where higher-density VFR flights normally occur. The 11th AF Airspace Handbook lists the areas/locations that pilots are to avoid during flight training activities, and the listing is updated, as needed, to reflect any additions or changes to the listing.

The JBER and Eielson AFB midair collision avoidance programs would be updated, as needed, to help increase public awareness of any new airspace actions and training activities that may be implemented from the JPARC proposals.

Bird/Wildlife-Aircraft Strike Hazards

The potential for bird/wildlife-aircraft strikes would be low to moderate with the proposed lower altitudes to be flown, since most birds tend to fly within that lower altitude range, as described in Section 3.1.1. Migration periods for waterfowl and raptors in Alaska are from August to October and from April to May, which includes those months when some MFEs are conducted. As also noted in Section 3.1.1, the vast majority of Air Force–reported bird strikes has occurred below 3,000 feet AGL, with nearly half of those occurring above 500 feet AGL.

Bird activities and the risk of bird/wildlife-aircraft strikes would be of concern in this expanded airspace, and the existing BASH programs and procedures would include consideration of any additional means for monitoring and reacting to heightened risks of bird strikes in this airspace. All means would be used to identify when eagles, swans, waterfowl, and other large birds would be flying in the 500- to 2,500-foot AGL range so as to take those actions necessary to avoid potential bird strike hazards during those limited periods pilots would be flying below 2,500 feet AGL. This would include use of radar tracking and where possible, tracking/modeling migratory trends, pilot reports, and other such measures currently used by the military or other agencies to monitor where and when such bird activities occur. Pilots would be briefed on any increased bird strike potential, and limits would be placed on low-altitude flight activities, as necessary, during those reported periods of increased risk. The mitigation measures discussed in Section 3.1.8.4 (Biological Resources) for avoiding eagle and other wildlife habitats during nesting seasons would also serve to minimize BASH hazards.

GROUND SAFETY

The proposed use of chaff in the MOAs results in small plastic, nylon, and aluminum-coated Mylar pieces falling to the ground. With flares, residual materials are also generally light with a high surface-to-weight ratio (see discussion in Section 3.1.10.3.1 for more information). This results in essentially no likelihood of a flare end cap, piston, or wrapper causing injury in the highly unlikely event residual material from a flare struck a person or an animal.

The only exception could be the flare safe and initiation device, which falls with the force of a medium-sized hailstone. Calculations of the likelihood of this device striking an individual take into consideration the population density under the airspace, the number of flares deployed, and the amount of time the population was outside and unprotected even by a hat. If, for example, a population has an average density of 0.5 persons per square mile and is exposed 50 percent of the time under an airspace the size of the proposed Delta MOA, and if 2,000 flares were deployed annually in the airspace, the expected strikes of a hailstone-sized device to a person would be 1 in 16,000 years. In other words, it is extremely unlikely that anyone would be struck with the force of a medium-sized hailstone as a result of existing or proposed training with flares in the airspace.

An estimated 0.01 percent of deployed flares do not ignite and fall to earth as a dud flare. In the extremely unlikely case that an individual found a dud flare approximately 1-by-2-inches wide and 8 inches long, the individual should mark the location and notify Eielson AFB Public Affairs. A very high temperature (near 2,000 degrees Fahrenheit [°F]) or friction, such as could be caused by a bullet, could ignite a dud flare. Handling or striking a dud flare could result in injury or death.

The use of defensive flares in the MOAs may also be expected to have impacts associated with the potential for starting wildland fires from burning flares. Wildland fire management on Army lands is required by the Sikes Act and Army Regulation (AR) 200-1, as well as Public Law 106-65, the Military Lands Withdrawal Act. Additional direction regarding wildland fire management comes from USARAK's Integrated Wildland Fire Management Plan and the MOU between Bureau of Land Management (BLM) and USARAK. The purpose of these protocols is to establish wildland fire management procedures and protocols to provide USARAK the capability to complete its mission to maintain combat readiness and fulfill resource management intent.

Three primary management actions are used to prevent wildfires. First, a fire danger rating system is used to reduce the likelihood of a fire by limiting military activities. Certain military activities are restricted when thresholds of wildfire risk are reached. Second, wildfire danger is reduced through the removal of accumulated fuels (e.g., prescribed burning and/or construction and maintenance of fire or fuel breaks). Third, an Initial Attack Response Team remains available during military training activities during high and extreme fire danger to provide a rapid initial response to wildfires in the area. Additionally, coordination will occur between Air Force personnel and wildland fire fighting personnel regarding fire detection and response. See Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures,* for a complete list of wildland fire management mitigations.

Therefore, the use of chaff and flares would result in no significant impacts to ground safety.

3.1.3.3.2 Alternative E

FLIGHT SAFETY

The potential for aircraft mishaps and bird/wildlife-aircraft strikes would be generally the same as discussed for Alternative A, given that the number of aircraft operations and airspace uses would be the same as discussed for that alternative. The potential for near misses/midair collisions may be decreased somewhat with the reduced amount of airspace proposed for this alternative and its greater distance from

the higher-use areas in which VFR and IFR aircraft typically operate. The proposed use of the Paxon MOA for routine training activities in the high sector (14,000 feet MSL and above) should not present any flight safety risks to VFR aircraft or bird/wildlife strike hazards other than what is of concern at the lower altitudes.

GROUND SAFETY

The potential for chaff and flare use impacts would generally be the same as discussed for Alternative A, given that the number of aircraft operations and airspace uses would be the same as discussed for that alternative. The only difference is that chaff and flare dispersal from aircraft would occur within a MOA somewhat smaller in size, although still within a very large expanse of airspace.

3.1.3.3.3 No Action Alternative

The No Action Alternative would involve continuation of those plans, procedures, and processes currently used for minimizing flight safety risks for all flight activities within the existing airspace.

3.1.3.4 Mitigations

FLIGHT SAFETY

Measures taken to prevent and mitigate aircraft mishaps, near misses/midair collisions, bird/ wildlife-aircraft strikes, and other conditions that can jeopardize flight safety are fundamental elements of all aviation activities and safety programs. Those standing programs/procedures, such as preflight pilot safety briefings, advisories on reported increased bird activities, and maintaining in-flight situational awareness, coupled with the existing mitigations and any additional measures to be considered would collectively serve to minimize flight safety risks for all airspace users.

In addition to these practices, the following mitigations are proposed to reduce impacts on civilian air operations.

- **Special Use Airspace Information System.** Continue SUAIS in all areas where radio coverage exists; this includes a majority of the area beneath the proposed Fox 3 and Paxon MOAs. The SUAIS Letter of Agreement with the FAA will be updated to include current radio sites and any new MOAs to be covered by the system.
- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.

3.1.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.4.

3.1.4.1 Affected Environment

The expansion of the Fox 3 MOA and the addition of the new Paxon MOA will take place in four adjacent boroughs and census areas: Denali, Matanuska-Susitna, Southeast Fairbanks, and Valdez-Cordova. The affected boroughs and census areas are all in attainment of the National Ambient

Air Quality Standards (NAAQS). Table B-12 in Appendix B, Section B.4.3, summarizes the estimated 2008 annual emissions for the affected boroughs and census areas.

3.1.4.2 Impact Assessment Methodology

The air quality analysis estimated the changes (increases and/or decreases) in operational emissions that would occur from the proposed addition of the Paxon MOA and the modifications to the Fox 3 MOA and surrounding area. There are no proposed construction activities associated with this proposed action.

The analysis followed the general methodology described in Appendix B, Section B.4.5. Since the project region for this proposed action is in attainment of all NAAQS and EPA's General Conformity rule does not apply, the analysis used the Prevention of Significant Deterioration (PSD) new major source threshold of 250 tons per year of each pollutant as an indicator of significance or nonsignificance of projected air quality impacts.

PSD CLASS I AREA IMPACT ANALYSIS

The PSD Class I area of concern for this proposed action is Denali National Park, which is approximately 15 miles from the Fox 3 MOA. The majority of proposed training activities would occur within the area surrounding portions of Denali National Park. Due to the proximity of the proposed action to a pristine PSD Class I area, this EIS provides a qualitative analysis of the potential for proposed activities to affect visibility within this area.

3.1.4.3 Environmental Consequences

3.1.4.3.1 Alternative A

CONSTRUCTION

There are no construction activities associated with Alternative A for expansion of the Fox 3 MOA and the addition of the new Paxon MOA, as these actions would only involve airspace training activities.

OPERATIONS

Alternative A will move 50 percent of the sorties that currently occur at the Stony MOA to the Fox 3 MOA, resulting in lower emissions at Stony MOA and increased emissions at the Fox 3 MOA. Current aircraft operations at the Fox 3 MOA all occur above 3,000 feet and do not result in ground-level operations. A low-altitude stratum would be added to the Fox 3 MOA, which would result in portions of the current Fox 3 aircraft operations taking place at altitudes lower than the 3,000-foot mixing height, and increased air emissions in the region. The shift of sorties from the Stony MOA to the Fox 3 MOA would reduce the number of sorties that would occur at the Stony MOA by 50 percent, as well as the associated emissions from aircraft operations that would occur below 3,000 feet. Since the airspace floor for the proposed Paxon MOA is below 3,000 feet, the proposed sorties at the new Paxon MOA would result in new emissions in the region.

Chaff use is expected to increase due to the increased amount of sorties in the region. However, according to a Navy Research Laboratory Study, Environmental Effects of RF [Radio Frequency] Chaff, virtually all RF chaff is 10 to 100 times larger than particulate matter 10 microns or less in diameter (PM_{10}) or particulate matter 2.5 microns or less in diameter ($PM_{2.5}$) (Navy 1999). Additionally, the air quality impacts of chaff were evaluated by the Air Force in *Environmental Effects of Self-Protection Chaff and Flares* (Air Force 1997-2). The study concluded that most chaff fibers maintain their integrity after ejection. Although some fibers may fracture during ejection, it appears that this fracturing does not release particulate matter (Air Force 1997-2). Consequently, the use of chaff under Alternative A would not result in significant adverse air quality impacts.

The changes of emissions at all three MOAs were assessed to determine the residual (net) emissions and impacts associated with Alternative A. Table 3-8 presents an estimate of the change in annual operational emissions that would occur under Alternative A for this proposed action. The data in Table 3-8 show that the residual (net) criteria pollutant emissions from Alternative A would not exceed their applicable PSD significance thresholds of 250 tons per year. Therefore, the criteria pollutant emissions that would result from the operation of Alternative A would result in less-than-significant air quality impacts. Given that the project region is in attainment of all NAAQS, a conformity determination is not necessary. Details of the aircraft operational data and emission factors used to estimate emissions from Alternative A are included in Appendix F, *Air Quality*, Tables F–1 through F–3. Tables F–4 through F–7 in Appendix F list the changes in emissions in the affected airspace from Alternative A.

Combustive emissions from the operation of aircraft in the MOAs would contain hazardous air pollutants (HAPs) that could potentially impact public health. It is expected that significant impacts on public health from HAPs emitted in association with aircraft operations would not occur, as the mobile and intermittent nature of these sources and the wide geographic regions of proposed operations would produce minimal impacts of HAPs in a localized area.

Table 3-8. Change in Annual Operational Emissions Resulting from Implementation of Alternatives A and E

Area	Change in Criteria Pollutant Emissions (tons per year)						Change in GHG Emissions (metric tons per year)
	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Stony MOA	-0.08	-0.80	-18.08	-1.61	-0.98	-0.89	-40,053
Fox 3 MOA	3.53	11.85	122.87	10.08	5.36	4.83	248,607
Paxon MOA	2.38	6.51	48.67	3.71	1.67	1.50	76,051
Total change in emissions	**5.83**	**17.56**	**153.47**	**12.18**	**6.04**	**5.44**	**284,606**
Significance thresholds	**250**	**250**	**250**	**250**	**250**	**250**	**N/A**

Key: CH_4=methane; CO=carbon monoxide; CO_2e=carbon dioxide equivalent equivalent; GHG=greenhouse gas; MOA=Military Operations Area; N/A=not applicable; NO_x=nitrogen oxide; $PM_{2.5}$=particulate matter 2.5 microns or less in diameter; PM_{10}=particulate matter 10 microns or less in diameter; SO_2=sulfur dioxide; VOCs=volatile organic compounds.

IMPACTS ON DENALI NATIONAL PARK

To quantify the impact of proposed emissions from Alternative A on air quality–related values in the nearby Denali National Park, this EIS provides an evaluation of the relative increase in proposed emissions in comparison with existing emissions within the following boroughs and census areas: Denali, Matanuska-Susitna, Southeast Fairbanks, and Valdez-Cordova.

The data in Table 3-9 show that the net annual increases in emissions from Alternative A would range from 1.17 percent to 0.025 percent of the annual emissions for the combined affected boroughs and census areas (based on 2008 emissions inventory data), depending on the pollutant. The pollutants of greatest concern that would degrade visibility in Denali National Park are nitrogen oxides (NO_x) (as a precursor to ammonium nitrate) and volatile organic compounds (VOCs). Table 3-9 data show that the projected annual emissions of VOCs and NO_x from Alternative A would equate to 0.09 percent and 1.17 percent, respectively, of the total emissions of these pollutants from these boroughs and census areas. In addition, due to the transport distance of at least 15 miles, these emissions would further disperse upon transport to this pristine PSD Class I area. As a result, the proposed action (or activities) would not produce a significant amount of emissions, as defined in section 40 *Code of Federal Regulations* (CFR) 52.21(b)(23)(iii) of the PSD regulation. Additionally, these relatively minimal levels of emissions would

not substantially contribute to an increase in visibility impairment within the project region, which represents a less-than-significant adverse impact.

Table 3-9. Annual Operational Emissions in Comparison to Regional Emissions – Alternatives A and E

Scenario	Criteria Pollutant Emissions (tons per year)					
	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Change in emissions resulting from Alternatives A and E	5.83	17.56	153.47	12.18	6.04	5.44
Denali Borough[1]	295.45	1,534.40	421.04	35.50	996.74	129.97
Matanuska-Susitna Borough[1]	4,233.88	22,897.58	2,632.45	171.27	16,848.82	1,994.15
Southeast Fairbanks Census Area[1]	498.00	2,734.00	290.00	65.00	2,929.00	332.00
Valdez-Cordova Census Area[1]	1,404.51	6,169.55	9,751.40	1,103.29	3,753.06	782.14
Combined boroughs and census areas	**6,431.84**	**33,335.52**	**13,094.89**	**1,375.06**	**24,527.62**	**3,238.26**
Project percent of borough and census area emissions	**0.09**	**0.053**	**1.17**	**0.89**	**0.025**	**0.17**

1. Year 2008 emissions (EPA 2010).

Key: CO=carbon monoxide; NO_x=nitrogen oxide; $PM_{2.5}$=particulate matter 2.5 microns or less in diameter; PM_{10}=particulate matter 10 microns or less in diameter; SO_2=sulfur dioxide; VOCs=volatile organic compounds.

3.1.4.3.2 Alternative E

CONSTRUCTION

There are no construction activities associated with Alternative E for expansion of the Fox 3 MOA and the addition of the new Paxon MOA, as these actions would only involve airspace training activities.

OPERATIONS

Proposed aircraft operations in the expanded Fox 3, Stony, and new Paxon MOAs under Alternative E would be the same as the proposed operations under Alternative A. However, in comparison to Alternative A, the Fox 3 airspace would be smaller under Alternative E, and thus, the effects of the increases in emissions associated with increased operations would be more concentrated. See Section 3.1.4.3.1 for details on the changes in aircraft operations in the MOAs associated with this action.

The changes in emissions at all three MOAs were assessed to determine the residual (net) emissions and impacts associated with Alternative E. The data in Table 3-9 above show that the residual (net) criteria pollutant emissions from Alternative E would not exceed their applicable PSD significance thresholds of 250 tons per year. Therefore, the criteria pollutant emissions that would result from the operation of Alternative E would result in less-than-significant adverse air quality impacts. Given that the project region is in attainment of all NAAQS, a conformity determination is not necessary. Details of the aircraft operational data and emission factors used to estimate emissions from Alternative A for the proposed action are included in Tables F-1 through F-3 of Appendix F, *Air Quality*, of this EIS. Tables F-4 through F-7 of Appendix F show the changes in emissions in the affected airspace from Alternative E.

Similar to Alternative A, Alternative E is not expected to result in significant impacts on public health from HAPs emitted in association with aircraft operations, as the mobile and intermittent nature of these sources and the wide geographic regions of proposed operations would produce minimal impacts of HAPs in a localized area. Additionally, the use of chaff under Alternative E would not result in any significant adverse air quality impacts.

IMPACTS ON DENALI NATIONAL PARK

The impacts of proposed emissions from Alternative E on Denali National Park would be similar to impacts from Alternative A, which are shown in Table 3-9. As in Alternative A, the pollutants of greatest concern that would degrade visibility in Denali National Park are NO_x and VOCs. In addition, due to the transport distance of at least 15 miles, these emissions would further disperse on this pristine PSD Class I area. As a result, the proposed action (or activities) would not produce a significant amount of emissions, as defined in section 40 CFR 52.21(b)(23)(iii) of the PSD regulation. These relatively minimal levels of emissions would not substantially contribute to an increase in visibility impairment within the project region, which represents a less-than-significant adverse impact.

3.1.4.3.3 No Action Alternative

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations at the Fox 3 and Stony MOAs. Therefore, the No Action Alternative would not result in additional air quality impacts.

3.1.4.4 Mitigations

Since the impacts from all alternatives are expected to be insignificant, no actions to reduce air quality impacts are being proposed.

3.1.5 Physical Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.5. Because this proposal does not involve any actions that would affect this resource, it does not require further analysis.

3.1.6 Water Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.6. According to plans, dry target sites would be temporary and would not require permanent supporting infrastructure such as fencing, pads, power poles, hard lines, or permanent fixtures. They would be in the form of nonfunctional threat vehicles and trailers approved by the Alaska Department of Transportation, and would be placed within MOA airspace such that they could be approached from a full 360 degrees. Additional ground support would include unmanned air defense threat emitters on trailers and microwave and ground/air very-high-frequency/ultra-high-frequency radios. The dry target ground support equipment would be located on lands currently withdrawn for exclusive military use or other Federal and State lands within the MOA boundaries. The use of chaff and defensive flares is expected to have negligible impacts on water resources (see the discussion in Section 3.1.3.1). Therefore, this action is expected to have little to no adverse impacts on water resources within the study area. Because this proposal involves no disturbance of the land surface that would affect this resource, further analysis is not required.

3.1.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.7.

3.1.7.1 Affected Environment

Chaff and defensive flares are currently used in the existing Fox 3 MOA and are managed as ordnance. See the discussion on the use of chaff and flares in Section 3.1.3.1.

3.1.7.2 Impact Assessment Methodology

GENERAL HAZARDOUS MATERIALS AND WASTE

The qualitative and quantitative assessment of impacts from hazardous materials and waste management focuses on how and to what degree each alternative location may affect hazardous materials and waste generation, usage, management, and disposal. An impact was considered significant if (1) the generation of hazardous waste types or quantities could not be accommodated by the current management system, or (2) there was an increased likelihood of an uncontrolled release of hazardous materials that could contaminate the soil, surface water, groundwater, or air.

Impacts associated with hazardous materials and waste are based on the relevant statutes and regulations governing the handling and disposal of hazardous materials and waste (see Appendix B, Section B.7.2, Regulatory Setting). The regulations and associated impact methodologies address hazardous waste management, hazardous materials and hazardous waste contamination, toxic substances management, asbestos abatement and management, and hazardous materials spill management. Table 3-10 summarizes methodologies associated with hazardous materials and waste.

Table 3-10. Materials/Hazardous Waste Impact Assessment Methodology

Topic	Methodology
Spill or release	Evaluate the increased risk of a spill of a hazardous substance, as defined by 40 CFR 302, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or 40 CFR 110, 112, 116, and 117, with respect to exceedance of existing management plans and procedures.
Water	Evaluate the increased risk for an accidental spill of hazardous or toxic materials in or near a body of water with respect to exceedance of existing management plans and procedures.
Contaminated sites	Evaluate the potential for contaminated sites or remediation activities to affect proposed actions such as to require regulatory renegotiation of remediation plans or delays to existing remediation plans.
Generation	Evaluate the potential for increased generation of hazardous substances with respect to exceedance of existing management plans and procedures.
Danger to the public	Evaluate the risk of endangering the public or environment during the storage, transport, or use of hazardous materials with respect to exceedance of existing management plans and procedures.

Key: CERCLA=Comprehensive Environmental Response; Compensation, and Liability Act; CFR=Code of Federal Regulations.

3.1.7.3 Environmental Consequences

3.1.7.3.1 Alternative A

AIRSPACE

This action would involve expansion of the existing Fox 3 MOA and creation of the new Paxon MOA. No new construction is proposed as part of this alternative. In addition, refueling and/or maintenance would not occur in the MOA footprint. Therefore, no beneficial or adverse general hazardous materials–related construction and operational impacts would occur in association with airspace operations.

Live fire would not occur within these MOAs; therefore, ordnance–related chemical releases would not occur. However, chaff and flares are used throughout Alaskan training airspace as combat countermeasures against air- or ground-based threats. The use of training chaff and flares would be extended into the proposed Paxon MOA airspace; however, there would not be an increase in chaff and

flare use within the overall airspace. Rather, this use would be redistributed over a larger expanse of airspace. The Air Force would encourage and facilitate the continued study of chaff alternatives (e.g., biodegradable chaff) to reduce hazardous waste–related impacts on soils, surface water, air, and biological resources within and underlying the MOAs, such that no beneficial or adverse impacts would occur.

GROUND/INFRASTRUCTURE ASSETS

This alternative would involve the use of temporary dry targets for practice bombing without the actual release of ordnance. These dry targets would consist of nonfunctional threat vehicles and trailers beneath MOA airspace approved by the Alaska Department of Transportation that can be approached from a full 360 degrees. In the event that electric power for the ground support equipment were provided by portable generators, the Air Force would manage any hazardous materials, such as generator fuel, in accordance with AFI-32-7086, *Hazardous Materials Management* (Air Force 2004-2), and AFI-32-7042, *Waste Management* (Air Force 2009). In addition, the Air Force would comply with State regulations, including 18 Alaska Administrative Code (AAC) 62, *Hazardous Waste* (Alaska Department of Environmental Conservation [ADEC] 2003), and 18 AAC 75, *Oil and Other Hazardous Substances Pollution Control* (ADEC 2008), as well as all applicable Federal regulations, such that no beneficial or adverse impacts would occur.

3.1.7.3.2 Alternative E

The airspace structure for the Fox 3 MOA expansion under this alternative would be smaller in size from that proposed under Alternative A, with the southern boundary moved approximately 20 NM to the north and no subdivisions, as shown in Figure 2-2. Also, this alternative would include addition of the new Paxon MOA, as shown in Figure 2-2, with its proposed use to include both MFEs and routine training activities under different altitude scenarios. Impacts would be the same as described for Alternative A (Section 3.1.7.3.1).

3.1.7.3.3 No Action Alternative

Under the No Action Alternative, there would be no addition to the current Fox 3 MOA configuration and no new Paxon MOA. Therefore, hazardous materials–related impacts would be the same as those occurring under existing conditions and no additional impacts would occur.

3.1.7.4 Mitigations

No mitigations are identified for this resource.

3.1.8 Biological Resources

Biological resources are essential to subsistence and, additionally, are a focus of outdoor recreation activities such as hunting, fishing, and birdwatching as well as enhancing other outdoor recreational activities such as cross-country skiing and hiking. Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8.

3.1.8.1 Affected Environment

The expanded Fox 3 MOA and proposed Paxon MOA overlie the Alaska Range and Copper River Basin ecoregions (Figure 3-3). In the Alaska Range ecoregion, a cold continental climate prevails and portions of the area are barren of vegetation. Below small icefields and glaciers, swift glacial streams with heavy sediment loads course down mountain ravines and braid across valley bottoms. Shrub communities of willow (*Salix* spp.), birch (*Betula* spp.), and alder (*Alnus* spp.) occupy lower slopes and valley bottoms.

Forests are rare and confined to low-elevation drainages (Nowacki et al. 2001). The Copper River Basin ecoregion, which underlies the southwestern portion of the expanded Fox 3 MOA and proposed Paxon MOA, is a large wetland complex underlain by thin to moderately thick permafrost and pockmarked with thaw lakes and ponds. A mix of low shrubs and black spruce (*Picea mariana*) forests and woodlands grows in the wet organic soils. The extensive boreal forests in the project region are prone to wildfire, the potential extent of which is increased with direct and indirect effects of global warming and fuel buildup (Chapin et al. 2008). The forests are adapted to and require recurring fire; however, caribou tend to avoid winter habitat burned in the last 50–60 years because of a lack of adequate lichen abundance due to the slow pace of lichen regeneration after fire (Rupp et al. 2006) compared to regeneration of other boreal forest vegetation. Cottonwood (*Populus* spp.), willow, and alder line rivers and streams as they braid or meander across the basin. Spring floods are common along drainages. Arctic grayling (*Thymallus arcticus*), burbot (*Lota lota*), and anadromous sockeye salmon (*Oncorhynchus nerka)* are common fishes. Black bear (*Ursus americanus*) and brown bear (*U. arctos*), caribou (*Rangifera tarandus*), wolverines (*Gulo gulo*), and ruffed grouse (*Bonasa umbellus*) are present throughout these wetland habitats. The climate is strongly continental, with steep seasonal temperature variation. The basin acts as a cold-air sink, and winter temperatures can be bitterly cold (Nowacki et al. 2001).

Habitat under the proposed expansion areas ranges from alpine tundra to marshy lowlands and supports populations of big game species, waterfowl, and anadromous fish. The project area supports Dall sheep (*Ovis dalli*) in the alpine tundra-vegetated middle and upper slopes of mountainous portions, especially under the southwestern part of the proposed Fox 3 expansion area and the northern part of the proposed Paxon MOA (Figure 3-4). Caribou habitat (Figure 3-5) for the Nelchina Caribou Herd underlies most of the airspace, with summer range and calving habitat underlying the central and western parts of the airspace and winter habitat under both the eastern and western portions. Anadromous fish streams are mainly under the Paxon MOA in the Copper River Basin ecoregion. Habitat used by moose (*Alces alces*) (Figure 3-6) underlies most of the airspace except the high mountains to the southwest and north. Habitat used by ducks, geese, and trumpeter swans (*Cygnus buccinator*) (Figure 3-7 and Figure 3-8) is especially prevalent under the southeastern part of the Fox 3 expansion area and the proposed Paxon MOA, coinciding with the larger river systems and marshy areas. The combined Fox 3 and proposed Paxon MOAs cover more than 2 million acres of nationally significant waterfowl nesting habitat. Nesting and post-nesting molt of adult birds occurs in this region between April 15 and August 1. Raptors, including bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*), can be relatively common in the region. Historical studies along the upper Susitna River (under the Fox 3 MOA) from 1982 reported a linear density of active bald eagle nests of one nest per 14 river miles (ABR 2011). Another summary of available data concluded that the Susitna River basin (including a large area outside the Fox/Paxon MOAs extending downstream from the western boundary of the existing Fox 3 MOA southward to the Cook Inlet) supported approximately 150 to 200 pairs of bald eagles in 1995, and predicted populations were increasing (Ritchie and Ambrose 1996). Locations and numbers of active eagle nests vary each year. Figure 3-9 shows locations of historically recorded bald and golden eagle nests within and near the Fox 3 and Proposed Paxon MOAs. Note that there is incomplete survey coverage of the project area and that nesting undoubtedly exists over a broader area than shown. Potentially suitable habitat for bald eagles, based upon proximity to water and presence of trees, was modeled and is shown on the figure. Because the nest data were collected over several years, only a fraction of the indicated bald eagle nest locations shown would be active during any one year. Golden eagles, which tend to nest and forage in open country, are underrepresented in the available data. Golden eagle nesting data collected over a 10-year period in nearby Denali National Park showed wide fluctuations in success rates and brood size, primarily influenced by cyclical changes in abundance of their primary prey (McIntyre and Adams 1999). Nest sites are chosen based on proximity to suitable hunting terrain. In an 1,800-square kilometer (km^2) study area within Denali National Park, there were approximately 62 nesting territories, about 79 percent (49) of which would be active in a given year (McIntyre 2002).

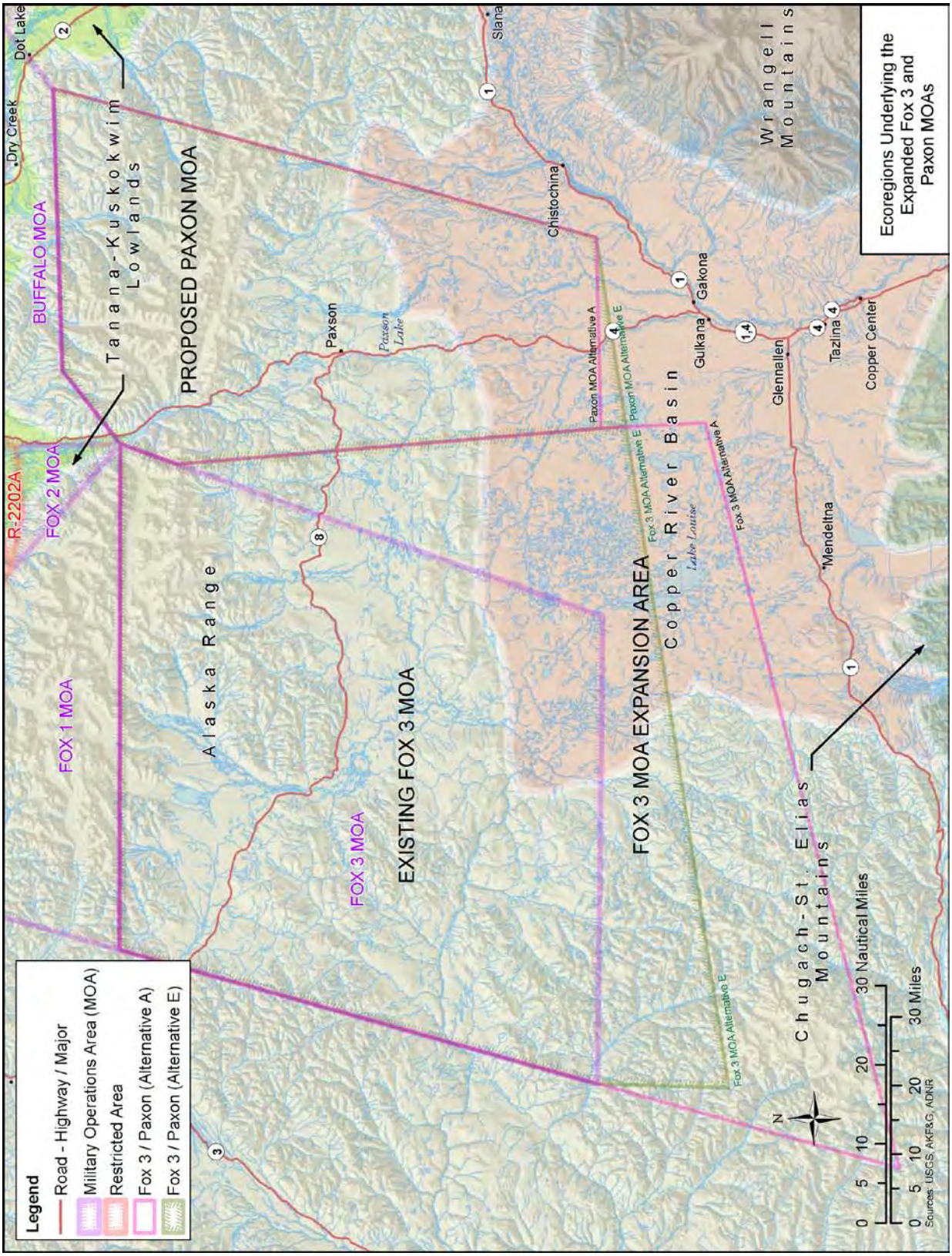


Figure 3-3. Ecoregions Underlying the Expanded Fox 3 and Paxon MOAs
Source: USGS 1996

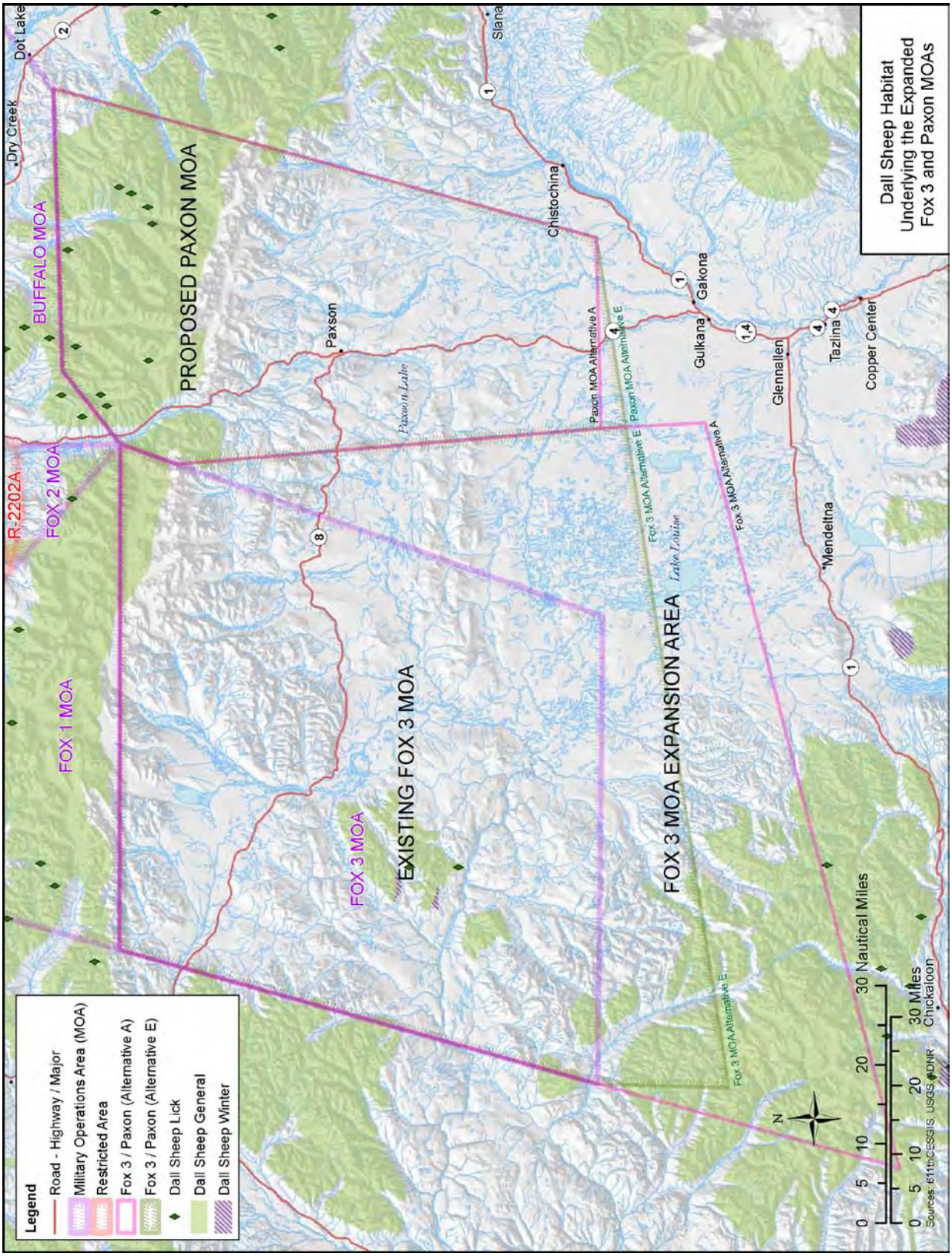


Figure 3-4. Dall Sheep Habitat Underlying the Expanded Fox 3 and Paxon MOAs
Source: RDI 2005-1

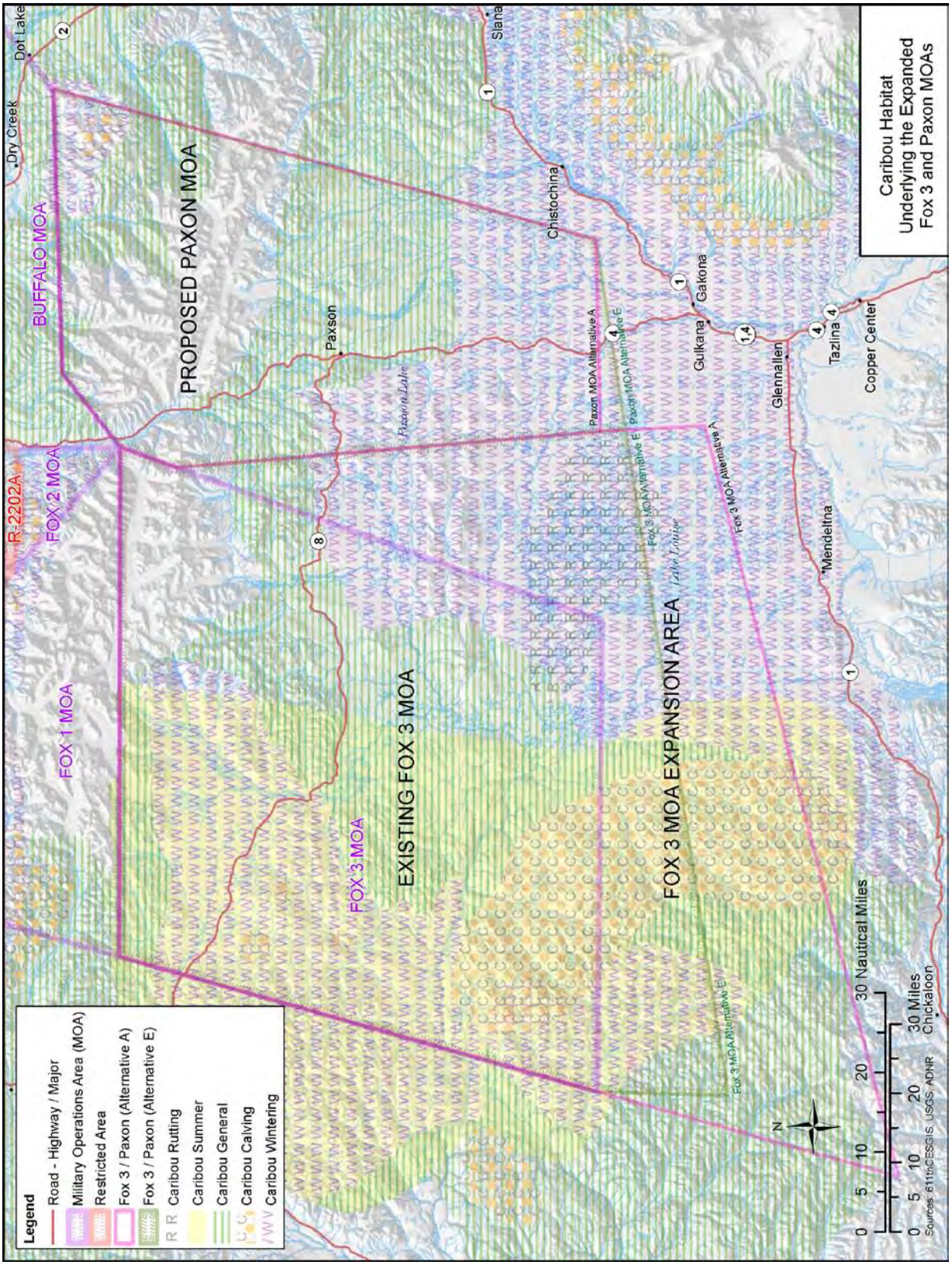


Figure 3-5. Caribou Habitat Underlying the Expanded Fox 3 and Paxon MOAs
Source: RDI 2005-2

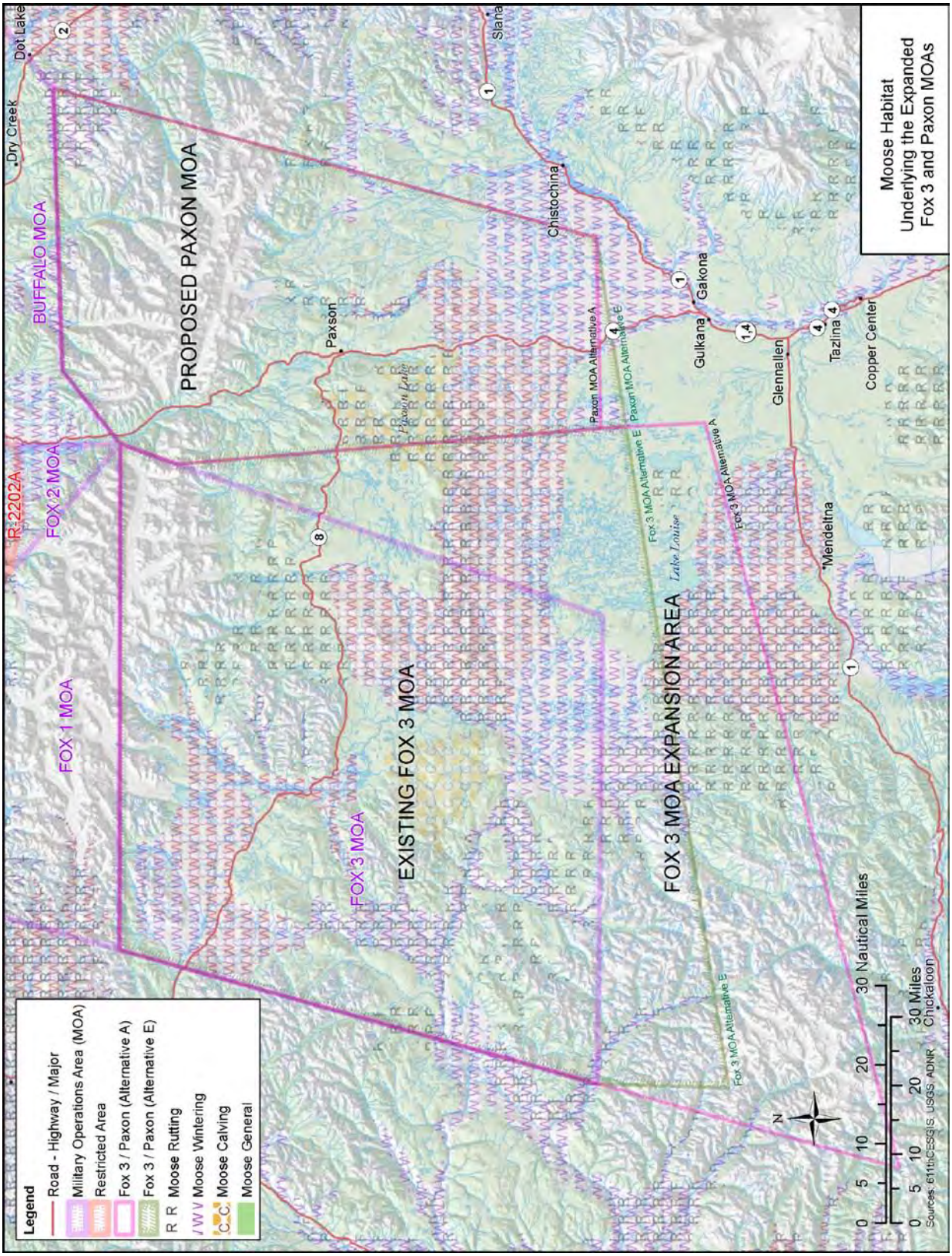


Figure 3-6. Moose Habitat Underlying the Expanded Fox 3 and Paxon MOAs
Source: RDI 2005-3

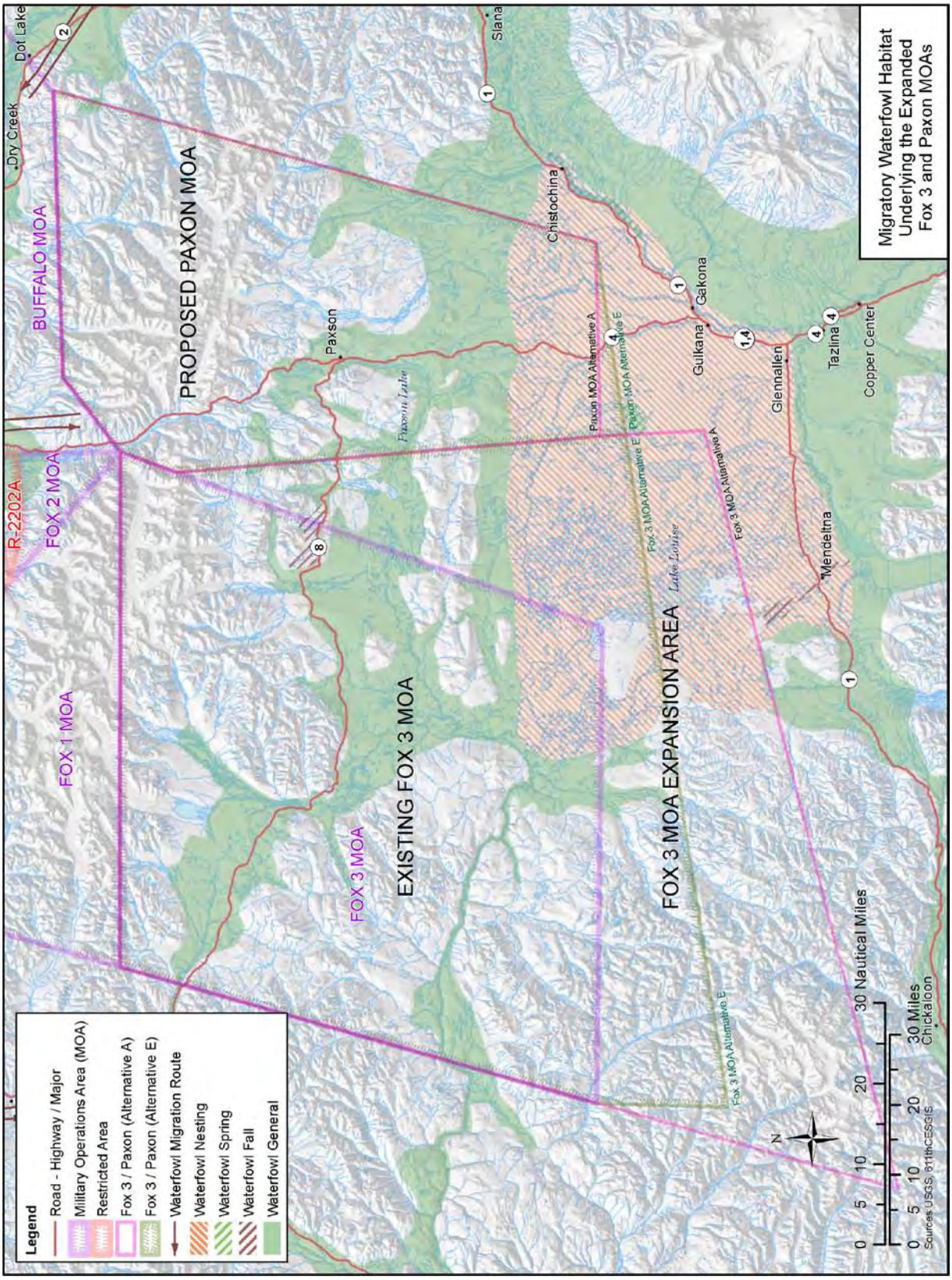


Figure 3-7. Migratory Waterfowl Habitat Underlying the Expanded Fox 3 and Paxon MOAs
Source: RDI 2005-4

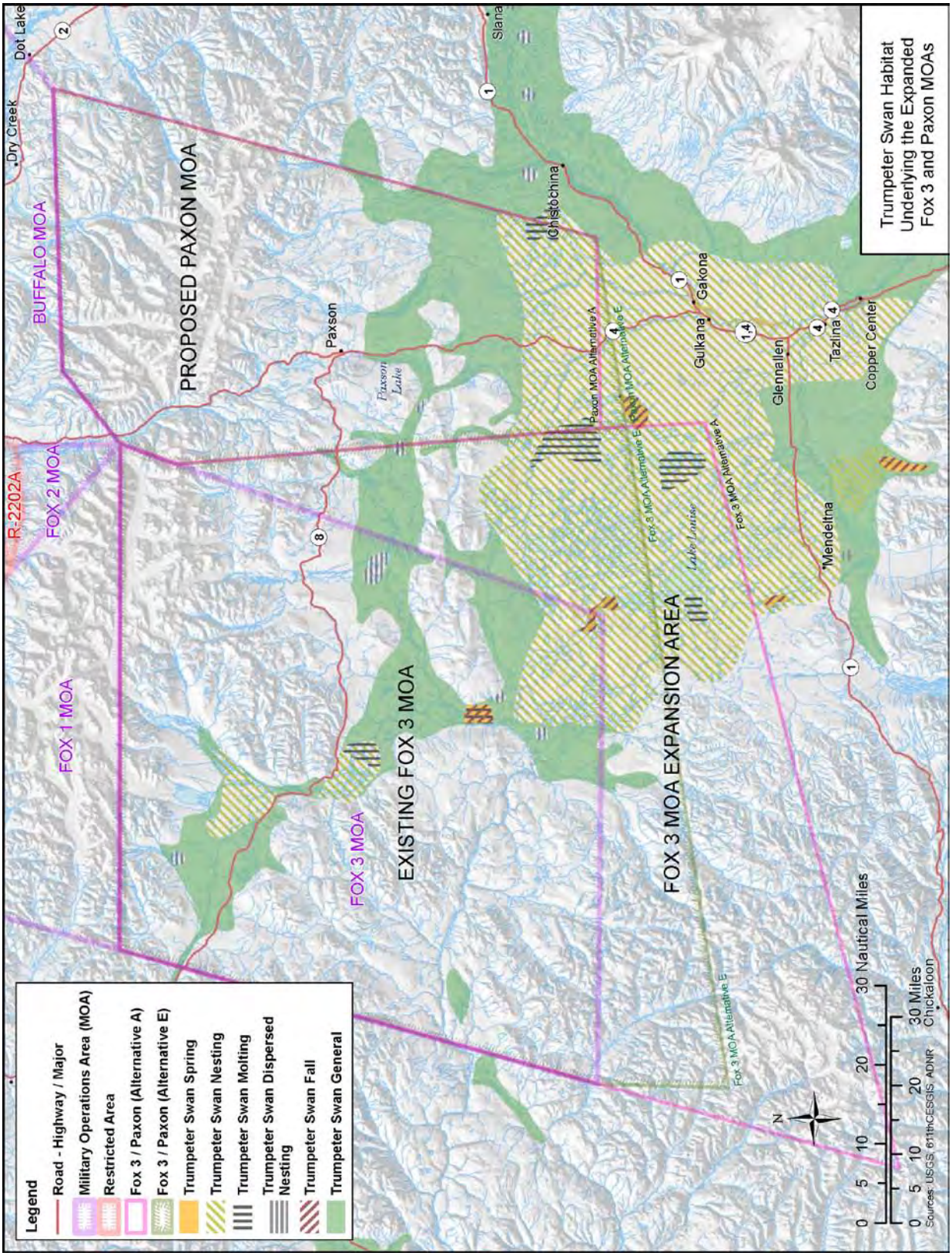


Figure 3-8. Trumpeter Swan Habitat Underlying the Expanded Fox 3 and Paxon MOAs
Source: RDI 2005-5

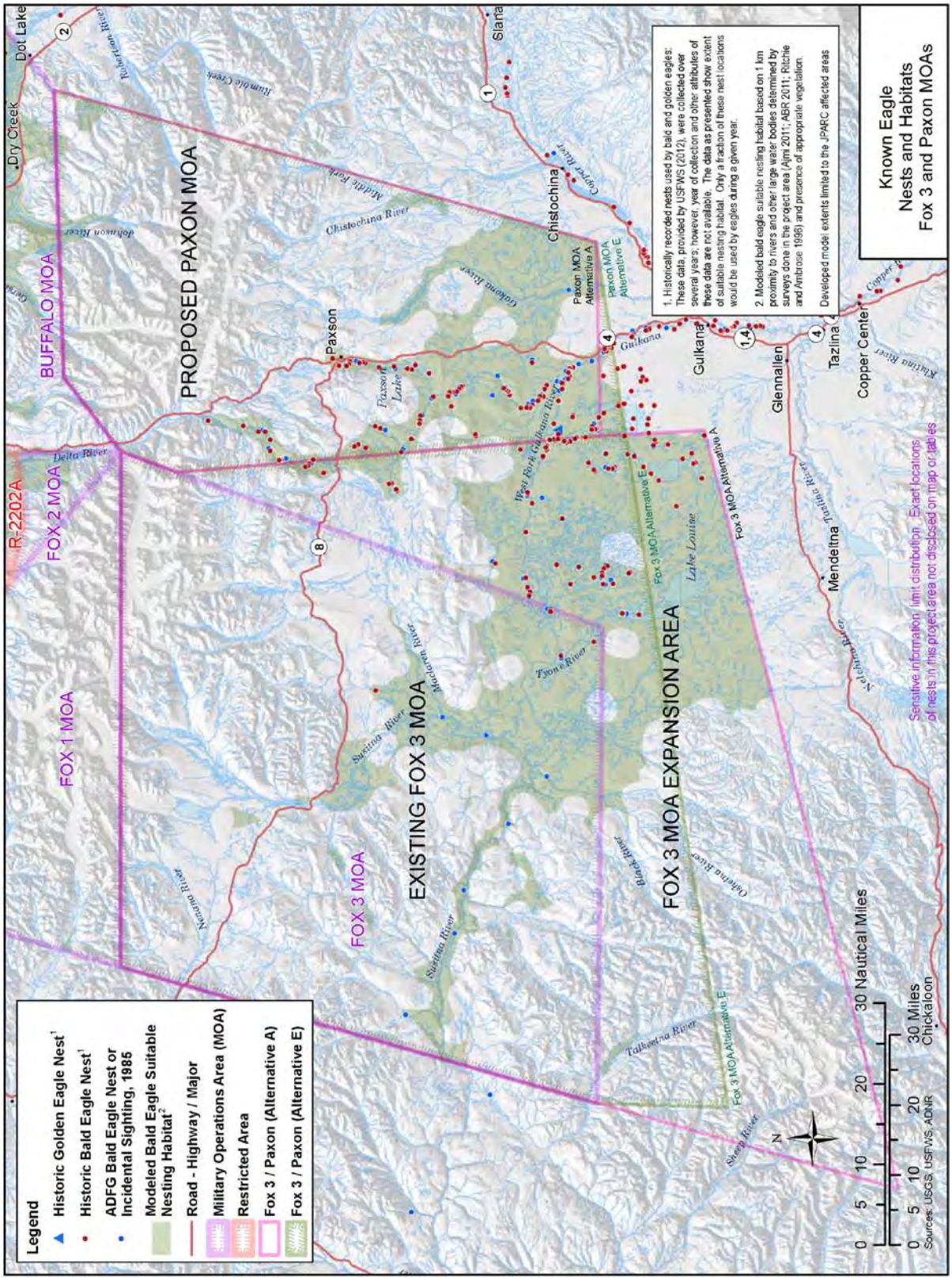


Figure 3-9. Known Eagle Nests and Habitats – Fox 3 and Paxon MOAs

3.1.8.2 Impact Assessment Methodology

Impact analysis was conducted using knowledge of wildlife habitat and sensitive species occurrence data, where available, based on where construction-related ground disturbance, range impacts, airfield operations (takeoffs, landings, engine run-ups), and other activities in airspace and MTRs would likely occur. Assessing the significance of direct and indirect impacts on biological resources is based on evaluation of their context and intensity including determinations of:

1. The importance (legal, commercial, cultural, recreational, ecological, or scientific) of the resource.
2. The rarity of a species or habitat regionally.
3. The sensitivity of the resource to proposed construction and training activities.
4. The proportion of the resource that would be affected relative to its occurrence in the region.
5. The duration of the impact.

Federal or State agencies consider impacts on biological resources to be greater if special interest species or habitats would be adversely affected, if substantial effects would occur over relatively large areas, and/or if disturbances would cause reductions in population size or distribution of a priority species.

Resources that may experience effects have been identified through public scoping meetings, communications with Federal and State agencies and Native American governments, and review of past environmental documentation. This analysis has been prepared to satisfy the requirements of NEPA, the Endangered Species Act (ESA), the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act (MBTA), the Clean Water Act (CWA), and the Sikes Act, as well as applicable State regulations.

Context and intensity are taken into consideration in determining a potential impact's significance, as defined in 40 CFR 1508.27. The context of an impact takes into account the affected ROI, the affected interests, and the locality. In the case of the site-specific alternatives, the affected ROI is the general location associated with the airspace and/or ground disturbance. The intensity of a potential impact on biological resources refers to the impact's severity and includes consideration of beneficial and adverse impacts, whether the action establishes a precedent for future actions with significant effects, the level of uncertainty about project impacts, and whether the action threatens to violate Federal, State, or local law requirements imposed for protection of the environment. The analysis encompasses direct and indirect effects, including short-term, long-term, and potential cumulative effects.

For effects that would occur on Army training lands, the U.S. Army Garrison Fort Wainwright, Alaska (USAG-FWA) Environmental Division staff has developed a system to rank species and quantify availability of high-value habitat on installations. Rankings for each mammal and bird species are based on the following factors: rarity; population trends; habitat specialization; spatial distribution; sensitivity to disturbance from military construction, training, or land management practices; potential to respond to management and recovery efforts; and status as game animals. These categories may be used to further refine impact assessments developed for the proposed action when applicable.

The evaluation criteria for biological resources include those for habitat and species disturbance, as well as species displacement and mortality. These criteria are the basis of the significance criteria used to assess the potential impacts of the action alternatives compared with the No Action Alternative.

BIOLOGICAL RESOURCES SIGNIFICANCE CRITERIA

- **Habitat Disturbance** – Changes in high-quality native (wetland and upland) habitat, including loss, fragmentation, or degradation. Less-than-significant impacts would be temporary short-term impacts and localized impacts unlikely to spread beyond the immediate area of disturbance.
- **Wildlife Disturbance** – Changes in behavior that result in long-term or permanent changes in population use of habitats and behavioral reactions that result in physiological stress that substantially affects productivity or survival. Less-than-significant impacts would be any changes in behavior not resulting in long-term or permanent changes of population use of habitats and behavior reactions that did not result in a level of physiological stress that substantially affected productivity or survival.
- **Displacement** – Changes in habitat use that result in permanent displacement of populations from their current range or shifts in habitat use that result in substantial decreased productivity or survival. Less-than-significant impacts would be temporary displacement of populations or temporary changes in habitat use that did not lead to a substantial decrease in productivity or survival.
- **Mortality** – Increases in species mortality rates from project activities that jeopardize sustainable regional populations or adversely affect wildlife management goals for populations. Less-than-significant impacts would include either no mortality or such limited mortality that it would not affect the regional population or affect wildlife management goals for that species.
- **Protected Species** – Direct mortality of protected species from project activities, or adverse effects of project activities on survival, reproduction, and/or productivity of protected species. Less-than-significant impacts would include no mortality from project activities or no adverse impact on survival, reproduction, and/or productivity. For Federally listed endangered or threatened species, more-specific and -stringent criteria would apply, consistent with ESA and the Bald and Golden Eagle Protection Act compliance.

For these analyses of environmental consequences, the focus is on the following species, identified as being indicator species, especially for their known breeding, winter, and other crucial habitats: caribou, moose, bison (*Bison bison*), Dall sheep, brown and black bear, raptors, including golden and bald eagles, migratory waterbirds, swans, sandhill crane (*Grus canadensis*), and neotropical migratory birds. Species identified as sensitive species, species of concern, or priority management species are included in the environmental consequences discussion as warranted by the probability of adverse effects related to the various alternatives. For the purposes of analyses regarding overflight effects on wildlife, we focused on aircraft time spent at or near the proposed minimum aircraft operation floors, which provide a conservative (or worst-case) scenario for assessing impacts on the selected species, because this would represent the highest levels of overflight disturbance likely to occur during major training events. Areas of ground disturbance from construction impacts were also considered to the extent possible.

In the analysis and discussion that follows, impacts have been classified as:

- Beneficial – Impacts would benefit wildlife resources.
- None – No measurable beneficial or adverse impacts are expected to occur.
- Adverse – There is a potential for adverse impacts, but not significant; may require management actions or mitigations to avoid or reduce impacts.
- Significant Adverse – There is a potential for significant adverse impacts; requires management actions or mitigations to avoid or reduce impacts.

The first three qualitative impact categories listed (beneficial, none, and adverse) are considered not significant in this analysis. The last category is considered significant and mitigation measures have been identified to offset negative impacts. New, proposed mitigations for definitive projects are presented after impact sections (Section 3.1.8.4, for this project).

3.1.8.3 Environmental Consequences

3.1.8.3.1 Alternative A

Alternative A includes the proposed expanded Fox 3 MOA and the proposed new Paxon MOA with both the high- and low-altitude MOAs. Under this alternative, the existing Fox 3 MOA would be expanded in area. The existing Fox 3 MOA is approximately 3,138,000 acres, and the expanded Fox 3 MOA would encompass 5,514,000 acres, including the area currently occupied by the Fox 3 MOA. In addition, the Paxon MOA would be established, encompassing 2,017,000 acres. The floor of the proposed expanded Fox 3 MOA and Paxon MOA would be 500 feet AGL. The current floor of the existing Fox 3 MOA would be lowered from 5,000 feet AGL to 500 feet AGL.

As detailed in Section 3.1.8.1, habitat under the existing Fox 3 MOA and the proposed expansion areas ranges from alpine tundra to marshy lowlands and supports populations of big game species, waterfowl, and anadromous fish. Big game include Dall sheep in the alpine tundra-vegetated mid and upper slopes of mountainous portions, and caribou and moose, which use habitat under most of the airspace, except for the highest mountainous areas. Anadromous fish streams include the Talkeetna and Susitna Rivers draining to the west from the Fox 3 MOA and the Gulkana River system and tributaries draining to the south from the proposed Fox 3 and Paxon MOAs. Habitat used by ducks, geese, and trumpeter swans is especially prevalent under the southeastern part of the Fox 3 expansion area and the southern part of the proposed Paxon MOA, coinciding with the larger river systems and marshy areas.

The floor of the existing Fox 3 MOA is 5,000 feet AGL and it extends upward to but not including FL180 (approximately 18,000 feet MSL). The proposed action would create a low-level MOA beneath the existing and proposed expanded Fox 3 MOA and the proposed Paxon MOA. This proposed low-level MOA would extend from 500 feet AGL up to but not including 5,000 feet AGL. A high-level MOA would overlie the low-level MOA and would extend from 5,000 feet AGL upward to but not including FL180.

Additional dry targets are proposed to be integrated into the tactically relevant JPARC threat-air defense system. Pilots use dry targets to practice bombing tactics without releasing actual ordnance. The dry target sites would be temporary and would not require permanent supporting infrastructure such as fencing, pads, power poles, hard lines, or permanent fixtures. The targets would be in the form of nonfunctional threat vehicles and trailers placed within MOA airspace such that they could be approached from a full 360 degrees. Additional ground support would include unmanned air-defense threat emitters on trailers and microwave and ground/air very-high-frequency/ultra-high-frequency radios. The temporary dry targets would be located on lands currently withdrawn for exclusive military use or other lands, as permitted, within the MOA boundaries. It is assumed that no new access roads or other ground clearance would be required to place these targets, which would be periodically relocated to provide realism. They would be placed on existing disturbed areas as indicated above, accessed by existing roads, or placed and removed by access across frozen ground, thereby avoiding impacts on vegetation or wildlife habitat.

Table 3-11 summarizes the amounts of key wildlife resources under the existing Fox 3 MOA, under the proposed expanded Fox 3 MOA, and under the proposed Paxon MOA.

Table 3-11. Habitat Areas of Key Wildlife Resources Under Existing Fox 3 MOA and Under Proposed Expanded Fox MOA and Proposed Paxon MOA

	Airspace Area (acres)	Moose[1]		Caribou[2]		Dall Sheep[3]		Ducks and Geese[4]		Trumpeter Swan[5]	
		Habitat Area (acres)	Percent of Area Under Airspace	Habitat Area (acres)	Percent of Area Under Airspace	Habitat Area (acres)	Percent of Area Under Airspace	Habitat Area (acres)	Percent of Area Under Airspace	Habitat Area (acres)	Percent of Area Under Airspace
Existing Fox 3	3,138,000	2,570,000	82	2,844,000	91	196,000	6	951,000	30	657,000	21
Expanded Fox 3	5,514,000	4,167,000	76	5,169,000	94	872,000	16	1,802,000	33	1,487,000	27
Paxon	2,017,000	1,396,000	69	1,446,000	72	606,000	30	703,000	35	527,000	26
Fox 3 plus Paxon	7,531,000	5,563,000	74	6,615,000	88	1,478,000	20	2,505,000	33	2,014,000	27
Modified Fox 3 expansion plus modified Paxon (Alternative E)	6,401,000	4,932,000	77	5,527,000	86	945,000	15	2,220,000	35	1,751,000	27

[1] General habitat mapped throughout.
[2] Prevalent throughout; calving and rutting predominantly in Fox 3 expansion area.
[3] Most prevalent in Fox 3 expansion and new Paxon. No lambing identified.
[4] Habitat including nesting most prevalent in Fox 3 expansion and southern end of Paxon.
[5] Habitat including nesting most prevalent in Fox 3 expansion and southern end of Paxon.

Key: MOA=Military Operations Area.
Source: RDI 2005-1, 2005-2, 2005-3, 2005-4, 2005-5, 2005-6

Although this proposed action would involve no physical ground disturbance (except for placement of dry targets, discussed above), wildlife species would be exposed to overflight by military aircraft flying as low as 500 feet AGL, potentially causing altered behavior or metabolic effects. Additionally, high speed maneuvers within the proposed airspace would create sonic booms, and training would incorporate use of chaff and flares, (depending on the aircraft) as defensive measures. Discussion of these potential impacts follows.

Several studies have documented the reaction and effects to ungulates exposed to military aircraft overflights. Responses ranged from no reaction and habituation to panic reaction from overflights below 500 feet AGL (Weisenberger et al. 1996; Manci et al. 1988). Both the visual aspect and peak noise level of overflights diminish rapidly with increasing altitude of overflight. Similarly, wildlife responses diminish with increasing altitude of overflight (or increasing slant distance, which is a combination of aircraft height AGL and the horizontal distance from the animal for an aircraft not directly overhead).

A National Park Service study (Anderson and Horonjeff 1992) described the relationship between increasing altitude or slant distances and diminution of sound levels. Very large reductions in sound levels (on the order of 15 to 25 dB) are experienced as altitude or slant distance increases from 125 feet to 1,000 feet. Increases from 1,000 to 2,000 feet altitude would produce smaller but still moderate to substantial reductions (on the order of 4 to 8 dB). Between 2,000 and 7,000 feet AGL, 1,000-foot increases in distance produce considerably smaller reductions in sound levels (on the order of 3 to 5 dB), and above 7,000 feet AGL, each 1,000-foot increase in altitude results in only very small reductions in sound level (Anderson and Horonjeff 1992).

Reported wildlife responses to overflight are largely behavioral and short-term. Some short-term physiological changes (e.g., increased heart rate) have also been measured. Behavioral responses to overflights at 500 feet AGL and above are generally characterized for wildlife species, including various ungulate species, as minor and include individuals assuming an alert posture, rising, walking, or running short distances. Few studies have evaluated the effect of military overflights on moose; several have studied the effect on caribou. Andersen et al. (1996) studied the response of radio-collared moose to large-scale ground and aerial military training exercises. They found temporary increases in heart rate

that returned to normal soon (within 10 to 20 minutes or less) after the exposure. Animal flight responses were greater in response to approach by humans than to approach by equipment, including aircraft, possibly due to perception of humans as predators. Overflight of F-16 jets flying at 150 m AGL (less than 500 feet AGL) did not elicit any heart rate or activity response from a moose, while skiers and walkers were flushing moose at approach distances of 200 to 400 m (650 to 1,300 feet). Home ranges were temporarily displaced approximately 1.4 kilometers (km) during the exercises, which involved 6,000 personnel, several hundred pieces of mechanized equipment including battle tanks and all-terrain vehicles, a squadron of transport helicopters, and four jet fighter squadrons.

A recent study of barren ground caribou in Alaska documented only mild short-term reactions of caribou to military overflights in the Yukon MOAs (Lawler et al. 2005). A large portion of the Fortymile Caribou Herd calves underneath the Yukon MOAs, which are located to the northeast of the proposed Fox 3 and Paxon MOAs. Lawler et al. (2005) concluded that military overflights did not cause any calf death, nor did cow-calf pairs exhibit increased movement in response to the overflights. Magoun et al. (2003) identified that maintaining a floor of 2,000 feet (625 m) AGL for all military jet aircraft over caribou calving grounds would "eliminate most of the stronger-level reactions of caribou to military jet aircraft (startle reactions, trotting, and running) especially if speeds…did not exceed 500 knots between 2,000 feet AGL and 5,000 feet (1,562 m) AGL." Maier et al. (1998) found that cow-calf pairs of the Delta Caribou Herd within a range that includes the proposed project area) exposed to low-altitude overflights in existing MOAs moved about 2.5 km more per day than those not exposed (Maier et al. 1998). The authors stated that moving this distance was of low energetic cost to barren ground caribou.

The proposed lowest altitude within the proposed Fox 3 MOA expansion and proposed Paxon MOA is 500 feet AGL. One of the mitigations from the *Alaska MOA EIS* and ROD (Air Force 1997-1) included establishing a minimum overflight altitude of 3,000 feet AGL over the Delta Caribou Herd calving areas from May 15 to June 15. This is consistent with the recommendation of Magoun et al. (2003), noted above.

Lawler et al. (2004) reported on a study of the effects of military jet overflights on Dall sheep under the Yukon 1 and 2 MOAs in Alaska. The study could find no difference in population trends, productivity, survival rates, behavior, or habitat use between areas mitigated and not mitigated for low-level military aircraft by the *Alaska MOA EIS* (Air Force 1997-1). In the mitigated area of the Yukon MOAs, flights are restricted to above 5,000 feet AGL during the lambing season. Project mitigations include proponent coordination with Alaska Department of Fish and Game (ADFG) to maintain seasonal avoidance areas over caribou and Dall sheep critical areas to minimize effects on these species (see Section 3.1.8.4).

Studies of waterfowl including ducks and geese have shown (1) temporary behavioral responses to overflight, including taking flight; (2) responses decreasing in magnitude as overflight elevation increases; and (3) rapid resumption of the behaviors exhibited prior to the overflight (e.g., Komenda-Zehnder et al. 2003). Helicopters generally create a greater response at a given altitude than do fixed-wing aircraft, including military jets. Research has shown that waterfowl response to overflight varies by species, time of year, and distance to the aircraft. Other things being equal, faster aircraft (e.g., jets) elicited less of a response than slower propeller-driven aircraft (Komenda-Zehnder et al. 2003), possibly because of the shorter duration of the jet overflight coupled with the fact that jets in level flight typically are not audible until after they have passed overhead. Recommendations from the U.S. Fish and Wildlife Service (USFWS) are to avoid low-level flights (below 1,600 feet AGL) during the critical periods for adult waterfowl (April 15 through August 1) over nesting and post-nesting molt areas, which are typically associated with large river systems and marshy areas.

Songbirds and raptors, including bald and golden eagles, vary in their responses to military jet overflight, but documented responses have been limited to short-term behavioral responses and no effects that would

be measurable at a population level have been documented (see Appendix E, *Noise*). The Air Force proposes to avoid disturbance to nesting eagles by restricting minimum altitude to 1,000 feet AGL from March 15 to September 30 (nesting season), which is consistent with recommendations by the USFWS and included in the National Bald Eagle Management Guidelines (USFWS 2007), in the proposed expanded Fox 3 MOA and the proposed Paxon MOA (see Section 3.1.8.4).

Fish in their native habitat would not be affected at the sound levels associated with military aircraft overflight as low as 500 feet AGL. Salmon are hearing generalists with their best hearing sensitivity at low frequencies (below 300 hertz) where they can detect particle motion induced by low frequency sound at high intensities (Amoser and Ladich 2005; Popper and Hastings 2009), not approached by projected sound levels associated with military jet overflight. Studies of Atlantic salmon conclude that they are unlikely to detect sounds originating in air (Hawkins and Johnstone 1978). Potentially sensitive areas such as the Gulkana hatchery, which is the largest sockeye salmon hatchery in the world (PWSAC 2012), could be affected by overflight noise in the proposed Paxon MOA, especially during the incubation period when the eggs are susceptible to any type of noise or shock. Eggs are beginning to be loaded into incubators in August and loading may continue into the beginning of October. After being taken, the eggs are very sensitive for about 2 months until they "eye up." Concern was expressed that sonic booms associated with RED FLAG exercises scheduled to be in August and October would overlap the sensitive periods and cause egg mortality. The EIS preparers found one study that looked specifically at trout and salmon eggs after exposure during a critical phase of development to a variety of simulated sonic boom overpressures similar to those produced by military airplanes. Comparisons with control groups of eggs spawned at the same time indicated that the sonic boom exposure caused no increase in egg or fish fry mortality (Rucker 1973). The Air Force proposes to avoid overflight within 3 miles of either side of the Richardson Highway and below 5,000 feet MSL, which is expected to afford noise protection for the hatchery.

Supersonic operations in the proposed MOAs would be limited to altitudes at or above 5,000 feet AGL or 12,000 feet MSL, whichever is higher, to reduce sonic boom intensity at the surface. The current Fox 3 MOA is exposed to sonic booms as low as 5,000 feet AGL or 12,000 feet MSL, whichever is higher; and the Paxon ATCAA currently permits supersonic flight above FL300 (see Section 3.1.2.3.1). Near the centers of the Fox 3 MOA/ATCAA and the Paxon MOA/ATCAA, sonic booms would increase from about 4.6 to 5.2 per day (approximately 13 percent increase) on average under the proposed action (Alternative A). Some animals may startle in response to a sonic boom, however, animals under the existing Fox 3 MOA and proposed Paxon MOAs have been previously exposed to sonic booms and may be habituated to the sound. For wildlife not previously exposed to sonic booms (e.g., under the Paxon MOA and the expanded portions of Fox 3 outside the boundaries of the existing Fox 3 MOA), some short-term behavioral responses may be observed but would not be expected to result in any population-level effects.

Chaff and flare use in the proposed action area is expected to be similar to use under current conditions in the Fox 3 MOA and other SUA in the region. There would be no change in the minimum altitude or seasonal restrictions on defensive flare release. Extensive studies of chaff particles and defensive flare constituents have found no negative impacts on biological resources, including both vegetation and wildlife. A recent evaluation of the effects of chaff and flares on wildlife applicable to nearby areas is contained in the *Delta Military Operations Area Environmental Assessment* (Air Force 2010). Mitigations in place to restrict altitude deployment of flares in Alaska have successfully avoided fire impacts from training with defensive flares (Air Force 2010). In conclusion, there is potential for adverse but not significant impacts to biological resources from project use of chaff and flares. Based on recent research and overflight restrictions contained in the 11th AF Airspace Handbook and proposed for this project (see Section 3.1.8.4), it is expected that expanding the Fox 3 MOA and establishment of the Paxon

MOA would have less than significant impacts on fish and wildlife under the proposed airspace that would not be measurable at the population level.

3.1.8.3.2 Alternative E

Under this alternative, there would be an expanded Fox 3 MOA that would be reduced in size compared with that under Alternative A and a new Paxon MOA similar to that identified in Alternative A but with a different alignment of its southern boundary. The lower stratum of both the Fox 3 and Paxon MOAs under this alternative would extend down to 500 feet AGL as in Alternative A. The effects of this alternative would be similar to those described under Alternative A, except that less acreage of wildlife habitat would be located under the southern portion of the expanded airspace associated with this alternative as reflected in Table 3-11 above. As for Alternative A, there is potential for adverse but not significant impacts to biological resources from project operations under Alternative E. Potential adverse effects to wildlife species would be reduced with the use of appropriate mitigation measures summarized in Section 3.1.8.4.

3.1.8.3.3 No Action Alternative

Under the No Action Alternative, the horizontal and vertical boundaries of the existing Fox 3 MOA would remain the same and training would be expected to continue as permitted within the existing MOA. Wildlife resources would remain as they currently exist under current conditions.

3.1.8.4 Mitigations

The foregoing analysis assumes that the proposed project and alternatives would incorporate the applicable mitigation measures adopted as part of past NEPA documentation for the airspace, including the *Final Alaska MOA EIS* (Air Force 1997-1) and subsequent airspace modifications (Air Force 2010).

The preceding analysis has identified adverse impacts to biological resources. The following mitigations are proposed to reduce these impacts.

- **Eagle and Migratory Bird Avoidance.** Limit minimum altitude to 1,000 feet AGL in the new Fox 3 and Paxon MOAs from March 15 to September 30 (nesting season) to comply with the Bald and Golden Eagle Protection Act. Subject to available funding, the Air Force may coordinate with the USFWS to establish habitat models and/or conduct bald and golden eagle nest surveys to establish low flying (500 feet AGL) areas outside of eagle habitat during the nesting season (March 15 to September 30).
- **Wildlife Avoidance.** Modify existing Letter of Agreement with ADFG to maintain avoidance areas over caribou and Dall sheep populations under the new MOAs during critical lifecycle periods. Coordination with wildlife agencies will continue to determine specifics, including seasons and minimum overflight altitudes; location of herds is monitored/reported by ADFG.
- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.
- **National Wild and Scenic Rivers Protection.** For the period of May 15 to September 30, expand the Gulkana (west, middle, and north forks) and Delta National Wild and Scenic Rivers' (and others, as designated) Flight Avoidance Areas to include portions within new MOA

boundaries using a 5-NM buffer either side of the river centerline with 5,000 feet MSL minimum altitude. The river corridors will include their headwater lakes areas (Tangle Lakes and Dickey Lake).

3.1.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.1.9.1 Affected Environment

The cultural resources ROI for the proposed action consist of the land beneath the proposed Fox 3 MOA expansion and the proposed new Paxon MOA.

It is expected that there would be minimal ground disturbance associated with the action. The additional dry targets proposed would be trailers and nonfunctional threat vehicles that would be located on lands currently withdrawn for exclusive military use or other lands, as permitted, within the MOA boundaries. No new construction would be associated with this action. Thus, archaeological and historic architectural resources under airspace, which are unlikely to be affected by aircraft overflights (see Section 3.1.9.2 below), were characterized using the records of the National Register of Historic Places (National Register) and National Historic Landmarks.

Archaeological sites under existing training airspace include Native burial grounds, village and settlement sites, and historic mining sites (Air Force 2006-1). Historic buildings and structures under the proposed MOAs may include structures relating to gold mining, trapping, or the railroad (Air Force 2006-1). In addition to National Register–listed sites, there are likely to be additional cultural resources either eligible or potentially eligible for National Register listing under both the existing and proposed airspace. Locations of Federally recognized Alaska Native tribes under or near the airspace discussed below are illustrated in Figure 3-10.

NATIONAL REGISTER-LISTED PROPERTIES

The National Register–listed Tangle Lakes Archaeological District is located on lands underlying the existing Fox 3 MOA (see Appendix H, *Cultural Resources*). The district contains more than 400 recorded archaeological sites spanning 10,000 years of human presence in the region (BLM 2006). However, there are no National Register–listed properties beneath the proposed Fox 3 expansion or the proposed new Paxon MOA (NRIS 2011).

TRADITIONAL CULTURAL PROPERTIES AND ALASKA NATIVE CONCERNS

Alaska Native tribes in the proposed Paxon MOA and Fox 3 MOA expansion area include the Cheesh-Na Tribe (formerly the Native Village of Chistochina), Native Village of Gakona, the Knik Tribe, and the Native Village of Tyonek, as well as scattered remote residences (Figure 3-10). Properties of traditional religious and cultural importance known to be located within the area include 10 burial sites affiliated with peoples of the Alaska Native corporation of Ahtna, Inc.

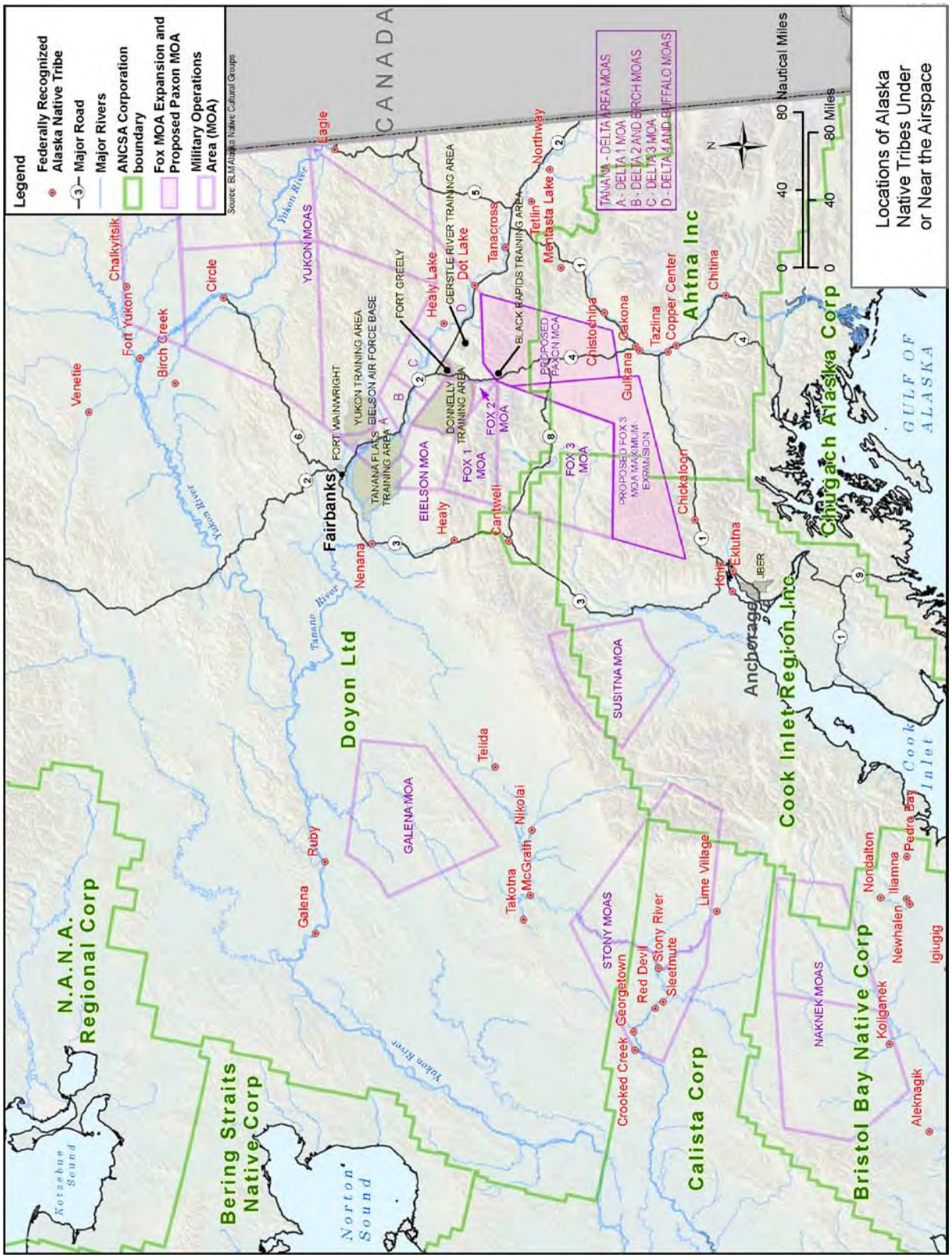


Figure 3-10. Locations of Alaska Native Tribes Under or Near the Airspace

3.1.9.2 Impact Assessment Methodology

Analysis of potential impacts on cultural resources considers both direct and indirect impacts. Direct impacts may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglect of a resource to the extent that it deteriorates or is destroyed. Direct impacts are assessed by identifying the types and locations of proposed activity and determining the location of cultural resources that could be affected. Indirect impacts result primarily from project-induced population increases and the need for construction to accommodate population growth. Construction activities and the subsequent use of the facilities can impact cultural resources.

Impacts on traditional resources under airspace can include the noise and visual effects of aircraft overflights on rituals and ceremonies and on wildlife resources. Aircraft overflights can also increase the level of effort required to harvest subsistence resources and increase the likelihood of reduced harvest levels during the critical subsistence season.

Scientific studies of the effects of noise and vibration on historic properties have considered potential impacts on historic buildings, prehistoric structures, archaeological cave/shelter sites, and rock art. These studies have concluded that overpressures generated by supersonic overflight were well below established damage thresholds and that subsonic operations would be even less likely to cause damage (see Appendix E, *Noise*). Thus, archaeological and historic architectural resources under airspace were characterized using the records of the National Register and National Historic Landmark Program.

The potential for traditional resources in the area was identified using cultural resources management plans (CRMPs), historic preservation plans, and information provided by installation cultural resources management staff. The potential for traditional resources under airspace was identified using Bureau of Indian Affairs (BIA) maps of reservations and American Indian lands (BIA 1998), the BIA list of Federally recognized tribes, regional histories, and documentation on Alaska Native tribes compiled by the Alaska Department of Community and Economic Development (DCED). In addition, potentially interested Alaska Native groups were contacted to request information on potential concerns about the proposed action.

3.1.9.3 Environmental Consequences

3.1.9.3.1 Alternative A

Alternative A would expand the current Fox 3 MOA boundaries to the south and east and subdivide it into sectors, including a new lower-altitude stratification from 500 feet up to but not including 5,000 feet. In addition, the proposed action would create a new MOA, Paxon, to the east of the current Fox 3 MOA. There would be no construction and minimal ground disturbance under this alternative.

As with previous analyses for existing Alaska MOAs (Air Force 1997-1), no significant impacts are anticipated to cultural resources from the expansion of current Fox 3 MOA boundaries, the addition of a new MOA, and their use for flight training. As described in Section 3.1.2.3, subsonic aircraft noise levels beneath the proposed Paxon MOA would increase from 37 to 54 dB L_{dnmr}. Noise levels beneath all subunits of the expanded Fox 3 MOA would increase from 39 dB L_{dnmr} (in areas under existing Fox 3 MOA) or ambient sound levels (in areas not beneath military airspace) to 49 dB L_{dnmr}. The increase in noise would not be sufficient to damage any archaeological or historic architectural sites. Scientific studies of the effects of noise and vibration on historic properties have demonstrated that flight operations would be unlikely to cause damage (see Appendix E, *Noise*). Sonic booms are projected to increase from

an average of 4.6 booms per day to 5.2 booms per day, which is not expected to result in impacts on cultural resources.

In compliance with Section 106 of the National Historic Preservation Act (NHPA), Alaskan Command (ALCOM), on behalf of the Air Force, has completed consultation with the Alaska State Historic Preservation Officer (SHPO) and determined that no historic properties will be affected by implementation of the proposed action. All compliance requirements for consultation with potentially affected Alaska Native tribes, Alaska Native Claims Settlement Act (ANCSA) corporations, and Tribal government entities regarding ALCOM's finding of no historic properties affected has been completed. In accordance with AFI 32-7065 (Air Force 2004-3), all NHPA Section 106 consultation has been completed.

In the event that previously unrecorded or unevaluated cultural resources are encountered, the Air Force would manage these resources in accordance with the NHPA and other Federal and State laws, Air Force and DoD regulations and instructions, and DoD American Indian and Alaska Native policy.

No significant impacts on traditional cultural resources are anticipated to result from the proposed expansion of Fox 3 MOA boundaries and the creation of the new Paxon MOA. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes regarding their concerns about potential impacts on Tribal rights, Tribal resources, or Indian land under the proposed expansion of Fox 3 MOA boundaries and the creation of the new Paxon MOA (see Section 1.6.5).

3.1.9.3.2 Alternative E

The airspace structure for the Fox 3 MOA expansion under this alternative would be smaller in size from that proposed under Alternative A with the southern boundary moved approximately 20 NM to the north and no subdivisions, as shown in Figure 2-2. This alternative would also include the addition of the new Paxon MOA as described in Alternative A and shown in Figure 2-2. There would be no construction and only minimal ground disturbance with this alternative.

Under Alternative E, impacts would be similar to Alternative A, with no significant impacts anticipated to cultural resources from the expansion of current Fox 3 MOA boundaries, the addition of the new Paxon MOA, and their use for flight training.

3.1.9.3.3 No Action Alternative

Under the No Action Alternative there would be no changes to the existing Fox 3 MOA and no new Paxon MOA. Existing use of the MOA would continue under this alternative, and resources would continue to be managed in compliance with Federal law and Air Force regulations.

3.1.9.4 Mitigations

No mitigations are identified for this resource at this time.

3.1.10 Land Use

3.1.10.1 Affected Environment

Information supporting this section is also found in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.2 (General Description of Affected Environment), and Appendix I (*Land Use, Public Access, and Recreation*).

LAND STATUS, MANAGEMENT AND USE

Land Status

Land ownership in the proposal area is a mixture of Federal, State, local borough, and private land (including Native regional and village corporation land), as shown in Figure 3-11 and tabulated in Table 3-12. Alternative A (composed of areas 1, 2, 3, and 4) is just over 7.5 million acres in size, and Alternative E (composed of areas 1, 2, 4, and 5) is about 6.4 million acres. As the table indicates, most of the land within the proposal area is State-owned.

Table 3-12. Land Status of Lands in the Fox 3 MOA Expansion and New Paxon MOA Proposal Area

Land owner/manager	Proposal Area[1]				
	1	2	3	4	5
Federal (% of total) [2]	30%	12%	1%	19%	29%
State (% of total) [3]	67%	87%	98%	77%	9%
Private (% of total) [4]	3%	1%	1%	4%	62%
Total (acres)	**3,137,694**	**1,211,977**	**1,164,821**	**2,017,083**	**31,941**

[1] Locations shown in Figure 3-11 (shown in legend key)
1 = Existing Fox 3 MOA
2 = Fox 3 MOA Expansion Area 1 (Alt A and E)
3 = Fox 3 MOA Expansion Area 2 (Alt A only)
4 = New Paxon MOA (Alt A and E)
5 = New Paxon MOA wedge (Alt E only)

[2] Federal = Federal land in the action areas including land owned by Department of the Interior and the Department of Defense.

[3] State = State land in the action area including State patented and State tentatively approved.

[4] Private = Private land includes Native patented, Native Interim Conveyed, State land disposals (to local boroughs and private), and privately owned land.

Key: MOA=Military Operations Area.

Source: ADNR 2011-1

Population centers underlying the proposal airspace include the census-designated places (CDPs) of Lake Louise and the Native village areas of Cantwell, Dot Lake, Mendeltna, Paxson, Glennallen, Chistochina, Gulkana, and Gakona. Private land accounts for less than 3 percent of the land in the proposal area. Private land is mostly concentrated in these listed communities, but is also dispersed throughout the region. Military land account for less than 1 percent and includes the Army's Black Rapids Training Area (5,000 acres), just south of Delta Junction on the Richardson Highway and land around Lake Louise. The Northern Warfare Training Center is located at Black Rapids Training Area.

Land Management and Use

Plans developed by the Federal government, the State, local boroughs, municipalities, and Native corporations describe the management intent and priorities for lands within their jurisdictions. A brief description of the primary plans for the 7.5 million-acre proposal area is provided in Appendix I, *Land Use, Public Access, and Recreation*.

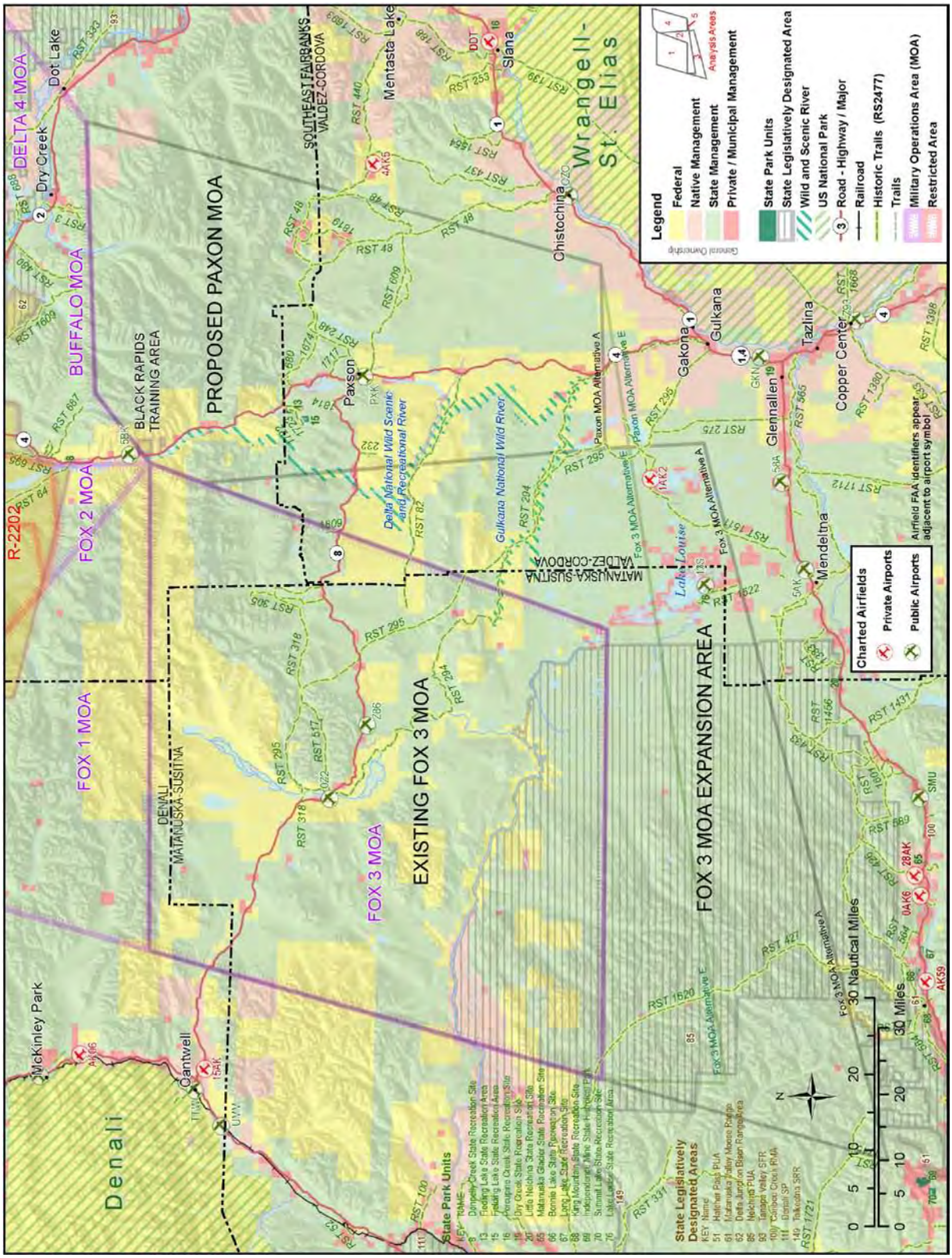


Figure 3-11. Land Status and Special Use Areas in the Fox 3 MOA Expansion and New Paxon MOA Proposal Area

Source: ADNR 2009-1, ADNR 2009-2, ADNR 2009-3, ADNR 2011-2, ADNR 2011-3, BLM 2005, NPS 2009

The State of Alaska and BLM manage the vast majority of lands in the proposal area. The BLM lands are divided into four resource management areas (RMAs): Delta, Denali/Clearwater, Gulkana, and Glennallen/Richardson. Recreation, subsistence activities and mining are primary uses. Several Area Plans (developed by the Alaska Department of Natural Resources [ADNR]) govern the general management priorities of State lands. Both BLM and the ADFG conduct year-round management activities. Game surveys are performed at specific times each year by air and are the basis for setting bag limits for the following hunting season. Surveys are very time-sensitive based on the life cycles of each species and the onset of snow. The routine survey schedule is as follows (surveys marked with asterisks (*) are essential surveys that are conducted every year):

- May 15–June 10: Caribou parturition surveys; moose twinning*, calf survival and periodic mortality surveys; occasional bear surveys
- June 20–July 10: Caribou population estimate and composition surveys*
- Mid-summer: Dall sheep surveys*
- October 1–10: Caribou composition survey*
- Following first adequate snow cover (approximately mid-October) and before December 7: moose population estimates*
- May 5–June 5: Ptarmigan surveys (aircraft access)
- Late March–early April: Watana Su-Hydro winter range moose surveys* (scheduled for the next several years)
- Year-round: Monitoring of moose and caribou movements via aerial radiotelemetry

Figure 3-12 provides a generalized illustration of areas with the heaviest public use. The highest activity levels occur along the Denali and Richardson Highways where trails are accessible into more primitive areas, between the Gulkana and Gakona Rivers, the Tangle Lake Archaeological District area, the Lake Louise and upstream portions of the Tyone River watershed, and the Valdez and Clearwater Creek areas served by two public airports. According to ADFG data for the period from 2008 to 2010, over 90 percent of hunter success in Game Management Units (GMUs) 13, 14, and 20D occurs between mid-August and late September, with another short surge from the end of October to early November (ADFG 2011-1).

Special Use Areas

Federal and State lands with legislatively designated protection in the proposal area are listed in Table 3-13. The area includes 10 areas with special purposes and management based on particular resource values, including refuges, parks, preserves, sanctuaries, critical habitat areas, ranges, and special management areas. Descriptions of special use areas are provided in Appendix I, *Land Use, Public Access, and Recreation*.

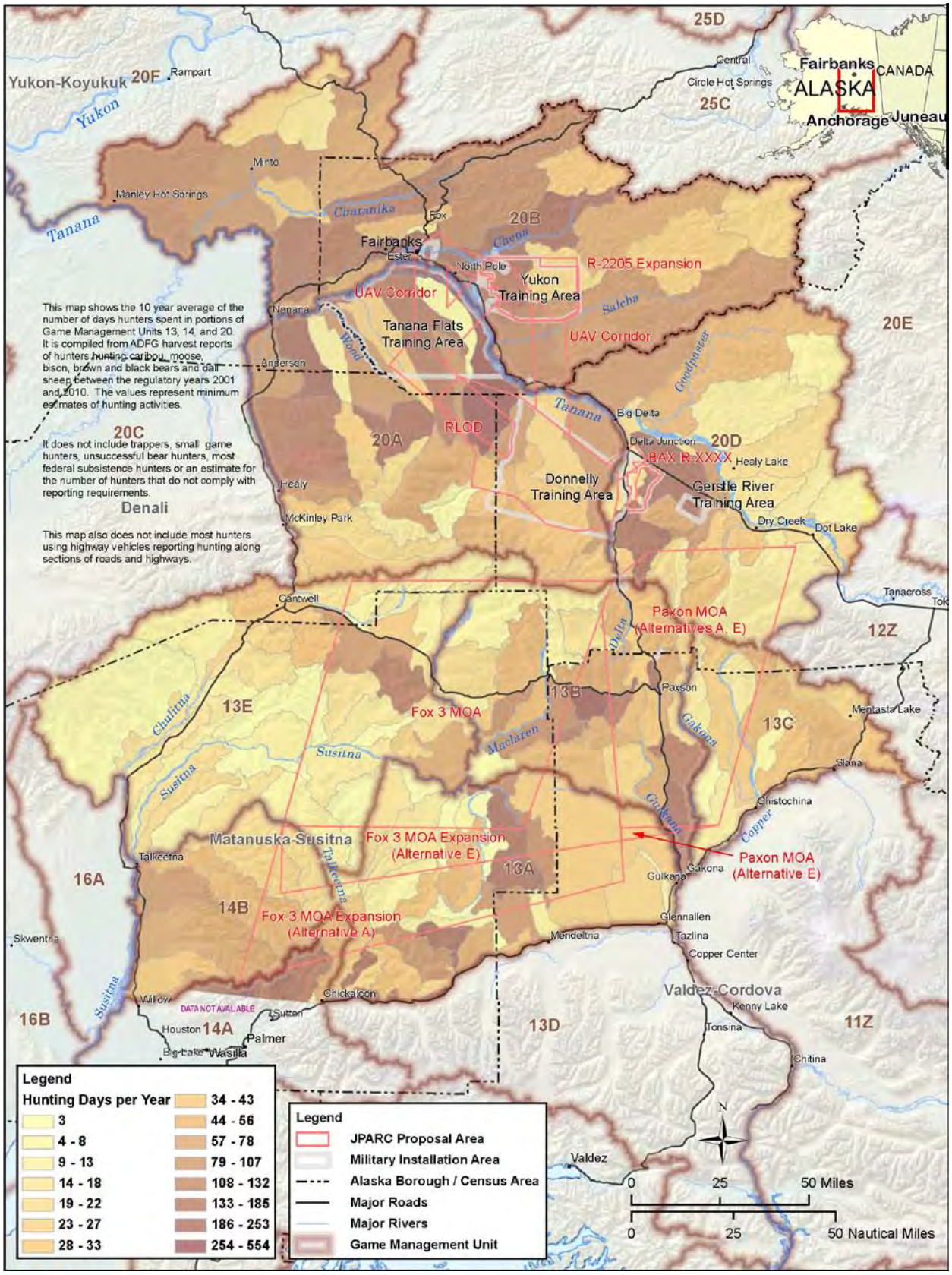


Figure 3-12. Hunter Use Days in the JPARC Region of Influence
Source: SAIC 2011-1

Table 3-13. Special Use Areas – Fox 3 MOA Expansion and New Paxon MOA Proposal Area

Special Use Area	Total Area (acres)	Proposal Area[1]									
		1		2		3		4		5	
		Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Gulkana National Wild River	92,864	5,020	5%	35,071	38%	0	0%	52,772	57%	0	0%
Delta National Wild and Scenic Recreational River	44,394	0	0%	21,566	49%	0	0%	22,272	50%	0	0%
Lake Louise State Recreation Area	98	0	0%	0	0%	98	0%	0	0%	0	0%
Tangle Lakes Archaeological District	227,866	72,926	32%	130,981	57%	0	0%	24,122	11%	0	0%
Clearwater Creek Controlled Use Area	566,192	562,119	99%	29	0%	0	0%	0	0%	0	0%
Delta Controlled Use Area	990,549	101,468	10%	1	0%	0	0%	324,819	33%	0	0%
Fielding Lake State Recreation Area	570	0	0%	0	0%	0	0%	570	100%	0	0%
Nelchina Public Use Area	2,333,089	657,404	28%	562,518	24%	630,658	0%	0	0%	0	0%
Matanuska Valley Moose Range	131,593	0	0%	0	0%	179	0%	0	0%	0	0%
Kasilof River Special Use Area	2,079,912	22,999	1%	30,312	1%	0	0%	18,065	1%	284	0%

[1] Locations shown in Figure 3-11 (shown in legend)
1 = Existing Fox 3 MOA
2 = Fox 3 MOA Expansion Area 1 (Alt A and E)
3 = Fox 3 MOA Expansion Area 2 (Alt A only)
4 = New Paxon MOA (Alt A and E)
5 = New Paxon MOA wedge (Alt E only)
[2] Federal = Federal land in the action areas including land owned by Department of the Interior and the Department of Defense.
[3] State = State land in the action area including State patented, State tentatively approved, State land disposals.
[4] Private = Private land includes Native patented, Native Interim Conveyed, and privately owned BLM land.
Key: MOA=Military Operations Area.
Source: ADNR 2009-1, ADNR 2011-3, BLM 2005, BLM 2011, SAIC 2011-2

On Federal land, BLM has designated the Delta River and the Gulkana River as Special Recreation Management Areas. The Gulkana, Delta Wild, and Scenic River areas are popular for recreation and fishing. On State land, Nelchina Public Use Area (PUA) is widely used for recreation, hunting, and mining and is accessible to persons in Anchorage, Wasilla, and Glennallen. It encompasses 2.5 million acres of State land in the Talkeetna Mountains and was established by the State legislature to protect, perpetuate, and enhance the fish and wildlife habitat and public enjoyment by the activities of fishing, hunting, trapping, recreation, and other public uses. It has been managed for multiple-use under the guidelines of the 1985 Susitna Area Plan and now under the 2010 Susitna Matanuska Area Plan, currently under appeal. Nelchina PUA has an extensive trail network, and landing strips provide for air access to Steve Langford, Jacko, Tyone, and Red Creeks. Tangle Lakes Archaeological District is a management priority area for ADNR and portions underlie the Fox 3 MOA, the proposed Fox 3 expansion area, and the new Paxon MOA. Most of the Clearwater Controlled Use Area (CUA) underlies the existing Fox 3 MOA and about one-third of the Delta CUA underlies the proposed Paxon MOA.

Resource and Productive Use

The proposal area supports a range of productive uses and productive resource potential. The locations of energy resources, energy assets, and productive sites are shown in Figure 3-13. Figure 3-14 shows the location of high potential renewable resource areas and existing productive sites.

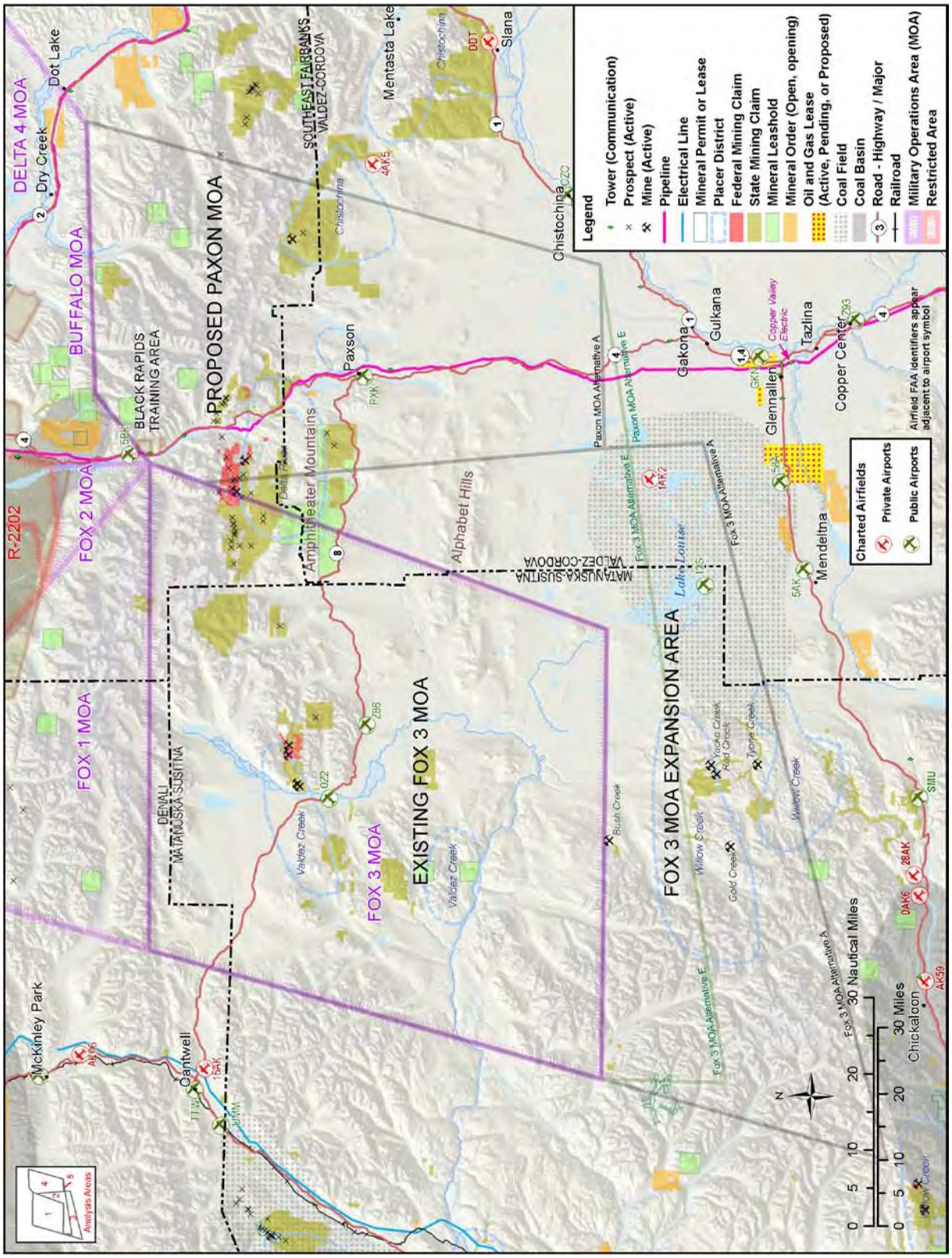


Figure 3-13. Energy and Productive Uses in the Fox 3 MOA Expansion and New Paxon MOA Proposal Area
Source: ADNR 2009-4, ADNR 2010-1, ADNR 2010-2, ADNR 2011-4, ADNR 2011-5, ADNR 2011-6, ADNR 2011-10, ADNR 2011-11, ADNR 2011-12, ADNR no date, BLM 2007, NGA no date, USGS 2005-1, USGS 2005-2

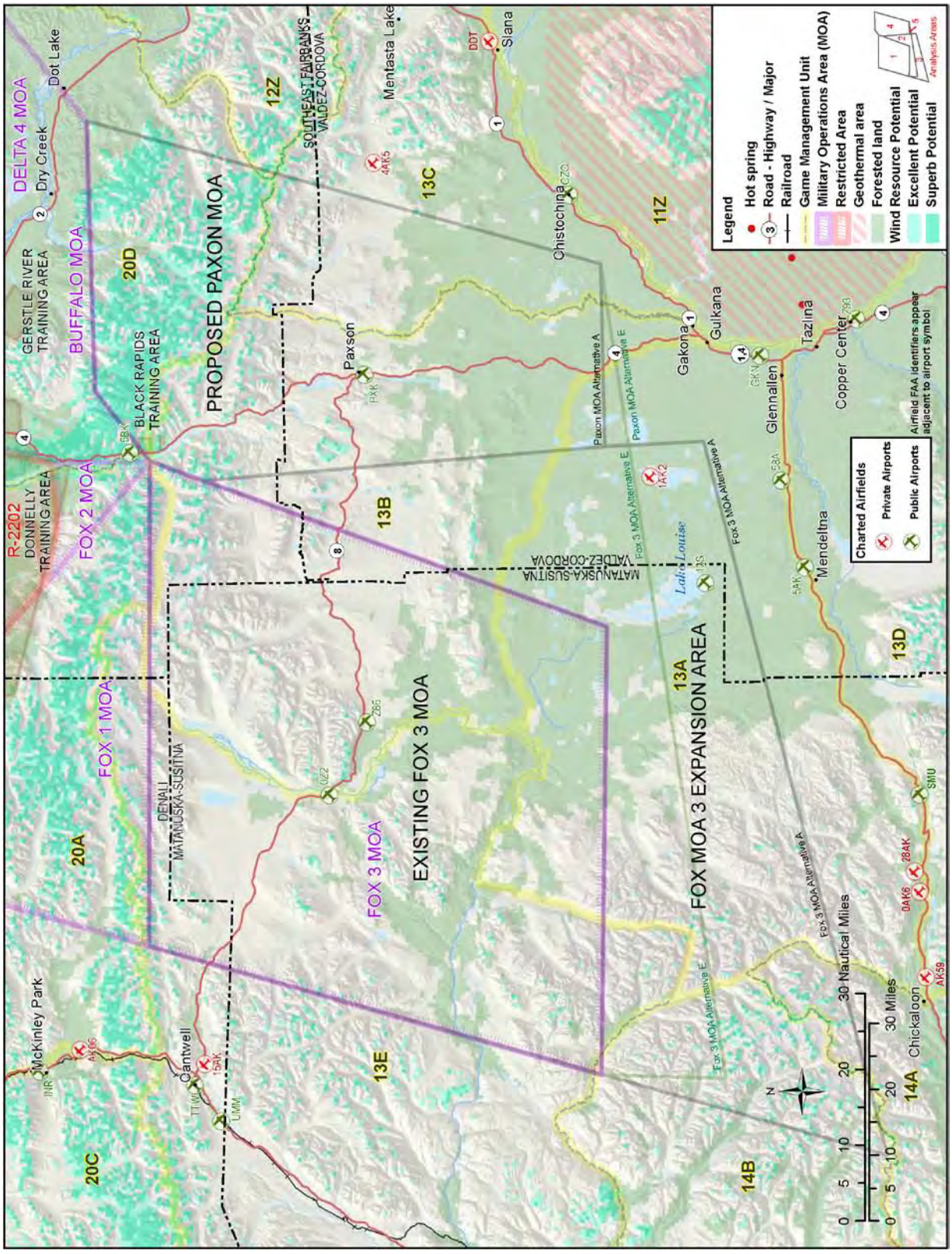


Figure 3-14. Renewable Resources in the Fox 3 MOA Expansion and New Paxon MOA Proposal Area
Source: ADNR 2010-3, ADNR 2010-4, AWS TrueWind/NREL 2003, USGS 1991

The proposal area has 29 mineral claims on a total of 18,444 acres, mineral leaseholds on 124,000 acres, mineral estate orders on 161,100 acres, and 15 prospecting sites occupying 9,250 acres. The area is covered by over 2 million acres of forest, and has excellent and superb wind energy potential on 230,300 acres (along the southern mountain ridges and inclines). Placer deposits (for precious metals) lie east and west of Paxson and localized oil accumulations north of Gulkana and along the Richardson Highway north of Paxson. The Alphabet Hills and Amphitheater Mountains (Delta River district) have high mineral potential with active placer mining and potential for future year round operations. Many active mines in the south Fox 3 area. In the Nelchina area, Gold, Bush, Red, Willow, Tyone, and Jacko Creeks have active placer mines (Willow Creek district). Placer mining mostly takes place in the summer months. Many mines are serviced by commercial air service operations, and supplies and equipment are also brought in along trails when there is snow cover. Some areas such as Bush Creek are only accessible by air. Mining is also active north of the Denali Highway under the existing Fox 3 MOA (Valdez Creek area), and further east under the proposed Paxon MOA in the Chistochina district.

Localized oil accumulations are located north of Gulkana and along the Richardson Highway north of Paxson. Mineral and oil exploration relies on air access for surveys and crew support, usually flying VFR at lower altitudes (5,000 feet AGL).

Many lakes and rivers in the area are popular for tourism, vacationing, and outdoor sports such as hunting and fishing (for example, the areas around Lake Louise, Tangle Lakes, and Summit Lake). Many Alaskans make livelihoods centered around these activities that rely on the great natural beauty of the region.

Federal and State land managers prioritize the use of lands based on resources, attributes, and local values. In the proposal area, about 6.5 million acres are classified (by ADNR) for its habitat value. BLM lands are associated with the two Wild and Scenic Rivers in the proposal area.

Private and Native Lands

Private parcels and residential lands within the proposal area account for about 3 percent of the proposal area. Private land is used for a range of commercial and productive uses, and some is used for settlement and homesteading. Residential use is associated with cities, villages, settlements, homesteads, designated census places, and undesignated clusterings of dwellings. Further discussion of Native-owned lands and resources is provided in Section 3.1.13.2, Subsistence. Communities, Native villages, and populated areas underlying the airspace associated with the Fox 3 MOA proposal are listed in Table 3-14. There are also 71 Native allotments (each 160 acres or less); the majority located in the southern part of the proposed Fox 3 MOA expansion area.

Locations of Interest

During public scoping for this EIS, members of the public and government agency representatives provided the names and locations of several sites and areas valued for particular resources, purposes, and uses. These locations are illustrated in Figure A–1 and listed in Table A–6 (in Appendix A, *Public Scoping Summary*). Table 3-14 lists locations of interest that occur within the Fox 3 MOA proposal area and were identified frequently during the scoping process.

Table 3-14. Locations of Interest – Fox 3 MOA Expansion and New Paxon MOA Airspace

Location	Land Use Characteristic	Proposal Area[1]				
		1	2	3	4	5
Area around Tok[2]	Community					
Area south of Denali Highway	Habitat, hunting, recreation	X	X			
Cantwell	Community					
Clarence Lake	Recreation, fishing	X				
Copper River Valley/Basin	Natural resources, recreation, hunting				X	X
Crosswind Lake	Recreation, fishing			X		
Eagle River[2]	Community					
Delta National Wild and Scenic River	Pristine areas, recreation		X		X	
Delta Range	Natural area				X	
Denali Highway	Scenic areas, tourism	X	X			
Fielding Lake	Recreation, fishing				X	
Gakona	Community					
Game Management Unit 13	Hunting, habitat, wildlife	X	X	X	X	X
Glennallen	Community					
Gulkana National Wild and Scenic River	Pristine areas, recreation	X	X		X	
Lake Louise	Community			X		
Lake Louise Recreation Area	Recreation, commercial businesses			X		
MacLaren River Lodge	Recreation, business	X				
Meiers Lake	Recreation, fishing					
Mountains east of Talkeetna	Recreation, hunting, naturalness	X				
Nelchina						
Nelchina PUA	Recreation, hunting, fishing	X	X	X		
Oshetna River		X	X	X		
Paxson	Community				X	
Paxson Lake	Natural feature, recreation				X	
Private land (throughout)	Residences	X	X	X	X	X
Richardson Highway	Scenic areas, tourism				X	X
Sourdough Lake	Recreation, fishing				X	
Summit Lake	Recreation, fishing				X	
Susitna Lake	Recreation, fishing		X	X		
Tangle Lakes	Recreation, fishing		X		X	
Upper Copper River	Naturalness, fishing				X	X
Upper Susitna River	Naturalness, fishing	X	X	X		

1 Proposal Areas 1–5 shown on Figure 3-11 (shown in legend)
1 = Existing Fox 3 MOA
2 = Fox 3 MOA Expansion Area 1 (Alt A and E)
3 = Fox 3 MOA Expansion Area 2 (Alt A only)
4 = New Paxon MOA (Alt A and E)
5 = New Paxon MOA wedge (Alt E only)
2 Not within the Alternative E Fox 3 expansion area
Key: MOA=Military Operations Area; PUA=Public Use Area.
Source: ADNR 2009-1, ADNR 2009-5, ADNR 2011-3, BLM 2005, BLM 2011, SAIC 2011-2

PUBLIC ACCESS

Land Access

Revised Statute (RS) 2477–designated routes within the ROI for this proposal are listed in Table 3-15. Figure 3-11 shows the locations of the listed trails. There are extensive trail networks throughout the area, especially in the Nelchina PUA, along Denali Highway, and along Richardson Highway into the Delta and Gulkana Wild and Scenic River areas.

Table 3-15. Public Access Trails Within the Region of Influence of the Fox 3 MOA Expansion and New Paxon MOA Proposed Action and Alternatives

Public Access	Designation/#	Length (miles)
Glacier Gap Lake Trail (a.k.a. Lavery)	RS2477 Trail / RST 1809	2
Chickaloon River Trail	RS2477 Trail / RST 427	23
Chisana–Slate Creek	RS2477 Trail / RST 1819	9
Chistochina–Slate Creek	RS2477 Trail / RST 48	58
Delta River Trail	RS2477 Trail / RST 1674	26
Fielding Lake Trail – north shore	RS2477 Trail / RST 1722	4
Fielding Lake Trail – south shore	RS2477 Trail / RST 1723	3
Gulkana–Denali (winter)	RS2477 Trail / RST 294	113
Gulkana–Valdez Creek (summer)	RS2477 Trail / RST 295	85
Kashwitna River Trail	RS2477 Trail / RST 1721	6
Lake Louise Road to Ewan Lake	RS2477 Trail / RST 1511	26
Lake Louise Trail	RS2477 Trail / RST 1522	8
McClaren River Trail	RS2477 Trail / RST 305	13
Meiers Lodge–Dickey Lake	RS2477 Trail / RST 82	41
Mentasta-Slate Creek	RS2477 Trail / RST 440	16
Moores Lake Trail	RS2477 Trail / RST 680	4
One Mile Trail	RS2477 Trail / RST 609	32
Paxson–Denali (Valdez Creek)	RS2477 Trail / RST 318	35
Paxson–Slate Creek	RS2477 Trail / RST 248	31
Richardson Highway–Fish Lakes Trail	RS2477 Trail / RST 1717	5
Sevenmile Lake Trail (Denali Highway)	RS2477 Trail / RST 1814	< 1
Swede Lake–Little Swede Lake–Denali Highway	RS2477 Trail / RST 232	3
Talkeetna River Trail	RS2477 Trail / RST 1620	25
Windy Creek Access Road	RS2477 Trail / RST 517	18

Source: ADNR 2009-2

Aerial Access

A complete list of the public and private airports and airstrips in the ROI for this proposal is provided in Appendix D, *Airspace Management*, Table D–5, Table 3-16, and shown on Figure 3-11. Table 3-16 identifies the communities and special areas served by charted airports and airfields in the Fox 3 MOA proposal area.

Table 3-16. Charted Airports and Airfields Serving the Fox 3 MOA Proposal Area

Charted Airport	Areas Underlying or Within 20-mile Service Radius	
	Community	Communities and Special Use Areas
Anderson Lake Airport (OAK1)	Palmer, Sutton, Big Lake, Wasilla, Knik, Houston, Eklutna, Fishhook CDP, Palmer City, Gateway CDP, Buffalo Soapstone CDP, Willow CDP, Farm Loop CDP, Butte CDP, Big Lake CDP, Meadow Lakes CDP, Sutton-Alpine CDP, Lazy Mountain CDP, Knik River CDP, Tanaina CDP, Knik-Fairview CDP, Lakes CDP, Anchorage Municipality	Hatcher Pass PUA, Palmer Hay Flats SGR, Matanuska Valley Moose Range, Willow Mountain CHA, Knik River PUA, Lake Susitna SRR, Chugach SP, Summit Lake SRS, Big Lake North SRS, Hanson Memorial SRS, Independence Mine State Historic Park, Kepler-Bradley SRA, Rocky Lake SRS, Big Lake SRS, Finger Lake SRS, Wolf Lake SRS
Black Rapids (5BK)	Fort Greely CDP, Deltana CDP	Delta National Wild and Scenic and Recreational River, Donnelley Creek SRS
Cantwell Airport (TTW)	Cantwell, Cantwell CDP, McKinley Park CDP	Denali National Park
Chistochina (CZO)	Chistochina, Chistochina CDP, Gakona CDP	Wrangell-St. Elias National Park
Clearwater (Z86)	**None**	**None**
Cottonwood Lake Seaplane Base (3H3)	Eklutna, Palmer, Sutton, Knik, Big Lake, Houston, Wasilla, Tanaina CDP, Buffalo Soapstone CDP, Butte CDP, Palmer City, Houston City, Wasilla City, Lazy Mountain CDP, Willow CDP, Fishhook CDP, Anchorage Municipality, Meadow Lakes CDP, Farm Loop CDP, Sutton-Alpine CDP, Gateway CDP, Knik River CDP, Big Lake CDP, Lakes CDP, Knik-Fairview CDP, Willow Mountain CHA	Chugach SP, Matanuska Valley Moose Range, Palmer Hay Flats SGR, Knick River PUA, Little Susitna SRR, Hatcher Pass PUA, Big Lake North SRS, Hanson Memorial SRS, Summit Lake SRS, Finger Lake SRS, Independence Mine SRS, Big Lake South SRS, Kepler-Bradley SRA, Rocky Lake SRS, Wolf Lake SRS
Crosswind Lake Airport (1AK2)	Tolsona CDP, Lake Louise CDP, Glennallen CDP, Mendeltna CDP, Gakona CDP, Gulkana CDP	Gulkana National Wild River, Lake Louise State Recreation Area
Denali Airport (AK06)	Healy, McKinley Park, Cantwell, Healy CDP, McKinley Park CDP, Cantwell CDP	Denali National Park, Dry Creek Site State Park
Farrars Airport (28AK)	Chickaloon, Chickaloon CDP, Glacier View CDP, Eureka Roadhouse CDP	Nelchina PUA, Matanuska Valley Moose Range, Knik River PUA, Caribou Creek RMA, Long Lake SRS, Bonnie Lake SRS, Matanuska Glacier SRS
Finger Lake Seaplane Base (99Z)	Sutton, Wasilla, Big Lake, Palmer Knik, Houston, Eklutna, Buffalo Soapstone CDP, Houston City, Fishhook CDP, Sutton-Alpine CDP, Wasilla City, Knik River CDP, Butte CDP, Knik-Fairview CDP, Gateway CDP, Anchorage Municipality, Lazy Mountain CDP, Willow CDP, Big Lake	Hatcher Pass PUA, Willow Mountain CHA, Chugach SP, Knik River PUA, Matanuska Valley Moose Range, Palmer Hay Flats SGR, Little Susitna SRR, Wolf Lake SRS, Summit Lake SRS, Kepler-Bradley SRA, Big Lake North SRS,

Table 3-16. Charted Airports and Airfields Serving the Fox 3 MOA Proposal Area *(Continued)*

Charted Airport	Areas Underlying or Within 20-mile Service Radius	
	Community	**Communities and Special Use Areas**
	CDP, Meadow Lakes CDP, Chickaloon CDP, Tanaina CDP, Lakes CDP, Farm Loop CDP, Palmer City	Independence Mine SHP, Big Lake South SRS, Rocky Lake SRS, Finger Lake SRS, Hanson Memorial SRS
Golden North Airfield Airport (15AK)	Cantwell, Cantwell CDP, McKinley CDP	Denali National Park
Gulkana Airport (GKN)	Tazlina, Gulkana, Copper Center, Glennallen, Gakona, Gulkana CDP, Copper Center CDP, Glennallen CDP, Mendeltna CDP, Gakona CDP, Silver Springs CDP, Willow Creek CDP, Willow Creek CDP, Tolsona CDP, Tazlina CDP,	Wrangell-St. Elias National Park, Dry Creek SRS
Jonesville Mine Airport (JVM)	No longer in service	
King Ranch Airport (AK59)	Sutton, Chickaloon, Lazy Mountain CDP, Glacier View CDP, Sutton-Alpine CDP, Chickaloon CDP	Knik River PUA, Matanuska Valley Moose Range, Nelchina PUA, Matanuska Glacier SRS, King Mountain SRS, Long Lake SRS, Bonnie Lake SRS
Lake Louise Airport (Z55)	**No longer in service**	
Lake Louise Seaplane Base (13S)	Nelchina, Mendeltna, Mendeltna CDP, Glennallen CDP, Nelchina CDP, Eureka Roadhouse CDP, Tolsona CDP, Lake Louise CDP,	Nelchina PUA, Lake Louise State Recreation Area.
Mankomen Lake Airport (4AK5)	Chistochina CDP, Mentasta Lake CDP	Wrangell-St. Elias National Park
Paxson Airport (PXK)	Paxson, Paxson CDP	Gulkana National Wild River, Delta National Wild Scenic and Recreational River, Fielding Lake SRA
Road Commission (NR1)	**None**	**None**
Sheep Mountain Airport (SMU)	Nelchina CDP, Glacier View CDP, Eureka Roadhouse CDP	Nelchina PUA, Caribou Creek RMA, Matanuska Glacier SRS
Tazlina Airport (Z14)	Nelchina, Mendeltna, Glennallen CDP, Lake Louise CDP, Nelchina CDP, Mendeltna CDP, Tolsona CDP, Eureka Roadhouse CDP	Nelchina PUA, Little Nelchina SRS, Lake Louise SRA
Tazlina/Smokey Lake/Seaplane Base (5AK)	Mendeltna, Nelchina, Glennallen CDP, Mendeltna CDP, Tolsona CDP, Eureka Roadhouse CDP, Nelchina CDP, Lake Louise CDP,	Nelchina PUA, Little Nelchina SRS, Lake Louise SRS
Tolsona Lake Seaplane Base (58A)	Glennallen, Mendeltna, Nelchina, Gulkana CDP, Glennallen CDP, Lake Louise CDP, Mendeltna CDP, Nelchina CDP, Tolsona CDP, Tazlina CDP	Wrangell-St. Elias National Park, Dry Creek SRS, Lake Louise SRS

Table 3-16. Charted Airports and Airfields Serving the Fox 3 MOA Proposal Area *(Continued)*

Charted Airport	Areas Underlying or Within 20-mile Service Radius	
	Community	Communities and Special Use Areas
Victory Airport (SMU)	Chickaloon, Chickaloon CDP, Glacier View CDP, Eureka Roadhouse CDP	Matanuska Valley Moose Range, Nelchina PUA, Knik River PUA, Caribou Creek RMA, Bonnie Lake SRS, King Mountain SRS, Matanuska Glacier SRS, Long Lake SRS
Wasilla Creek Airpark Airport (05AK)	Wasilla, Eklutna, Sutton, Palmer, Anchorage Municipality, Butte CDP, Gateway CDP, Chickaloon CDP, Farm Loop CDP, Tanaina CDP, Fishhook CDP, Knik River CDP, Houston City, Lazy Mountain CDP, Wasilla City, Big Lake CDP, Sutton-Alpine CDP, Meadow Lakes CDP, Buffalo Soapstone CDP, Lakes CDP, Willow CDP, Knik-Fairview CDP, Palmer City	Willow Mountain CHA, Hatcher Pass PUA, Palmer Hay Flats SGR, Knik River PUA, Chugach SP, Matanuska Valley Moose Range, Little Susitna SRR, Wolf Lake SRS, Hanson Memorial SRS, Finger Lake SRS, Independence Mine SHP, Kepler-Bradley SRA, Summit Lake SRS
Wolf Lake Airport (4AK6)	Big Lake, Knik, Sutton, Wasilla, Palmer, Eklutna, Houston, Farm Loop CDP, Wasilla City, Willow CDP, Lakes CDP, Anchorage Municipality, Knik River CDP, Houston City, Big Lake CDP, Palmer City, Butte CDP, Buffalo soapstone CDP, Chickaloon CDP, Meadow Lakes CDP, Tanaina CDP, Fishhook CDP, Gateway CDP, Knik-Fairview CDP, Lazy Mountain CDP, Sutton-Alpine CDP	Palmer Hay Flats SGR, Little Susitna SRR, Chugach SP, Willow Mountain CHA, Matanuska Valley Moose Range, Hatcher Pass PUA, Knik River PUA, Big Lake North State Recreation Site, Wolf Lake SRS, Independence Mine SHP, Kepler-Bradley SRA, Summit Lake SRS, Rocky Lake SRS, Finger Lake SRS, Big Lake South SRS, Hanson Memorial SRS

Note: Bold text indicates that the airport is located under the proposed airspace for this proposal.

Key: CDP=Census Designated Place; CHA=Critical Habitat Area; PUA=Public Use Area; RMA=Resource Management Area; SGR=State Game Refuge; SP=State Park; SRS=State Recreation Site; SRA=State Recreation Area; SRR=State Recreation River.

Source: FAA 2011-6; AirNav 2011.

Navigable and Public Waters

There are many rivers, streams, and lakes within the proposal area. Some of these features are likely designated as navigable and public waters, including portions of the Gulkana, Delta, and Tyone Rivers as well as Lake Louise, Crosswinds Lake, Ewan Lake, Paxson Lake, and Tangle Lakes (ADFG 2011-2).

RECREATION

Recreation on Military Lands

Black Rapids Training Area underlies the proposed new Paxon MOA and is available for public recreational use. The DoD also has interest in a small parcel around Lake Louise under the proposed expanded Fox 3 MOA, which is available only to military personnel.

Recreation on Non-military Lands

The general recreational uses and opportunities provided in the region are described in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.3.3. Federally and State-designated

recreation areas and lands within the ROI for this proposal are listed in Figure 3-12. Recreational uses and values of the special use areas are described in Appendix I, *Land Use, Public Access, and Recreation*. Federally designated recreation lands within the ROI include the Gulkana National Wild River and the Delta National Wild and Scenic Recreational River. State-designated recreation areas include Lake Louise State Recreation Area, Fielding Lake State Recreation Area, Nelchina PUA, and Matanuska Valley Moose Range.

Other lands that are managed for multiple uses, including recreation, are Brushkana Creek–Fairbanks Area, areas within the Hatcher Pass Management Plan, Copper River Basin, areas within the Delta-Salcha Area Plan, areas within the Glenn Highway Subregion, Kasilof River Special Use Area, areas within the Lake Louise Subregion, Loon Lake, Matanuska Valley, areas within the Talkeetna Mountains Subregion, and areas within the Tanana Basin Area Plan. Several popular campgrounds are easily accessible from the Richardson and Denali Highways, including Sourdough Creek, Paxson Lake, and the Brushkana and Tangle Lake campgrounds. Table 3-17 shows the level of recent use and top recreational activities that occurred on trails and campgrounds within the portions of the Denali/Clearwater, Delta, Gulkana, and Glennallen/Richardson Recreation Management Areas within the action area (BLM 2011). As reported in the table, areas with the highest levels of activity are the Tangle Lakes, Paxson, Brushkana, and Sourdough campgrounds. Several trails are also heavily used, such as those at Tangle Lakes, One Mile Creek and down to Gulkana River. Peak use periods regularly occur from June 27 to July 11, August 10 through September 20 and October 21 to November 30; however, the timing can vary from year to year.

Recreation activities occur in undesignated recreation resource areas on Federal, State, and private lands throughout the proposal area. Depending on proximity to communities, highways, or other development, these lands range from semimodern to primitive in setting and recreational opportunity.

Hunting, trapping, berry-picking, mountaineering, and fishing are important recreational activities for Alaskans, out-of-state visitors, and tourists. The ADFG has responsibility for managing these resources in accordance with bag limits, permits, and other applicable State regulations. The proposal area overlaps with GMUs 13A, 13B, 13C, 13E, 14A (small portion), 14B (small portion), 20A (small portion), and 20D (small portion). Descriptions of the management priorities and recreational uses for these units are provided in Appendix I, *Land Use, Public Access, and Recreation.*

GMU 13 is an important moose and caribou hunting area, likely the most heavily used area in the state due to accessibility of the area to residents from Anchorage, the Matanuska Susitna Borough, and Fairbanks. In 2010, 5,015 individual moose hunters reported hunting in GMU 13, a number that has been steadily increasing since 2002. This increase is partially credited to the current active management programs which the state has invested significant time and energy to increase moose abundance for the benefit of consumptive users. Current objectives for moose are being achieved, with some additional increases planned. The overall management objective is to maintain a high level of harvestable moose with sufficient hunter participation annually to avoid habitat impacts. Caribou hunting is also highly popular with 4,887 hunters reporting hunting this area in 2010, with a peak participation of 19,397 hunters in 1996. As shown by the above discussion, GMU 13 is an important moose and caribou hunting area.

Information in comments from ADFG identified the following additional areas with important trails and recreational and hunting opportunities include: Denali Highway between Cantwell and Paxson, Richardson Highway between Gulkana and Black Rapids, Tok Cutoff (Glenn Highway) between Gakona and Mentasta, Gakona/Chistochina River drainages, Upper Susitna River drainage (above Tyone River). Brushkana River drainage, Coal Creek drainage, Watana Creek drainage, Crosswind Lake, Upper Nenana River/Wells Creek area, Lake Louise/ Susitna/ Tyone Lake system, Maclaren River drainage, Tangle Lake system, Hungry Hollow/ Paxson/ Summit/ Fielding Lake areas, Swede Lake drainage in Hungry

Hollow down to the Alphabet Hills (bordered on the south by the West Fork Gulkana River), Gillespie/ June/ Nita/ Dick Lakes along the Richardson Highway south of Paxson, and throughout Nelchina PUA.

Additional popular trails for hunting and other recreating are located along the Maclaren River, throughout the Glacier Lake/Sevenmile Lake/Maclaren River area, notably: Round Top trail, Ewan Lake Trails, Lake Louise/Crosswind Trail, Tolsona Lake/Crosswind Trail, Butte Lake Trail, Coal Creek trail (starts east of Butte Lake),Moore's Camp Trail, Chistochina River Trail, Mankomen Lake Trail, Indian River Trail, Slana River Trail, Round Top Trail, Ewan Lake Trails, Butte Lake Trail, Coal Creek trail, Moore's Camp Trail, Chistochina River Trail, Mankomen Lake Trail, Indian River Trail, Slana River Trail, Oshetna/ Black River/ Goose Creek/ Busch Creek/ Clarence Lake Trail, Moore Lake/Gravling Lake/Marie Lake Trail.

Table 3-17. Trails and Key Recreation Sites in the Expand Fox 3/New Paxon MOA Proposal Area

Trail/Site	Total Visits	% of Area Total	Top Activities (based on number of participants)	Proposal Area[1]				
				1	2	3	4	5
Denali/Clearwater Recreation Management Area								
Clearwater Wayside	7,917	11%	Staging/Comfort Stop; Viewing-Other	X				
Brushkana Creek C.G.	11,964	17%	Viewing-Other; Viewing-Interpretive Exhibit	X				
Brushkana Creek Cabin Trail	900	1%	Access route	X				
Landmark Gap South	714	1%	Access route		X			
Osar Lake Trail	1,022	1%	Access route	X				
Butte Creek Trail	1,600	2%	Access route	X				
Butte Lake Trail	1,600	2%	Access route	X				
Susitna Overlook Trail	100	0%	Access route	X				
Windy Creek Trail	500	1%	Access route	X				
Valdez Creek Trail	1,000	1%	Access route	X				
Brushkana Creek Trail South	300	0%	Access route	X				
Seattle Creek Trail	200	0%	Access route	X				
Mile 87.6	100	0%	Access route	X				
Total visits	**71,477**							
Glennallen/Richardson Recreation Management Area								
Sourdough/Ewan Lake Trail	300	2%	Access route				X	X
Old Richardson Trail	100	1%	Access route				X	
Hogan Hill #1 Trail	275	2%	Access route				X	
Hogan Hill #2 Trail	50	0%	Access route				X	
Round Top Trail MP 170	300	2%	Access route				X	
Spring Lake Trail MP 173	300	2%	Access route				X	
Mile 174 East Trail MP175.5	300	2%	Access route				X	
Gakona River Overlook MP 179	500	4%	Access route				X	
One Mile Cr./Wolverine Mtn.	1,000	8%	Access route				X	
Castner Glacier Trail	750	6%	Access route				X	
Total visits	**12,917**							

Table 3-17. Trails and Key Recreation Sites in the Expand Fox 3/New Paxon MOA Proposal Area *(Continued)*

Trail/Site	Total Visits	% of Area Total	Top Activities (based on number of participants)	Proposal Area[1]				
				1	2	3	4	5
Gulkana River Recreation Management Area								
Sourdough Campground	14,890	39%	Viewing-Other; Viewing-Interpretive				X	
Gulkana River Recreation Management Area (Continued)								
Paxson Lake Campground	11,786	31%	Viewing-Other; Viewing-Interpretive Exhibit; Staging/Comfort Stop				X	
Gulkana River Raft Trail	3,171	8%	Viewing-Wildlife; Viewing-Other				X	
10 Mile Cabin	100	0%	Staging/Comfort Stop; Cabin Use				X	
Swede Lake Trail	2,109	5%	Access route				X	
Middle Fork Trail	1,012	3%	Access route				X	
Haggard Creek Trail	250	1%	Access route				X	
June Lake Trail	69	0%	Access route				X	
Gillespie Lake Trail	251	1%	Access route				X	
Mile 152 West Trail	150	0%	Access route				X	
Sourdough Creek CG Trail	488	1%	Access route				X	
Dickey Lake Trail	210	1%	Access route				X	
Total visits	**38,360**							
Other Areas								
Tangle Lakes Campground	12,142	42%	Viewing-Wildlife; Viewing-Other		X			
Upper Tangles	297	1%	Viewing-Other; Viewing-Wildlife; Row/Float/Raft		X			
Round/Lower Tangle Lakes	662	2%	Viewing-Other; Viewing-Wildlife		X			
Top-of-the-World/Yost Trail	722	3%	Access route	X				
Tangle Lakes Foot Trail	2,428	8%	Access route		X			
Total visits	**28,591**							

[1] Proposal areas 1 to 5 correlate to Figure 3-11 (see legend)
1 = Existing Fox 3 MOA
2 = Fox 3 MOA Expansion Area 1 (Alt A and E)
3 = Fox 3 MOA Expansion Area 2 (Alt A only)
4 = New Paxon MOA (Alt A and E)
5 = New Paxon MOA wedge (Alt E only)

[2] Not in Proposal Area

Source: BLM 2011.

HUNTING

The primary hunted species in the proposal area include black bear, grizzly (brown) bear, caribou, moose, goat, sheep, wolverine, ptarmigan, and wolf. Specific seasonal restrictions on hunting each species and descriptions of how such restrictions apply to residents and nonresidents are provided on the ADFG website. Hunting seasons start in August but the dates for specific species can shift from year to year.

Usually the beginning of season is pre-determinable, but may extend until the allowed harvest limits are reached. In general, the period from mid-August to the end of September is the most intensive for hunting caribou, moose, and various other species in Alaska. Bear have a long season (most of or all year). Sheep have a 40-day season that overlaps with other high-use periods. Goat do not have a season, but are mostly hunted in the summer and fall. Wolf and wolverine have a longer season, extending into the colder winter months. Underlying the proposal airspace are the Delta CUA and the Clearwater Creek CUAs. These are designated by ADFG to restrict the use of motorized vehicles for hunting, including transportation of hunters, their gear, or their game for a particular time of year. It does not limit motorized access on the Richardson or Denali Highways. This provides opportunities for walk-in hunters without the competition from more-mobile hunters.

Trapping

Species that can be trapped within these GMUs include beaver, coyote, red fox, lynx, marten, mink, weasel, muskrat, river otter, squirrel, marmot, wolves, and wolverine. The seasonal restrictions for these species are provided on the ADFG website. In general, most trapping occurs from late fall through spring, coinciding with times when fur coats are their thickest.

Fishing

The headwaters of the Tanana, Susitna River, and Copper River watersheds underlie the Fox 3 MOA proposal airspace. Many of the lakes, streams, and tributaries of these major rivers provide excellent sport fishing and important sources of subsistence fish. Approximately 19 water bodies used for sport (i.e., recreational) fishing are located the project area. Table 3-18 shows the intensity of use (determined by the number of days that fishing occurred) within the Tanana River, Upper Copper River, and Susitna River drainages in 2009 and 2010. Willow Creek is the most intensely used waterbody in the project area followed by Sheep Creek, Talkeetna River Drainage, and Lake Creek. The heaviest sport fishing use within the Tanana River, Upper Copper River, and Susitna River drainages occurred in the Delta Clearwater, Paxson Lake, and Willow Creek, respectively.

Lake Susitna and Lake Louise are well-known for arctic char fishing and attract not only Alaska residents but out-of-state and international travelers. Fishing is therefore important recreationally but also is closely tied to the local economy. Currently, 29 lakes in the Upper Copper and Upper Susitna Management Area are stocked with arctic grayling, rainbow trout, coho salmon, and arctic char. The upper Tanana River basin lies under the Fox 3 MOA. Fish species not commonly found in the lower Tanana River region, such as lake trout, are found in the high alpine lakes along the Denali Highway (ADFG 2011-3). Many of these lakes are only accessible by floatplane.

3.1.10.2 Impact Assessment Methodology

GENERAL METHODOLOGY

The assessment of impacts on land use, public access, and recreation considers whether changes resulting from implementing the proposal would displace a current use, change the suitability of a location for its current or planned uses, or impede the management of land use resources according to authorized plans.

There are no regulated standards for measuring land use impacts; however, the assessment considers factors such as:

- Degree of impact or change on the intrinsic qualities or uniqueness of the affected land and resource (either locally or nationally).
- Magnitude of the change from the current condition and the effect of the change on continuing its current use and identified purpose.

- Relative abundance or scarcity of land with similar attributes, use, and affected resource.
- Frequency, timing, and duration of the effect (for example, temporary or permanent, continuous or intermittent, daily or infrequent) that would preclude use or diminish suitability and access.
- Importance of an affected land use resource to local residents and users.
- Sensitivity of an affected area or use based on its value for a designated purpose (e.g., public recreation area, state or national park, protected area, or natural resource productivity objective).
- Compatibility of the change with implementing applicable land management plans and controls.

Table 3-18. Sport Fishing Activity Within the Expanded Fox 3/New Paxon MOA Proposal Area

Water Body	Average Use[1]	Fish Species	Proposal Area[2]				
Tanana River			**1**	**2**	**3**	**4**	**5**
Tangle Lakes Drainage above Wildhorse Creek	3,525	LT, GR, WF, BB		X		X	
Nenana River Drainage, excluding Brushkana Creek	1,426	SS, GR, NP, KS	X				
Fielding Lake	1,168	LT, GR				X	
Brushkana Creek	757	GR	X				
Fish Creek (Denali Highway)	368	None				X	
Upper Copper River							
Paxson Lake	1,191	LT, GR, WF, BB				X	
Crosswind Lake	1,028	RS, LT, GR, BB			X		
Summit Lake (near Paxson)	870	LT				X	
Susitna River							
Talkeetna River Drainage (excluding Clear Creek)	9,367	KS, SS, RS, PS, CS, DV, RT, BB, LT, GR	X	X			
Sheep Creek	8,145	KS, RS, PS, CS, DV, RT, GR, BB, SS			X		
Lake Louise	6,330	LT, GR, WF, BB, Other			X		
Susitna River	4,899	KS, SS, RS, PS, CS, DV, RT, GR, NP	X				
Kashwitna River	2,756	KS, RS, CS, RT, BB, RS			X		
Goose Creek	1,346	RT, GR, SS, RS, PS, CS	X				
Susitna Lake (upper Susitna drainage)	824	LT, GR, WF, BB	X				

[1] Averaged for 2009 and 2010.

[2] Proposal areas 1 through 5 shown in Figure 3-11 legend
1 = Existing Fox 3 MOA
2 = Fox 3 MOA Expansion Area 1 (Alt A and E)
3 = Fox 3 MOA Expansion Area 2 (Alt A only)
4 = New Paxon MOA (Alt A and E)
5 = New Paxon MOA wedge (Alt E only)

Key: KS=king salmon; SS=coho salmon; CS=chum salmon; LT=lake trout; DV=Dolly Varden; RT=rainbow trout; GR=arctic grayling; WF=whitefish; SF=sheepfish; NP=northern pike; BB=burbot; RS=sockeye salmon; KS=Chinook salmon; PS=pink salmon.

Source: ADFG 2012-1

Most of these effects are measured qualitatively in terms of values implicit in plans; input from local land managers, users, and residents; perceptibility of change; and local or widespread dependence on the affected resource. Where possible, the analysis uses proportional measures (e.g., time of effect, extent of effect) to quantify the degree or magnitude of an impact. Qualitative assessment also uses scientific and historical data to predict positive or negative changes to land use, public access, and recreation. The following categories are used in assessing these impacts:

- None – No measurable impact is expected to occur.
- No adverse impacts – Some impact would occur and would result in a minor change in accessibility, or intrinsic suitability for land uses or recreation but would not change the uses of an affected area.
- Potential for adverse impact, but not significant – Impacts are expected to occur, would be noticeable, and/or would have a measurable effect on public access and recreation, such as reduction in access, alteration of recreational opportunities, or change in activity level, could modify intrinsic suitability for particular land uses or recreation (e.g., increase noise and overflight in areas supporting uses that benefit from quiet) but not change or displace a specific land uses. Potential impacts may require management actions or mitigations to avoid or reduce impacts
- Potential for significant adverse impacts – Impacts are highly probable and would result in substantial change in use, accessibility, or intrinsic suitability for current and planned land uses or recreation, and conflicts with special use management priorities for an affected area. Change or displacement of current land use may result.
- Beneficial – Impacts are expected to improve conditions for land use in affected areas, access, and recreation (for example, provide improved infrastructure for access to public recreation areas).

The first three qualitative impact categories (none, minor, and moderate) are considered insignificant in this analysis. The impact is considered significant when the impact affects a critical or highly valued area or use.

PROPOSAL-SPECIFIC METHODOLOGY

The following are the primary impacts of this proposal on land use, including public access and recreation:

- Effects of noise (subsonic and supersonic) from military overflights on underlying uses and activities
- Effects of countermeasures deployment on land uses and recreation
- Indirect effects of limited civilian air access (including use of private airfields) on land use and recreation

Land Status, Management, and Use

The methodology for evaluating the effects of aircraft-generated noise on land uses first identifies ownership and management of affected lands, defined public land uses, special areas, and sites with concentrated activities (for example, villages, industrial facilities) underlying the airspace "footprint" of each alternative, by airspace subunits. Each special area and use is assigned a noise sensitivity ranking of high, medium, or low based on factors described above (for example, mining operations would rank low for noise sensitivity, and wild and scenic rivers as high). Relevant changes in noise level (in DNL) and frequency of operations (as a percent) are provided. Based on these contributing factors, an overall impact category is assigned.

The assessment of noise effects on land use considers the compatibility thresholds established for DNL and CDNL presented in Section 3.1.2.2 and Table 3-19. However, these levels frequently are not applicable to land uses in rural and remote settings and areas with qualities derived from quiet surroundings. Instead, perceptibility of anticipated changes in noise levels, frequency of noise exposure, timing of noise events, and noise sensitivity of affected areas and uses are considered. These factors apply to both average noise levels and sonic booms.

Table 3-19. Noise Compatibility Guidelines

Noise Zone	Noise limits (dB)			Noise Sensitive Guidelines
	Aviation ADNL	Impulsive CDNL	Small Arms PK 15(met)[1]	
LUPZ	60–65	57–62	N/A	Housing, schools, medical facilities normally acceptable
LUPZ I	<65	<62	<87	Housing, schools, medical facilities normally acceptable
LUPZ II[3]	65–75	62–70	87–104	Housing, schools, medical facilities not acceptable
LUPZ III[3]	>75	>70	>104	
Not categorized			>115[2,3]	Noise sensitive land uses discouraged

[1] PK 15(met)=Single-event peak level exceeded by 15 percent of events.

[2] >115 dB PK 15(met) large caliber weapons.

[3] Although local conditions regarding the need for housing may require noise-sensitive land uses in Noise Zone II, on or off post, this type of land use is strongly discouraged. The absence of viable alternative development options should be determined and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the noise-sensitive land use would not be met if development were prohibited in Noise Zone II.

Where the community determines that these uses must be allowed, measures to achieve an outdoor to indoor noise level reduction (NLR) of at least 25 dB to 30 dB in Noise Zone II, from small arms and aviation noise, should be incorporated into building codes and be in individual approvals. The NLR for communities subject to large caliber weapons and weapons system noise is lacking scientific studies to accomplish the recommended NLR. For this reason it is strongly discouraged that noise-sensitive land uses be allowed in Noise Zone II from large caliber weapons.

Normal permanent construction can be expected to provide a NLR of 20 dB, for aircraft and small arms, thus the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation, upgraded Sound Transmission Class (STC) ratings in windows and doors and closed windows year-round. Additional consideration should be given to modifying NLR levels based on peak noise levels or vibrations.

NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers, can help mitigate outdoor noise exposure NLR particularly from ground level aircraft sources. Barriers are generally not effective in noise reduction for large arms such as artillery and armor, large explosions, or from high-level aircraft sources.

Key: ADNL=A-weighted day-night average level; CDNL=C-weighted day-night average level; dB=decibel; LUPZ=land use planning zone; PK=peak.

Source: Army 2007 (Army Regulation 200-1).

Table 3-20 shows the relation of percentage of persons annoyed to DNL and CDNL metrics.

Table 3-20. Relation Between Noise Level Metrics and Annoyance

dB DNL	dB CDNL	Average Percent Population Highly Annoyed
45	***42***	***0.83***
50	***46***	***1.66***
55	51	3.31
60	56	6.48
65	60	12.29

Key: CDNL=C-weighted day-night average level; DNL=day-night average sound level.
Source: Finegold et al. 1994; Stusnick et al. 1992; CHABA 1981.

The effects of the use of chaff and flares on land use considers accumulation of debris on underlying areas and the indirect effect of this debris on land use. The primary concern is the visual aspect of debris. The evaluation considers if the debris is noticeable and how this could change the visual character of an area, relative to its inherent visual resource value (visual sensitivity).

Public Access

Ground access and travel are not affected by this proposal. Indirect effects of changes in civilian air access (reported in Section 3.1.1.3) are defined as changes in spatial and temporal availability to specific areas, and in associated uses and activities. The resulting effects on owner, land managers, and land users (particularly for productive uses) are evaluated using the categories defined above.

Limited air access can affect land use and recreation in remote areas and small communities in Alaska that have no surface linkage to major population centers. The safety and socioeconomic impacts resulting from lack of air access are discussed under those respective resource topics in this EIS. The assessment considers what areas would be affected (and to what degree) in terms of loss of productive use, reasonable access, and recreational enjoyment due to projected restrictions on air access.

Recreation

The evaluation of impacts on recreation uses a similar approach as described above for land use and public access. The analysis considers the expected effect of noise on the qualities of recreational areas and user experience based on the sensitivity of the area or use, and on the spectrum of available recreational opportunity. It also considers how changes in public access would affect the spatial and temporal availability of areas used for diverse recreational purposes.

3.1.10.3 Environmental Consequences

The primary source for impact from this proposal is noise associated with military aircraft using the modified Fox 3 MOA or new Paxon MOA. Table 3-21 summarizes the current and projected noise levels that would affect areas underlying these airspaces. A secondary indirect impact is reduced air access for multiple uses resulting from establishing low-altitude MOA airspace.

Effects of Subsonic Noise on Land Use, Special Use Areas, and Recreation. The effects of noise on people include sleep disturbance, interference with speech and communicating, and a variety of factors that affect health and social and economic functions. These intrusions contribute to annoyance. Studies have correlated average noise levels with community annoyance as a percentage of the affected population (see 14 CFR part 150, Table 1; FAA Order 1050.1E, App. A, p. A-15) (FAA 2006). Using this information, several agencies adopted guidelines with 65 dB DNL as a criterion for compatibility with residential land uses. During public scoping, some commenters noted that more sporadic noise exposure may cause greater annoyance due to the unpredictability of the overflights.

Annoyance is a common response to noise. An individual's response to noise is impossible to predict accurately and depends on several acoustic and nonacoustic factors, including but not limited to how the individual feels about the noise source and the activity the person is engaged in at the time the noise occurs (Newman and Beattie 1985). Extensive social surveys have found that the percentage of exposed populations that become "highly annoyed" after being exposed to a particular time-averaged noise level is predictable. This relationship has been studied for both the A-weighted DNL metric used to describe subsonic aircraft noise levels and CDNL used to describe impulsive noise events such as sonic booms (Schultz 1978; Finegold et al. 1994; Stusnick et al. 1992; CHABA 1981). There has been some investigation to determine if dose/response data on annoyance developed in urban contexts are generally similar in rural environments (U.S. Forest Service [USFS] 1992). The majority of these studies have been done in conjunction with sightseeing overflights of national parks. A low ambient noise combined with a short, high noise could heighten the reaction of individuals to noise. A more recent study undertaken by the National Park Service interviewed users of selected areas underlying Alaskan MOAs. The primary conclusions derived from this study are: (1) effects of flying exercises on user experiences did not differ from military training; (2) encounters with military aircraft were minimal and negative psychological impacts infrequent; (3) areas with higher use (for recreation and residing) and exposure to three or more

events per day reported higher levels of negative response (ranging between 23 and 36 percent); (4) expectations of interviewees did not consistently align with reported effects; and (5) residential communities expressed desire for more consistent communication with the Air Force regarding planned operations (NPS 2006).

Table 3-21. Noise Parameters Affecting Land Use and Recreation – Expanded Fox 3 MOA and New Paxon MOA Proposal

Location/Airspace	Current	Proposed	
		Alternative A	Alternative E
		Minimum Altitude 500 feet AGL	Minimum Altitude 500 feet AGL
Subsonic Noise: Day-Night Average Noise Level (L_{dnmr} dB)			
Fox 3 MOA/ATCAA	39	49	50
Fox 3 Expansion Area	37	49	50
Paxon MOA/ATCAA	37	54	54
Supersonic Noise: C-Weighted Day-Night Average Noise Level (CDNL)			
Fox 3 MOA/ATCAA	61	61	61
Fox 3 Expansion Area	61	61	61
Paxon MOA/ATCAA	61	61	61
Average Daily Supersonic Events (events/day)			
Fox 3 MOA/ATCAA	4.6	5.2	5.2
Fox 3 Expansion Area	4.6	5.2	5.2
Paxon MOA/ATCAA	4.6	5.2	5.2
Single-event Level (dB) F-15 at Minimum Permitted Altitude			
Fox 3 MOA/ATCAA	95	116	116
Fox 3 Expansion Area	N/A	116	116
Paxon MOA/ATCAA	86	116	116

Notes:
[1] Under current conditions, Paxon MOA does not exist; it would be created under Alternatives A and E.
[2] CDNL values are rounded to the nearest whole number; calculated CDNL increases would be less than 1 dB.

Key: AGL=above ground level; ATCAA= Air Traffic Control Assigned Airspace; CDNL=C-weighted day-night average level; dB=decibel; L_{dnmr}=onset rate-adjusted monthly day-night average sound level; MOA=Military Operating Area; N/A = not applicable.

The amount of change in noise level is another way to evaluate impact of noise more broadly over a large area. While human perception of, and reaction to, noise can vary, in general, most people can detect a 3-dB change while few persons can discern a 1- or 2-dB change. Even below 65 dB DNL, a 3-dB change can be perceived as a degradation of the noise environment (FICON 1992).

Quiet and naturalness is an intrinsic part of some recreational experiences. BLM, the USFWS, the USFS, the National Park Service, and ADNR are mandated to manage wilderness areas, recreational areas, and other specially managed lands areas for their wilderness and/or recreational qualities. This includes maintaining the natural setting and allowing minimal human disturbance and development. Management goals for these special use areas could be negatively affected by increased noise and disturbance associated with military overflights. The quality of recreation experiences in these areas could also be affected, depending upon the type of recreation and remoteness of the area.

Noise compatibility considerations may differ for various types of special use areas. Recreational areas, for example, vary in the degree to which quiet is desirable and necessary for a high-quality recreation experience. How much of an area is devoted to developed and undeveloped recreation and the remoteness of the area are also factors. Managers of wildlife areas and preserves frequently consider sensitivity of wildlife to noise, such as startle effects due to sudden changes in noise.

Effects of Noise from Low-Flying, High-Speed Aircraft on Land Use and Recreation. Low-level overflights, like other sudden unexpected sounds, can startle and disturb sleep. Similar effects on recreational experiences could occur as low-level aircraft operations are experienced. Startle effects are experienced when a loud noise occurs in a context where not expected and when there is no visible or audible warning. Low-flying military aircraft can startle humans and animals. Activities requiring a high degree of focus and with inherent safety risks (such as rock climbing and other extreme sports) may be incompatible with startling noise. Unpredictability of flight operations in MOAs may also "increase people's annoyance because they do not know when the overflights will occur, making affected persons even more prone to "startle effects" (USFS 1992). Startle effects to animals can affect ranching operations. For example, cattle could stampede if startled during specific ranching operations such as calf weaning and branding.

Effects of Impulsive and Supersonic Noise on Land Use, Special Use Areas, and Recreation. The primary impact of sonic booms, similar to low-level overflight, on human populations would be annoyance. Few studies help predict annoyance or land use effects from sonic booms. Sonic boom noise may combine with noise exposure from other sources (including subsonic aircraft noise) to cause annoyance. Humans tend to respond to the high frequency sounds in a sonic boom, while structures tend to respond to the low frequencies, which cause shaking. Shaking can have a visible and audible component that can be disturbing to persons and can cause physical damage (such as broken household items). Most community annoyance is experienced within the primary boom envelope from short-duration, high-overpressure booms. Guidelines correlate C-weighted measurements of impulsive noise (CDNL) with community annoyance and result in equivalents to A-weighted standards for compatibility. A 65 dB DNL equates to about 60 dB CDNL as a guideline for residential compatibility (see Table 3-21). The potential for sonic booms to destabilize snow and cause an avalanche was raised as a concern during scoping. Avalanches are a risk to skiers and other outdoor recreation in high mountain areas. Studies and reports have generally concluded that it is very unlikely that a sonic boom would trigger an avalanche unless the area is already critically unstable. A study performed in the Swiss Alps concluded that sonic boom is a poor means to produce avalanche (Perroud and Lecomte 1986).

Effects of Chaff and Flares on Underlying Land Use. Reports and studies indicate that military uses of chaff and flares do not cause noticeable changes under most situations (Air Force 1997-2). Therefore, the analysis focuses on identifying extreme or unusual circumstances that may warrant proactive consideration. The indirect effect of fires caused by flares on land use is addressed under Ground Safety (as a public safety concern). The effect of fires caused by flares to affect vegetation and wildlife is addressed under Biological Resources.

Effects of Reduced Air Access on Underlying Uses. While civilian pilots can technically operate in MOAs using VFR when active, many pilots choose not to do so because of higher risk when aircraft with vastly different performance capabilities are using the airspace. It is unknown how many pilots would avoid using the MOAs, but concern expressed by the public and land management agencies during scoping, suggest that would be likely for a high percentage of commercial and general aviation pilots. This would impact communities and commercial operations reliant on air access (such as mining and energy development and extraction), and persons who fly into remote areas for outdoor recreation, hunting and fishing (both personal and subsistence), and ecotourism.

3.1.10.3.1 Alternative A

During scoping, several participants explained that they consider noise qualities important to that use of the land. Of particular concern was noise impact (including subsonic and supersonic aircraft noise) to locations listed in Table 3-14.

LAND STATUS, MANAGEMENT, AND USE

Most of the land underlying the proposal area is owned and managed either by Federal or State agencies. This proposal would have no impact on land status or ownership.

Impacts on Land Management and Use

BLM, USFWS, ADNR, and ADFG have management responsibilities for public lands underlying the proposed airspace. The primary impact resulting from this proposal is the effect of noise from military aircraft on underlying areas, particularly those that sensitive to noise because of their use or inherent values of quietness. Areas with the most sensitivity to noise are those that are managed for their special resource values, and generally serve a recreational or preservation function. Table 3-21 provides current and projected average subsonic and supersonic noise levels under Alternative A and gives the current and projected number of supersonic noise-generating events.

BLM, USFWS, ADNR, and ADFG will continue to manage lands to meet multiple objectives. This will include approving new activities, leases and permits that require air access or construction of major infrastructure. The Air Force users would need to continue coordination since some of these could affect flight operations. For example, potential future activities such as new wind turbine sites, communication towers, and other tall objects could conflict with lowering the floor of the Fox 3 MOA 3 to 500 feet AGL. The proposed Fox 3 MOA modifications and new Paxon MOA would not change the use of underlying public or private land. Any existing or new tall structures, such as wind energy generators or communication towers, would be charted by FAA on sectional aeronautical charts and avoided by aircraft. These guidelines would continue to apply and would not be altered by this proposal. Larger communities would have a 1,000-foot vertical avoidance above the highest obstruction and a radius of 2,000 feet (14 CFR Part 91.119). When considering new flight restrictions and avoidances, coordination between military users and management agencies would assist in assigning priority and suitable restrictions to protect resource management responsibilities and land uses.

Indirect effects on land use from restricted air access are discussed below. Some locations are reliant on air access and associated uses may experience inconvenience or disruption by limited access from establishing lower-altitude SUA (in all life threatening emergencies, access would take precedent over military missions).

Noise Effects on Land Use

Effects on Subsonic Noise. Noise levels in the underlying areas would increase substantially by about 17 dB under the new Paxon MOA and by about 10 dB under existing Fox 3 and the Fox 3 expansion area. However, the highest projected level under the new Paxon MOA, 54 dB L_{dnmr}, is below levels of concern established by EPA for any land use. Overall, the relative change is high, and in quiet settings, these increases would be highly noticeable and cause potentially significant impacts on communities underlying the Fox 3 MOA and expansion area and new Paxon MOA.

Effects of Low-Level Overflight. The lower floor altitude of a MOA has a great influence on the decibel level of single-event overflights experienced from the ground. Under this proposal, the noise associated with low-level overflights could increase to as much as 116 dB for an F-22 flying at 500 feet AGL. This degree of noise would likely annoy or startle persons overflown. However, aircraft would operate in the

lowest altitude strata only a small portion of the time, and each sortie would only overfly a small portion of the underlying land. The potential for a person to experience a low-level overflight while recreating would remain relatively low. However, as low-level overflights do not currently occur within the proposal area, the associated increase in noise would be a new and adverse but less than significant impact on uses and for persons in natural, quiet settings. It is not likely to change land use or dramatically alter how and where persons partake of activities (mostly recreational). Mitigations within existing military training airspace do not allow MFEs during several months of the year to lessen impacts. Most noise-sensitive locations are avoided by placing a higher altitude limitation over these areas. In addition, Flight Avoidance Areas are designated over some of the special use areas, as described in Appendix I, *Land Use, Public Access, and Recreation*. Existing measures to mitigate adverse noise impacts associated with low-level overflight would continue under this proposal in the existing Fox 3 MOA. Locations identified in Table 3-14 without an existing avoidance procedure may experience adverse noise effects and warrant consideration as a new avoidance location.

Effects of Supersonic Noise Events. Overall, changes to quiet settings could constitute an effect on valued natural and pristine areas in the region, but would not be expected to change the land use of the area. The frequency of sonic booms would increase by less than one per day, for 4.6 to 5.2 on average (Table 3-21) but booms could be annoying to individuals who experience a startling event. A less than 1-dB increase in CDNL (Table 3-21) would likely not be perceptible to most persons who use the area where sonic booms already occur. This change would be noticeable in areas where sonic booms are not currently occurring at the south end of the proposed Fox 3 expansion area. Existing flight avoidance procedures for reducing noise impacts would apply for this airspace and continue to provide some noise reduction for sensitive locations. Existing altitude restrictions on supersonic operations should be applied to the new SUA. Overall, supersonic noise impacts would be as follows:

Fox 3 MOA. The Fox 3 MOA would see an increase of 10 dB in subsonic noise from 39 to 49 dB L_{dnmr}. This is a noticeable increase but below levels of concern for most land uses and health and safety. The loudest single-event level would increase substantially from 95 to 116 dB. Underlying areas that are sensitive to noise (including communities, special use areas, and locations of interest), would experience moderate to substantial change in noise conditions that could have an adverse effect on intrinsic suitability for their current uses in the absence of noise avoidance restrictions. This includes inhabited areas and special use areas underlying Fox 3 MOA as listed in Figure 3-12 (Gulkana National Wild River and Nelchina PUA), locations in Table 3-14, and additional locations listed in Section 3.1.10.1, Recreation (provided by ADFG in comments on the DEIS). A 13 percent increase in operation and lowering the floor of the MOA would increase the incidence of overflights for persons residing, recreating, or using the natural resources of the underlying area. These locations should be considered for flight avoidance, with lateral standoff/altitude/or seasonal parameters. Alternative A would result in little change in supersonic noise under this airspace.

Fox 3 Expansion Area. The Fox 3 MOA expansion area currently does not experience military overflight except for some portions underlying the high-altitude Paxon ATCAA. Current noise levels in the expansion area are about 37 dB. Noise levels due to subsonic aircraft operations would increase to about 49 dB and have similar effect to underlying areas and noise sensitive locations as for the Fox 3 MOA. Similar to the Fox 3 MOA, some areas underlying the Fox 3 Expansion Area are subject to flight restrictions. The loudest single-event level would increase from current civilian use levels to 116 dB from F-22 aircraft. Important affected locations include several small communities and lakes (among these, Summit, Tangle, Louise, Clarence, and Meiers Lakes) and Gulkana and Delta Wild and Scenic Rivers. The predicted change in noise exposure at these locations would cause potentially significant impacts. The highest priority should be given to the National Wild and Scenic Rivers, special use areas, and locations with clusterings of inhabitants, such as Lake Louise and Tangle Lakes areas. The Fox 3 expansion area would experience an imperceptible increase in CDNL from supersonic events (less than 1

dB CDNL) and an increase of 13 percent in frequency. This change would not be noticeable to most persons who are familiar with the area and the current frequency of booms and would not change land uses. The Air Force would expand the flight avoidance of the Gulkana and Delta National Wild and Scenic Rivers under the new MOAs with a 5-mile buffer on either side and minimum floor of 5,000 feet MSL between May 15 and September 30 every year, providing some reduction in noise in these sensitive areas during peak seasons, so that the impact of overflight may cause adverse but likely not significant impacts to activities in these special areas.

New Paxon MOA. Portions of the underlying area have experienced high altitude military overflight. The proposed operations would greatly change the noise environment within the new Paxon MOA (from 37 dB to 54 dB L_{dnmr}). This is a substantial increase even though levels would remain below thresholds used as compatibility standards for most land uses in developed settings. The loudest single-event level would increase from 86 to 116 dB. The change in noise exposures for portions of Gulkana, Delta Wild, and Scenic Rivers, the Fielding Lake State Recreation Area, and locations of interest under the new Paxon MOA (listed in Table 3-14) would be a significant impact considering their protected status and/or degree of value to the public. Existing flight avoidance locations should continue and be evaluated for additional restriction or expansion. Of note are the Tangle Lakes Archaeological District, Fielding Lake Recreation Area, and important hunting locations along the Gakona and Gulkana Rivers. Sensitive locations should also be considered for flight avoidance, with lateral standoff/altitude/or seasonal parameters. The highest priority should be given to the National Wild and Scenic Rivers, special use areas, and locations with clusterings of inhabitants. There would be no appreciable change in supersonic noise under the new Paxon MOA. The benefits of expanding the flight avoidance area over the wild and scenic rivers under the new Paxon MOA (see Section 3.1.10.4), would reduce noise impacts on these valuable resources, and lessen the intrusion for persons using these areas for multiple activities.

The Air Force also intends to expand or change flight avoidance procedures for areas with concentrated activity (such as communities, mining operations) to ensure that these areas are accessible and in some cases, to reduce noise exposure. These changes are coordinated with other agencies on a intermittent basis so that they reflect most current conditions on the ground and provide ongoing benefits to selected underlying areas.

Effects of Chaff and Flare Use on Land Use

Minimal impact on land use from chaff and flare use is expected. Fox 3 MOA and Paxon ATCAA have historically supported chaff and flare use with little or no impact on land use, recreation, or natural settings. Under this proposal, the same quantities of chaff and flares would be used but over a wider area. This would have minimal effect on land use and possibly a positive effect for the Fox 3 MOA area. The potential for fires from flares can affect vegetation and wildlife, and fires can indirectly change visual qualities of an area for many years. The risk of flare-caused fire, compared to other sources, is extremely low. Dispersed over an extremely large area, the likelihood of noticing residual materials deposited on the ground, such as small plastic, felt end caps, or wrapping material, is very low. Residual materials, if found and identified in a pristine setting, could annoy some persons, but would not change the overall visual qualities of an area.

Effects of Dry Targets on Land Use

Dry targets would occupy temporary sites on land underlying the Fox 3 expansion area and new Paxon MOA. They involve parking a vehicle or trailer on the side of a road, campground, or other accessible paved or graveled surface. Dry targets send and receive signals to act as a threat to training aircrews. The frequencies used are nonhazardous. The locations of these sites are not known, but would be very widely separated within the landscape. Future agreements with land owners (Federal, State, or private) would include any terms or particular provisions for the duration and precise location for the parked equipment

(such as the distance between the vehicle and roadway, particular campsite, screening, or signage). These sites, which are already in use without negative effects, would not change any land use and would be only implemented with willing owners and in cooperation with land managers. No impact on land use or recreation would result from deploying dry targets.

PUBLIC ACCESS

Ground access and travel is not affected by this proposal. Indirect effects of changes in civilian air access (reported in Section 3.1.1.2) could affect access to specific communities and areas and associated uses and activities.

Indirect Effects of Restricted Access on Land Use

The expansion of the Fox 3 MOAs and the establishment of the Paxon MOA would not restrict ground access to areas underlying Fox 3 MOA, the Fox 3 MOA expansion area, or the new Paxon MOA. The public and agency land management personnel would have the same access and availability to all areas as under current conditions.

The new and expanded airspace, however, may result in restricted access by aircraft to areas or landing fields below or in the vicinity of the airspace. Aircraft are often used as a means to access remote areas for multiple purposes, including recreation, habitation, resource extraction (mining and forestry), and resource management. In addition, many Alaskan residents in rural areas use light aircraft as residents of the "lower 48" use cars. General aviation aircraft are frequently parked at rural homes, and straight highways serve as runways. Some portion of general aviation pilots may choose not to fly in MOA airspace while military aircraft are operating, choosing to deviate around the MOA or postpone their activities.

Expanding the airspace with much lower altitudes would require increased vigilance by both military and civilian pilots to maintain continued awareness of each other's presence while sharing this MOA airspace. The Air Force is sensitive to that concern and would limit activation of the low sector to the mission needs that require the use of those lower altitudes. The Air Force would extend the use of the SUAIS and other communications means to provide information on when airspace is active. As discussed in Section 3.1.1.1, SUAIS capabilities and the manner in which this service is provided is outlined in an FAA agreement and Air Force procedures, addressed as a standing agenda item on the ACMAC meetings, and communicated through the SUAIS Pamphlet and other means. Any changes to the SUAIS capabilities are appropriately addressed and communicated through those same venues. It would be the responsibility of civil pilots to check on the status of MOAs prior to and during a general aviation flight in order to learn if the airspace is active. Public comments highlighted that the SUAIS system does not provide reliable coverage in the areas underlying the Fox 3/Paxon MOA area. The Air Force would identify any new radar sites for new MOAs in an updated Letter of Agreement with the FAA, to reduce the potential for gaps in the SUAIS coverage.

When the MOAs are inactive, IFR traffic would be permitted. Also, when IFR conditions prevail, access to IFR-capable airfields and IFR routes to remote locations beyond the airspace may be interrupted, delaying travel to some locations. To the extent that remote inhabited areas may rely on air access, this could potentially cause inconvenience or a safety concerns, primarily when visibility is low.

The low-altitude use of MOAs are not expected to be scheduled and activated on a daily basis. Therefore, air access for multiple uses by aircraft (productive uses, management and survey activities, recreation, hunting and fishing, and ecotourism) would be available to those civil pilots willing to fly VFR through an active MOA. However, for those pilots unwilling to fly VFR, or if weather conditions do not permit VFR, additional wait times or delays may be expected until the MOAs are released to IFR traffic. These delays are not expected to occur daily, particularly for the low-altitude MOAs. A delay in gaining access

to work sites or recreational areas could adversely affect specific land users, depending on the length of the delay. This would include commercial air operators who support and supply remote mining areas, mostly in the Nelchina PUA and underlying the Fox 3 MOA. Commercial guides, trappers, and subsistence users are also reliant on air access to some locations for their livelihoods. Specific areas include the Willow Creek, Valdez Creek, and Delta River placer districts. Overall, access would remain relatively high for the public, with the ability to provide real-time information on availability and an average use of 33 to 47 sorties per day, and overall impacts are less than significant.

Land management agencies are particularly concerned with having access to lower-altitude airspace to conduct game surveys. The timeframes for these surveys are very precise and vary by species. They also vary each year depending on conditions that affect game behavior from year to year. Mostly these occur in late summer/early fall and before first snow (see Section 3.1.10.1 for timing). Operations for a MFE could limit air access for surveys so that they were unable to take place. This would constitute a potentially significant impact on time-sensitive management activities. To overcome this impact would require close coordination and schedule planning between military operators and State and Federal land use managers to allow for adequate access low altitude airspace (below 1,500 feet AGL) to perform critical tasks. Similarly, hunters and other discretionary access for recreation may choose to avoid flying in active MOAs. Based on public concerns expressed in scoping, this could cause a significant impact on access for recreation and associated livelihoods.

A total of six charted airports are located under the proposed Fox 3 MOA (Table 3-16). Two airports (Road Commission NR 1 Airport and Clearwater Airport) are located under the existing Fox 3 MOA; three airports (Crosswind Lake Airport, Lake Louise Airport, and Lake Louise Seaplane Base) are located under the Fox 3 Expansion Area; and one airport (Paxson Airport) is located under the new Paxon MOA. Table 3-16 indicates the communities and special use areas that are serviced by these airports. Airports within the existing Fox 3 MOA are presently subject to routine military training activities, but not at low altitudes. To reduce the impact on local air access, a proposed VFR air corridor along Richardson Highway would maintain access below 4,500 feet MSL providing access for communities along the highway.

Per FAA regulations, public airports require an avoidance area of 3-NM radius and 1,500 feet AGL, while private airfields require an avoidance area of 1-NM radius and 1,000 feet AGL. These avoidance areas allow the airports and airfields to accommodate incoming and outgoing aircraft while the MOA airspace is active. However, as described above, many civil pilots will not take off into a MOA that is actively in use. This could disrupt and inconvenience many residents dependent on these amenities, as others are dependent on automobiles. The larger communities with potentially adverse impacts include Lake Louise and Paxson. Advanced public notification can lessen this disruption by allowing people to plan around military schedules.

A proposed mitigation to expand the VFR corridor over the Richardson Highway between Delta Junction and Glennallen (mostly under the new Paxon MOA) would allow greater access for civilian pilots into through this area. This would provide benefit for the communities along the highway and many trailheads along the highway corridor, although the 500-foot floor would still impose some constraint on access into more remote areas under the MOAs.

RECREATION

Evaluation of recreational resources considers whether projected changes would preclude, displace, or alter the suitability of an area or facility for ongoing or planned recreational uses. Ground access and travel is not affected by this proposal. Therefore, no direct spatial or temporal impacts on availability of recreational opportunities would occur under this alternative. Indirect effects of changes in civilian air

access (reported in Section 3.1.1.3) would affect spatial and temporal availability to specific areas, and associated uses and activities.

Quietness and naturalness is an intrinsic part of some recreational experiences. Reactions to noise in a recreational setting vary. A study by the USFS found that visitors to wilderness areas did not generally notice high-altitude aircraft noise intrusions, although startle effects from low-flying, high-speed aircraft were noticed and reported as annoying by some visitors (USFS 1992). In addition, a study by the National Park Service on the effects of military overflights on human users beneath selected Alaska MOAs found that the overall proportion of recreational users negatively impacted by military aircraft in MOAs was low (NPS 2006). The qualities of military overflights that were most consistently related to impact were number of sonic booms heard, loudness of the overflight, and the number of military overflights encountered (NPS 2006). For most users, the reported impacts were not substantial enough to alter their choices about where to recreate. In both studies, visitors varied on whether aircraft overflights were a positive or detrimental factor to their outdoor experience.

During scoping, specific recreational uses, including hunting, fishing, mountain climbing, backpacking, camping, and berry picking, were noted as noise-sensitive.

Subsonic Noise Impacts on Recreation

Special use areas and locations of interest underlying military training airspace are listed in Figure 3-12 and Table 3-14, respectively. In addition, BLM and State-managed land is valued for and frequently used for hunting. Table 3-17 indicates key recreational locations based on usage.

During routine training, aircraft activities in any specific area would occur in low numbers and would be generally dispersed over broad geographic areas. Because routine training operations in the MOA would follow random flight paths that vary horizontally and vertically on a daily basis, regular, repeated, or continuous exposure to aircraft-generated noise would be unlikely. Single events would increase from levels of 86 to 95 dB (and lower in some areas absent of military overflights) to as high as 116 dB. These events could be startling and disturb some activities that require a high degree of focus. In general, these events would be infrequent (i.e., low numbers of aircraft). For some persons, even if noticeable, this may not cause annoyance or change overall recreational enjoyment. The military flight training would occur in the expanded MOA Monday through Friday, from 8:00 a.m. to 6:00 p.m. The Fox MOAs are also available on weekends between 7:00 a.m. and 10:00 p.m. Given these characteristics, routine training activities alone would not be expected to result in permanent alteration of an area's recreation opportunity and would, therefore, be a minor impact to recreation.

The greatest increase in subsonic noise levels from existing conditions would occur in airspace overlying the proposed Fox 3 expansion MOA and the Paxon MOA, because these areas would be exposed to regular low-level military training and MFEs for the first time. Special use areas under the proposed Fox 3 expansion MOA affected by this increase in noise levels include: Gulkana National Wild River, Delta National Wild, and Scenic Recreational River, Lake Louise State Recreation Area, Nelchina PUA, and Matanuska Valley Moose Range. Special use areas within the Paxon MOA that would be affected include Gulkana National Wild River, Delta National Wild and Scenic Recreational River, and Fielding Lake State Recreation Area, which would be exposed to regular low-level military training and MFEs for the first time.

Impacts on recreational use in popular locations would result from intermittent, intensive, and repetitive aircraft overflights during MFEs, particularly during the most critical recreation period between approximately June 15 and September 15. This would be most evident at high-use locations including: Brushkana Creek campground, Tangle Lakes campground, Paxson campground, Clearwater Wayside, One Mile Creek/Wolverine Mountain, Tangle Lakes trail, Gulkana River Raft trail, Castner Glacier trail,

Sourdough campground, Matanuska Valley Moose Range, Lake Louise State Recreation Area, and trails and access points along Denali and Richardson Highway. In general, recreation use levels are lower during the remainder of the year, and MFEs would be expected to result in minor impacts during this period. The Air Force can provide advance schedules for MFEs, and the public would have access to information about MOA activation during scheduled training through the SUAIS and other available communications. Being able to plan recreational activities to avoid training times would minimize impacts to some degree. Considering this, these impacts are considered potentially adverse but less than significant. Avoiding MFEs in the peak seasonal times and/or flying at higher altitudes during these periods could reduce impacts on recreation and hunting to less than significant.

Effects of Low-Level Flight and Sonic Booms

Reactions vary depending upon individual expectations and the context in which aircraft-caused noise occurs. These incidences are not likely to be persistent and would have temporary impacts on any given experience.

Under this alternative the number of low-level overflights in areas underlying the MOA would increase. Recreational activities such as off-road recreational vehicle (ORRV) use, horseback riding, fishing, hunting, hiking, and climbing typically occur in remote landscapes where the primary noise source is from recreational activities. The suddenness and unpredictability of low-level overflights and sonic booms during MFEs may result in annoyance and could lessen a recreational experience for some persons. These incidences are not likely to be persistent and are not expected to change visitor habits or recreational uses overall. For example, if a startling event occurred, a hunter would likely be annoyed. The effect of these infrequent noise sources is not expected to change the behavior of game animals such that hunting resources would be impacted. Thus, low-level flight and sonic booms would have adverse but not significant impacts on any given recreational experience. The Air Force would provide advance schedules of training missions in the MOA and the public would have access to information about low-level MOA activation through the SUAIS, NOTAMs, and other communications, as appropriate. Communication of MFE schedules well in advance could help reduce or avoid impacts on recreation from MFEs and sonic booms during MFEs.

There are numerous mitigations measures associated with airspace and noise during aircraft operations that could be implemented to reduce indirect impacts on recreation impacts due to aircraft noise and air access by the public. These BMPs are listed in Section 3.1.1.4 (Airspace) and Section 3.1.2.4 (Noise), respectively.

The Air Force would expand the flight avoidance for the Delta and Gulkana National Wild and Scenic Rivers to mitigate and protect these valuable areas. Similarly, proposed avoidance of areas with concentrated activity could benefit some heavily used recreational areas, by reducing subsonic noise and the potential for low-level overflight.

Effects of Restricted Air Access on Recreation

Indirect effects of changes in civilian air access (reported in Section 3.1.1.2) would affect spatial and temporal availability to specific areas, and associated recreational sites and trails. The affected recreational sites and trails are listed in Table 3-17. The more heavily used locations include Brushkana Creek Camp Ground, Castner Glacier Trail, Sourdough Campground, Paxson Lake Campground, Tangle Lakes Campground. These areas are heavily used during the summer months and during hunting seasons (between July and December).

3.1.10.3.2 Alternative E

Alternative E would have a similar, but smaller configuration for the Fox 3 expansion area than Alternative A. The configuration for the new Paxon MOA would be the same as Alternative A. Therefore, impacts on land use and recreation within the Fox 3 MOA expansion area with Alternative E would be similar to those discussed for Alternative A (without the impacts on locations on the south part of the MOA) and those for the new Paxon MOA would be the same as what was described for Alternative A. Other impacts on land use and recreation would generally be the same as described for Alternative A.

Fox 3 MOA. Sorties, average subsonic and single-event noise levels, and supersonic events would be similar to Alternative A at about 50 dB L_{dnmr}. Impacts on land use, access, and recreation in areas underlying the Fox 3 MOA would be similar to those described for Alternative A.

Fox 3 Expansion Area. Sorties, average subsonic and single-event noise levels, and supersonic events would be essentially the same as under Alternative A. Underlying areas would experience similar noise effects (50 dB L_{dnmr}) as described for Alternative A, only in a smaller area. This would result in no change in noise levels from the baseline in and around the Lake Louise area, and Crosswinds Lakes, which would lie outside the area of overflight. Similarly a smaller portion of the Nelchina PUA would be affected by low-altitude operations. Under this alternative, the Matanuska Valley Moose Range, Willow Creek placer district (including Bush, Willow, Jacko, Red, and Tyone Creeks) would be outside the low MOA boundary and, therefore, not affected by training operations.

Paxon MOA/ATCAA. Sorties, average subsonic and single-event noise levels, and supersonic events would be essentially the same as under Alternative A. MFE operations would cause essentially the same effects as described for Alternative A. This alternative allows for routine training in addition to MFE operations. These operations occur at higher altitudes and would have relatively little noise effect on underlying areas. These operations would not cause the startle effects of low flying aircraft, although frequent users of the underlying areas would likely notice military aircraft overhead. Dispersed and high altitude overflights would have minimal effect on land uses and recreation.

Potential effects on air access would be similar to Alternative A.

3.1.10.3.3 No Action Alternative

There would be no changes to the current Fox 3 MOA configuration and altitudes or proposed addition of the Paxon MOA under the No Action Alternative. Therefore, no additional impacts on land use, public access, and recreation would occur and they would remain as under current existing conditions.

3.1.10.4 Mitigations

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The following mitigations are proposed to reduce these impacts.

- Land Use – Access
  - **Special Use Airspace Information System.** Continue SUAIS in all areas where radio coverage exists; this includes a majority of the area beneath the proposed Fox 3 and Paxon MOAs. The SUAIS Letter of Agreement with the FAA will be updated to include current radio sites and any new MOAs to be covered by the system.

- Land Use – Management, Recreation
  - **National Wild and Scenic Rivers Protection.** For the period of May 15 to September 30, expand the Gulkana (west, middle, and north forks) and Delta National Wild and Scenic Rivers' (and others, as designated) Flight Avoidance Areas to include portions within new MOA boundaries using a 5-NM buffer either side of the river centerline with 5,000 feet MSL minimum altitude. The river corridors will include their headwater lakes areas (Tangle Lakes and Dickey Lake).
  - **Concentrated Activity Areas.** Comply with flight avoidance areas established by the 11th AF Airspace and Range Team and listed in the 11th AF Airspace Handbook. Areas not specified by the ROD may be added, increased, decreased, or removed by the 11th AF Airspace and Range team as situations dictate (e.g., a mine and its air operations cease to exist).
- Land Use – Management, Access, Recreation
  - **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.

3.1.11 Infrastructure and Transportation (No Analysis Needed)

The ROI for the Fox 3 and Paxon MOAs does not intersect with ground-based transportation and utilities resources. As a result, no impacts on this resource are expected. For analysis of private and commercial aircraft use, see Section 3.1.1, Airspace Management and Use. Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for a general discussion of infrastructure and transportation for this proposed action. The proposed action involves minimal to no disturbance of the land surface and no significant increase in population; therefore, impacts of this proposed action on infrastructure and transportation assets within the study area are expected to be not beneficial or adverse.

3.1.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.1.12.1 Affected Environment

The proposed Fox 3 MOA and Paxon MOA expansion covers portions of two boroughs and two census areas, including the Matanuska-Susitna Borough, the Denali Borough, the Southeast Fairbanks Census Area, and the Valdez-Cordova Census Area. Therefore, the ROI for the Fox 3 MOA expansion and new Paxon MOA proposed action is defined as these two boroughs and two census areas.

POPULATION

The population in the ROI totaled 107,486 persons in 2010 (USCB 2010-1). The Denali Borough, located in the Alaska Interior Region, had the smallest population of the four areas in the ROI with 1,826 persons (1.7 percent of the total ROI population) (USCB 2010-1). There are four communities in the Denali Borough: Anderson, Clear, Cantwell, and Healy. Healy is the largest community; the Borough Seat has approximately 1,002 permanent residents (Denali Borough 2012). Ferry and a number of smaller settlements are located in the Denali Borough. The majority of the population resides along a 70-mile stretch of the George Parks Highway (ALARI 2011-1).

In 2010, the Matanuska-Susitna Borough had the largest population in the ROI, with 88,995 persons (83 percent of the total ROI population) (USCB 2010-1), and is also the fastest-growing region in the State of Alaska, largely due to its low housing costs, rural lifestyle, and its proximity to Anchorage (ALARI 2011-2). Approximately 90 percent of the population in the Matanuska-Susitna Borough resides along the road system between Willow and Sutton, south of the proposed action. Major communities in the borough include Palmer, Knik-Fairview, Lakes, Tanaina, Wasilla, and Meadow Lakes (ALARI 2011-2).

The Southeast Fairbanks Census Area is located in the eastern portion of the Alaska Interior Region. In 2010, the population in this census area totaled 7,029 persons (6.5 percent of the total ROI population) (USCB 2010-1). The majority of the population reside in the four communities of Deltana, Tok, Delta Junction, and Big Delta (ALARI 2011-3). Deltana has the largest population and is also the largest in land size of the four major communities.

The Valdez-Cordova Census Area is one of three defined areas in the Gulf Coast Region of the state in south-central Alaska. It is bounded on the south by Prince William Sound. In 2010, the population in this census area totaled 9,636 persons (9.0 percent of the total ROI population) (USCB 2010-1). The majority of the population resides in the home rule cities of Valdez or Cordova (ALARI 2011-4).

The total population below the airspace for the proposed action alternatives under consideration, as calculated through the use of geographic information system (GIS) data, are listed in Table 3-22. Alternative A had the greatest number of persons under the airspace. There are approximately 206 persons under the airspace for Alternative A, the majority of which are in the Southeast Fairbanks Census Area. Alternative E had the second highest calculated population under the airspace with 169 persons.

Table 3-22. Population Under the Airspace, 2010

Areas	Total Population[1]	Alternative A	Alternative E
Denali Borough	1,826	0	0
Matanuska-Susitna Borough	88,995	64	40
Southeast Fairbanks Census Area	7,029	76	76
Valdez-Cordova Census Area	9,636	66	53
Total ROI	**107,486**	**206**	**169**

[1] GIS-derived calculations.
Key: ROI=region of influence.
Source: USCB 2010-1.

HOUSING

During public scoping, concerns were expressed that property values would be impacted by noise from low-level flights associated with the proposed action. For a detailed description of baseline noise conditions in the area see Section 3.1.2.1. Many factors affect the market value of real property. While qualities of the property itself, surrounding properties, and the local real estate market are primary determinants of value, ambient noise levels could also play a role in determining market value. Several studies have analyzed property values as they relate to military and civilian aircraft noise. These studies, however, only consider properties near an airfield, not necessarily properties within an airspace as would be the case with properties within the area of the proposed action. In one study (Fidell et al. 1996), a

regression analysis of property values as they relate to aircraft noise at two military installations was conducted. This study found that, while aircraft noise at these installations may have had minor impacts on property values, it was difficult to quantify that impact. Another study (Nelson 2003) analyzed 33 other studies attempting to quantify the impact of noise on property values. The result of the study supports the idea that the potential for an adverse impact on property values as a result of aircraft noise exists, and that the value of a specific property could be reduced between 0.5 and 0.6 percent per decibel when compared with a similar property that is not affected by aircraft noise. Additional data indicate that the reduction in property values as a result of noise would be greater for noise levels above 75 dB DNL, which the EPA considers incompatible with residential use.

ECONOMIC ACTIVITY

In 2009, total employment in the Denali Borough was 2,099 (BEA 2011-1). The main industry reported in the borough was the accommodation and food services industry (44 percent), followed by government and government Enterprises (18.4 percent), and the transportation and warehousing industry (6.1 percent) (BEA 2011-1). The majority of employed residents of the Denali Borough were maintenance and repair workers (ALARI 2011-1).

In 2009, total employment in the Matanuska-Susitna Borough was 31,896 (BEA 2011-1). The main industry reported in the borough was the government and government enterprises industry (14.8 percent), followed by retail trade (14.5 percent), and the health care and social assistance industry (12.2 percent) (BEA 2011-1). The majority of Matanuska-Susitna residents work in Anchorage (ALARI 2011-2). However, most residents of the Matanuska-Susitna Borough that work in the borough were employed as retail salespersons (ALARI 2011-2).

In 2009, total employment in the Southeast Fairbanks Census Area was 3,777 (BEA 2011-1). The main industry reported in the Census Area was the government and government enterprises industry (23 percent), followed by retail trade (8.7 percent), and administrative and waste services (8.7 percent) (BEA 2011-1). The majority of employed residents of the Southeast Fairbanks Census Area were employed as maids and housekeeping workers (ALARI 2011-3).

In 2009, total employment in the Valdez-Cordova Census Area was 7,235 (BEA 2011-1). The main industry reported in the Census Area was the government and government enterprises industry (22.1 percent), followed by the transportation and warehousing industry (10 percent), and the manufacturing industry (10 percent) (BEA 2011-1). The majority of employed residents of the Valdez-Cordova Census Area were employed as construction laborers (ALARI 2011-4).

KEY INDUSTRIES

Key industries in the region that could be potentially affected by the proposed action include natural resources and mining, recreation and tourism, and civilian aviation.

Natural Resources and Mining

There are several mines in the general vicinity of the proposed action. Two of the largest in the area include the Usibelli Coal Mine and the Pogo Mine. Founded in 1943, the Usibelli Coal Mine is located in the Alaska Range of mountains near the town of Healy, Alaska, in the Denali Borough. The Usibelli Coal Mine is the only operational coal mine in Alaska and employs approximately 95 persons (Usibelli Coal Mine 2011). The Pogo Mine, commissioned in 2006, is 37 miles northeast of Delta Junction. The Pogo Mine has a workforce of approximately 320 persons (ADNR 2011-14). Table 3-23 details the total number of workers employed by the Natural Resources and Mining industry and the percentage who live in the borough or census area.

Table 3-23. Natural Resources and Mining Workers by in the Region of Influence, 2009

Region	Number Employed	Percent of Those Who Live in the Borough/Census Area
Denali Borough	123	15
Matanuska-Susitna Borough	2,677	8
Southeast Fairbanks Census Area	135	5
Valdez-Cordova Census Area	193	4

Source: ALARI 2011-1, 2011-2, 2011-3, 2011-4.

Recreation and Tourism

The amount of amenities and natural resources available in Alaska all promote a high quality of life and are an important economic component of Alaskan communities. The Alaska tourism industry is highly seasonal, with the majority of visitors traveling between May and September. The Denali Borough, Matanuska-Susitna Borough, and the Southeast Fairbanks Census Area are part of the Interior Region. Between October 2008 and September 2009, the direct, indirect, and induced effects of visitor industry employment in the Interior Region totaled 6,200 jobs, $205 million in labor income, and $519 million in spending (McDowell Group Inc. 2010). The Valdez-Cordova Census Area is part of the Southcentral Region, which had the largest total visitor industry employment, labor income, and spending in Alaska from October 2008 through September 2009. Total direct, indirect, and induced effects of visitor industry employment in the Southcentral Region totaled 17,600 jobs, $514 million in labor income, and $1,751 million in spending (McDowell Group Inc. 2010). Additional details on recreational areas and activities in the vicinity of the proposed action are provided in Section 3.1.10.1, Land Use, Affected Environment.

Civilian Aviation

Several public and private airports are within 10 NM of the proposed airspace. Civilian aviation contributes to the local economy and is relied upon for travel, safety, firefighting, recreation, hunting, mining, oil and gas development, and supplies. For more detailed information on civilian aviation in the ROI, see Section 3.1.1.1, Airspace Management and Use, Affected Environment.

3.1.12.2 Impact Assessment Methodology

The socioeconomic impact analysis examines the potential effects of the proposed action on the social and economic resources of the ROI. These social and economic resources are defined in terms of resident population and economic activity. Under the proposed action, Air Force personnel, operation procedures, and maintenance procedures would not be expected to change from baseline conditions. Potential secondary socioeconomic effects of the proposed action have been evaluated for airspace use, noise conditions, and safety in the affected area. The potential effects of the airspace modifications and changes in airspace use were evaluated to determine their potential impacts on the population, economic activity, and land values in the ROI. If potential socioeconomic impacts would result in substantial shifts in community characteristics, including property values, employment, income, and social well being, then impacts would be considered significant.

3.1.12.3 Environmental Consequences

3.1.12.3.1 Alternative A

The major concerns for socioeconomic resources associated with the proposed action, as identified by scoping and draft EIS public review comments, are potential effects to property values and commercial and general aviation. Under Alternative A, there are approximately 206 persons (see Table 3-22) within the extent of the census block that has been defined under the restricted airspace. However, the low population density under the proposed low-level airspace makes it highly unlikely that noise from flight activity associated with the Fox 3 MOA and new Paxon MOA would have significant social or economic impacts on the region. An individual or animal could on occasion be startled by an overflight at a specific time and place. However, a low-level overflight would be difficult to predict given the rural nature of the area, the random and dispersed nature of flight operations, and the large airspace area. An individual startled by a low-level overflight could see the overflight as an impact. The duration of a low-level overflight would be brief, and any related noise is not expected to have any effect on other aircraft flying the region. However, the fact that a low-level event could occur at any time and at any location, even infrequently, could be identified as a potential impact by some individuals while undertaking work-related tasks.

Under the proposed action, flight activity would occur over an expanded area and at a lower altitude. Thus, subsonic noise levels are projected to increase by a discernable amount but would remain below 55 dB L_{dnmr} in areas beneath the proposed airspace. Supersonic noise would remain below 62 dB CDNL. This level represents a threshold below which adverse noise effects to human populations are generally not expected. However, areas not currently overlain by MOAs in which baseline noise levels are extremely low would experience an estimated noise increase greater than 10 dB. Based on Table 3-22, up to 206 persons in the ROI could potentially experience this increase in noise. As stated in Section 3.1.2.2, areas that experience an increase in noise level greater than 10 dB could be significantly impacted. However, actual noise levels would vary due to several factors specific to a particular noise event. Thus, the level of impact by residents would be determined during the public and agency review of the Draft EIS. Creating avoidance areas over populated residential areas (i.e., residential areas surrounding Lake Louise) as outlined in Section 3.1.3.4 could minimize the degree of impact on residents. The complex nature of property valuation factors makes any estimation of the potential effects of noise from airspace modifications on land values highly speculative. Communities and private airports all exist and function under existing airspace. Other socioeconomic factors, such as business activity, employment, interest rates, land scarcity (or availability), and the nature of the local housing market are much more likely to affect property values than the change in noise as a result of the proposed training airspace modifications.

Impacts on key industries such as energy development and mining are expected to be low. The Air Force would coordinate with FAA and other regulatory agencies to evaluate energy development proposals under the proposed airspace on a case-by-case basis. If there were concerns about an energy development proposal, the Air Force would raise those concerns to the appropriate authority. In addition, overflight activities are not expected to significantly impact mining operations, especially since activities can be communicated in advance and an avoidance area can be identified and pilots briefed as part of the training mission.

Comments during public scoping expressed concerns that the expansion of the Fox 3 MOA and creation of the Paxon MOA would affect commercial and general aviation, and thereby potentially result in economic effects to regional business and communities. As described in Section 3.1.1.3, Airspace Management, the proposed modifications to and establishment of airspace in the vicinity of the Fox 3

MOA and Paxon MOA would potentially result in impacts to civil aviation that use established airways, jet routes, and airfields in the area. Impacts to civil aviation would potentially occur only during times when the military airspace is activated, which would be limited in frequency and duration. Potential civil aviation impacts (described in Section 3.1.1.3) may include significantly increased flight distances and increased flight time when the airspace is active and either pilots elect not to transit the MOAs, or pilots flying to and from private airports or airfields are directed by ATC to divert their flight routes to avoid the active airspace and military activities. To the extent that they would occur, these potential aviation impacts would result in economic impacts due to additional operating costs (primarily related to increased fuel use) associated with avoiding active airspace, and the costs of any expended efforts in tracking the airspace status through available advisory services.

Such impacts would depend on civil air traffic densities/peak periods and the individual areas and time frames in which the proposed military flight activities would occur. The FAA and Air Force would address any impacts and mitigation measures to be taken before implementation of any airspace proposals. This would include advanced coordination between military scheduling agencies and the Air Force, to avoid those time periods and altitudes that are most problematic for the ATC system. In addition, commercial and general aviation routinely experience flight diversions due to weather, airport delays, air traffic congestion, air traffic deconflictions, flight safety, and other such conditions that are unrelated to military airspace use.

The economic impacts of any commercial or other civil aviation aircraft being delayed or diverted to any extent around the proposed airspace when active cannot be quantified due to the many factors to be considered in estimating such impacts. These factors include aircraft type and weight, type and number of engines, an aircraft's phase of flight and altitude at the time of a diversion, air traffic conditions, the additional time/distance incurred by any diversion, etc. Other factors such as maintenance, labor, and aircrew costs would also have to be considered, as applicable, for commercial and general aviation impacts. Economic impacts to general aviation pilots would depend on routes of flight and decisions on whether to delay flight when the airspace is active versus flying through or avoiding the active airspace. Fuel consumption rates for the different turboprop and jet aircraft types are identified in technical manuals and other documents that provide operators with a general basis for estimating fuel use for flight planning and other purposes. Fuel use alone is not the only factor to be considered in determining the cost of any flight diversion. Aircraft fuel and operating costs would have to be examined in much more depth and in consideration of many other factors for those aircraft types that could be potentially affected by flight diversions around the airspace.

3.1.12.3.2 Alternative E

Under Alternative E, the Fox 3 MOA would be similar as described under Alternative A; however, the Fox 3 MOA would be smaller in size from that proposed under Alternative A with the southern boundary moved approximately 20 NM to the north and no subdivisions. Moving the southern boundary of the Fox 3 MOA 20 NM to the north would avoid a large proportion of the population in the Lake Louise area. Potential impacts under this alternative are similar to those described under Alternative A; however, this alternative avoids the area near Lake Louise and there are fewer persons identified overall under the airspace and thus fewer persons who could be potentially impacted under this alternative. In addition, the creation of avoidance areas over residential areas and economic centers, in particular north of Lake Louise that still lie within the southern MOA boundary, could minimize potential socioeconomic impacts from noise. Commercial and general aviation would remain similar to those as described under Alternative A.

3.1.12.3.3 No Action Alternative

Under the No Action Alternative, no new airspace would be created and no expansion to the existing Fox 3 MOA would be created. Existing activities in the Fox 3 MOA would continue under the current procedures and guidelines. Therefore, no changes to socioeconomic resources from current existing conditions are expected.

3.1.12.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse impacts. The following mitigations are proposed to reduce these impacts.

- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.
- **Concentrated Activity Areas.** Comply with flight avoidance areas established by the 11th AF Airspace and Range Team and listed in the 11th AF Airspace Handbook. Areas not specified by the ROD may be added, increased, decreased, or removed by the 11th AF Airspace and Range team as situations dictate (e.g., a mine and its air operations cease to exist).

3.1.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.1.13.1 Affected Environment

The ROI for this proposed action includes communities under or within 20 NM of the proposed Fox 3 MOA expansion and new Paxon MOA. Detailed characteristics of these communities, including characteristics of the Federal and State subsistence uses, are provided in Table 3-24. The distance of 20 NM was used as a best estimate of the maximum distance traveled by subsistence hunters without the use of aircraft. The ROI was narrowed to the communities within 20 NM in order to provide the characteristics of those communities who depend on the affected subsistence resources and may have fewer opportunities to find alternative subsistence resources. For other communities that are outside of the 20 NM ROI and still participate in subsistence activities within the ROI, the potential impacts would be the same as those described below.

Table 3-24. Subsistence Communities in the Vicinity of the Proposed Action

Village	2010 Population	Percent Alaska Native	Percent of Households Participating in Subsistence	State Subsistence			Federal Subsistence
				Most Representative Year	Species	Estimated Harvest (lb)	Hunting and Fishing Subsistence Areas
Cantwell	219	15.5	97.4	1999	Salmon (varying species)	4,630	Yukon-Northern Area Subsistence Fishing
					Non-Salmon Fish (varying species)	2,081	
					Large Land Mammals (bison, black bear, brown bear, caribou, moose, Dall sheep)	17,361	Unit 13E, Nelchina-Upper Susitna
					Small Land Mammals (beaver, coyote, fox, red fox, hare, marten, mink, muskrat, porcupine, squirrel, weasel, wolf, wolverine)	970	
					Birds and Eggs (includes migratory birds)	801	
					Marine Invertebrates (clams, crabs, shrimp)	125	N/A
					Vegetation (berries, plants, greens, mushrooms, wood)	1,627	N/A
Chickaloon	272	6.3	100	1982	Salmon (varying species)	505	Unit 13A, Nelchina-Upper Susitna Cook Inlet Area Subsistence Fishing
					Non-Salmon Fish (varying species)	2,688	
					Large Land Mammals (bison, black bear, caribou, moose, Dall sheep)	1,145	
					Small Land Mammals (beaver, coyote, fox, hare, marten, muskrat, porcupine, squirrel,	1,123	
					Birds and Eggs (includes migratory birds)	560	
					Vegetation (berries, plants, greens, mushrooms)	1,143	
Chistochina	93	63.40	100	1987	Salmon (varying species)	10,197	Prince William Sound Subsistence Fishing
					Non-Salmon Fish (varying species)	2,199	
					Large Land Mammals (black bear, caribou, moose, Dall sheep)	6,598	Unit 13C, Nelchina-Upper Susitna
					Small Land Mammals (beaver, coyote, fox, red fox, hare, land otter, marten, mink, muskrat, porcupine, wolf)	322	
					Birds and Eggs (includes migratory birds)	186	
					Marine Invertebrates (clams, crab, shrimp)	34	N/A
					Vegetation (berries, plants, greens, mushrooms, wood)	1,048	N/A

Table 3-24. Subsistence Communities in the Vicinity of the Proposed Action *(Continued)*

Village	2010 Population	Percent Alaska Native	Percent of Households Participating in Subsistence	State Subsistence			Federal Subsistence
				Most Representative Year	Species	Estimated Harvest (lb)	Hunting and Fishing Subsistence Areas
Dot Lake	62	73.70	100	1987	Salmon (varying species)	1,329	Yukon-Northern Area Subsistence Fishing
					Non-Salmon Fish (varying species)	2,094	
					Large Land Mammals (black bear, caribou, moose)	3,177	Unit 20D, Fairbanks-Central Tanana
					Small Land Mammals (beaver, fox, red fox, hare, lynx, marten, mink, porcupine, weasel, wolverine)	308	
					Birds and Eggs (includes migratory birds)	148	
					Vegetation (berries, plants, greens, mushrooms, wood)	499	N/A
Gakona	218	17.70	92.7	1987	Salmon (varying species)	6,074	Prince William Sound Subsistence Fishing
					Non-Salmon fish (varying species)	2,476	
					Large Land Mammals (bison, black bear, brown bear, caribou, moose, Dall sheep)	9,936	Unit 13A, Nelchina-Upper Susitna
					Small Land Mammals (beaver, coyote, fox, red fox, hare, land otter, marten, mink, muskrat, squirrel, weasel, wolf, wolverine)	140	
					Birds and Eggs (includes migratory birds)	424	
					Marine Invertebrates (clams, crabs, shrimp)	93	N/A
					Vegetation (berries, plants, greens, mushrooms, wood)	774	N/A
Glennallen	483	12.10	100	1987	Salmon (varying species)	19,136	Prince William Sound Subsistence Fishing
					Non-Salmon Fish (varying species)	6,152	
					Large Land Mammals (bison, black bear, caribou, moose, musk ox, Dall sheep)	20,053	Unit 13A, Nelchina-Upper Susitna
					Small Land Mammals (beaver, coyote, fox, red fox, hare, marten, muskrat, weasel)	366	
					Birds and Eggs (includes migratory birds)	174	
					Marine Invertebrates (clams)	26	N/A
					Vegetation (berries, plants, greens, mushrooms, wood)	778	N/A

Table 3-24. Subsistence Communities in the Vicinity of the Proposed Action *(Continued)*

Village	2010 Population	Percent Alaska Native	Percent of Households Participating in Subsistence	State Subsistence			Federal Subsistence
				Most Representative Year	Species	Estimated Harvest (lb)	Hunting and Fishing Subsistence Areas
Gulkana	119	73.90	95	1987	Salmon (varying species)	5,777	Prince William Sound Subsistence Fishing Area
					Non-Salmon Fish (varying species)	629	
					Large Land Mammals (black bear, caribou, moose)	3,036	Unit 13A, Nelchina-Upper Susitna
					Small Land Mammals (beaver, coyote, fox, red fox, hare, land otter, lynx, marten, mink, muskrat, porcupine, weasel, wolf, wolverine)	527	
					Birds and Eggs (includes migratory birds)	92	
					Vegetation (berries, plants, greens, mushrooms, wood)	176	N/A
Paxson	40	0.0	92.9	1987	Salmon (varying species)	1,730	Prince William Sound Subsistence Fishing
					Non-Salmon Fish (varying species	2,432	
					Large Land Mammals (bison, caribou, moose, Dall sheep)	5,404	Unit 13B, Nelchina-Upper Susitna
					Small Land Mammals (beaver, coyote, fox, hare, land otter, marten, mink, muskrat, porcupine, weasel, wolf)	971	
					Birds and Eggs (includes migratory birds)	583	
					Vegetation (berries, plants, greens, mushrooms, wood)	115	N/A

Key: lb=pounds; N/A=not applicable.
Source: ADCCED 2011; ADFG 2011-4; USFWS 2010-1, 2010-2.

The State subsistence information, provided by the ADFG, includes information for the most representative year for each community. As discussed in Appendix B, State subsistence is open to Alaska residents on State or private land. Regional and village Native corporation lands are considered private lands and are managed under State subsistence guidelines. Regulations regarding the State subsistence priority, amount of harvest, harvest season, and methods used in the harvest are dictated by the Alaska Board of Fisheries and the Alaska Board of Game. ADFG attempted to survey the maximum number of households in each community to gain an adequate sampling of the community and their subsistence habits. Several of these communities have more up-to-date data on a limited set of species; however, the information may not provide the most accurate description of the community's reliance on subsistence. Therefore, only the most representative year is presented in Table 3-24 as the best data available to provide a complete evaluation of potential impacts to subsistence and subsistence species per 40 CFR 1502.22. Public comments suggested other resources for more recent data; however, upon the Air Force's review it was determined that these resources were dependent on the same data being used in this EIS, or data collection was currently underway and would not be available in time for incorporation into this EIS. During public comments, a representative of the Alaska Outdoor Council did note that in 2010 there were 5,015 reported hunters in GMU 13 hunting moose while 4,887 hunters reported hunting caribou from the Nelchina herd (Amo 2012).

Federal subsistence is open on Federal public land only to Alaska residents living in rural communities. Federal public land includes land owned and managed by the BLM, NPS, USFS, and USFWS. Regulations regarding Federal subsistence priority, amount of harvest, harvest season, and methods used in harvest are dictated by the Federal Subsistence Board, which includes agency heads of USFWS, National Park Service, BLM, BIA, and USFS. Table 3-24 provides information on the Federal subsistence management areas for hunting and fishing for each community. Figure 3-23 shows these management units in relation to the proposed actions in addition to the Federal nonrural and State nonsubsistence areas, which are described in more detail in Section 3.2.13. Information on subsistence harvests on Federal public land near these communities is not available. All subsistence participants are required to have appropriate permits prior to subsistence harvesting.

Most of the area under the existing Fox 3 MOA is within the Nelchina–Upper Susitna Federal subsistence management area, specifically in GMUs 13A, 13B, and 13E and the Cook Inlet and Prince William Sound subsistence fishing areas. A comment on the DEIS noted that berry picking is an important activity that occurs within late July and August, while moose and caribou seasons in GMU 13 also starts in early August. The month of March is another important time for hunting caribou for local residents. In addition, subsistence activities are prevalent during May, June, July and October, with many persons using air access to get to their preferred areas for subsistence harvesting. More detailed information on species and habitats in the ROI is provided in Section 3.1.8, Biological Resources.

3.1.13.2 Impact Assessment Methodology

Many small communities in Alaska are wholly or largely dependent on subsistence use of renewable resources. Subsistence use can be the principal means of support for communities and families that do not participate in a wage-oriented economy. Subsistence activities provide a means for economic self-sufficiency, particularly for rural communities, which may not have regular access to year-round employment or year-round access to stores for household food purchases.

Section 810(a) of the Alaska National Interest Lands Conservation Act (ANILCA) requires that an evaluation of subsistence uses and needs be completed for any Federal determination to "withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands." Such an evaluation of the potential impacts on subsistence under the ANILCA 810(a) must be completed for this EIS. The ANILCA requires that this evaluation include findings on three specific issues: the effect of use,

occupancy, or disposition on subsistence uses and needs; the availability of other lands for the purposes sought to be achieved; and other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 United States Code [U.S.C.] 3120).

The evaluation and findings required by the ANILCA 810 are set out for each of the proposed actions considered in this EIS. To determine if a significant restriction of subsistence uses and needs may result from any of the proposed actions or their cumulative effects, the following three factors in particular are considered: reduction in the availability of subsistence resources caused by a decline in the population or amount of harvestable resources; reductions in the availability of resources used for subsistence purposes caused by alteration of their normal location and distribution patterns; and limitations on access to subsistence resources, including limitations attributable to increased competition for such resources. A significant restriction on subsistence may occur in at least two instances: (1) when an action substantially reduces populations or their availability to subsistence users, and (2) when an action substantially limits access by subsistence users to resources. The environmental consequences section of this EIS for each proposed action indicates whether that action would significantly restrict the availability of, or access to, subsistence resources.

A finding that the proposed action may significantly restrict subsistence uses imposes additional requirements including notices to the State of Alaska and appropriate regional and local subsistence committees, a hearing in the vicinity of the area involved, and the following determinations as required by ANILCA 810(a)(3):

- Such a significant restriction of subsistence uses is necessary, and consistent with sound management principles for the utilization of public lands.
- The proposed action will involve the minimal amount of public lands necessary to accomplish the purposes of use, occupancy, or other disposition.
- Reasonable steps will be taken to minimize adverse effects upon subsistence uses and resources resulting from such actions.

Another factor used to determine the significance of these potential impacts concerns the dependence of the affected communities on subsistence resources. Dependence was determined by several factors including the rural nature of the community, proximity of the community's primary subsistence area of the proposed action, availability of other employment opportunities, and whether the communities are predominantly Alaska Native. The emphasis on the Alaska Native population is not meant to downplay the importance of subsistence to rural non-Native residents. This factor is only used to acknowledge that Alaska Natives have a particular sensitivity to subsistence resources due to the higher level of dependency through low employment and economic opportunities and cultural practices. Based on these factors, a community's dependence was ranked as high, medium, or low and the results presented in the environmental consequences section of this chapter for each proposed action. Communities where more than 80 percent of the population participates in subsistence and/or more than 50 percent of the community is composed of Alaska Natives are ranked as having a high dependence on subsistence resources. Adverse impacts on the accessibility of subsistence resources may be perceived as significant for communities and individuals with high dependency on subsistence resources depending on the availability of other accessible areas to harvest resources while adverse impacts on the availability of subsistence resources such, as a reduction in the population or normal behavior of the resources, may be perceived as significant for communities and individuals with high and medium dependence on subsistence resources.

3.1.13.3 Environmental Consequences

The following communities are ranked as high in dependency on subsistence resources: Cantwell, Chickaloon, Chistochina, Dot Lake, Gakona, Glennallen, Gulkana, and Paxson.

3.1.13.3.1 Alternative A

The expansion of the Fox 3 MOAs and the establishment of the Paxon MOA would not restrict ground access to traditional use areas or hunting locations beneath the new airspace. Subsistence users would have the same access and availability to subsistence resources from the ground as under current conditions.

The new and expanded airspace, however, may result in a restriction of access by aircraft to areas or landing fields below or in the vicinity of the airspace. Aircraft are often used in the subsistence harvests, particularly for times of year in which traditional use areas are not accessible by ground vehicles. Wildlife surveys are also regularly conducted by aircraft to gauge populations and health, information that is then taken into consideration when the ADFG determines subsistence priorities and the amount of takes permitted.

Operations and potential impacts on general aviation and airports are detailed in Section 3.1.1. The Paxon Low MOA would only be used during MFEs, which would occur no more than 60 days per year. Advanced notification of the MFE schedule for the year would be published in accordance with the guidance established by the 1997 *Alaska MOA EIS* mitigations, and MFEs would not be scheduled for the months of September, December, or January. The following discussion details more of the day-to-day operation of the new Fox 3 MOAs but is also applicable to those times when the Paxon MOA is active. The proposed Fox 3 MOAs and Paxon MOA would not prohibit civil aviation use because MOAs are joint use airspace; civil pilots are permitted to fly through an active MOA using VFR see-and-avoid.

When the MOAs are inactive, IFR traffic would be permitted. The Air Force would continue to use the SUAIS and other communications to provide information on when the airspace is active. Civil pilots would have to check these resources to find the status of the MOAs prior to and during a general aviation flight in order to learn if IFR traffic would be let through MOAs. In addition, the stratification of the new MOAs would allow the Air Force to schedule and activate the low-altitude MOAs only when required for training. Once low-level training is completed, the low-altitude MOAs would be released and civil IFR traffic on the Victor routes and jet routes through the low Paxon MOA would be permitted. In addition, other IFR traffic could be routed by ATC through any inactive MOA, including the Fox 3 MOA. The low-altitude MOAs are not expected to be scheduled and activated daily. The low-altitude MOAs are not expected to be scheduled and activated daily. Therefore, access to subsistence resources by aircraft would not be restricted to those civil pilots willing to fly VFR through an active MOA. However, for those pilots unwilling to fly VFR, or if weather conditions do not permit VFR, additional wait times or delays may be expected until the MOAs are released to IFR traffic. These delays are not expected to be a daily occurrence, particularly for the low-altitude MOAs. Since a delay in participating in subsistence activities could result in lost opportunities to harvest subsistence resources, a delay in harvesting subsistence resources could be perceived by those individuals and communities with a high dependence on subsistence resources as an impact depending on the length of the delay.

For the ADFG and other agencies conducting wildlife surveys, coordination with the Air Force on the scheduling of the survey flights and military flights could deconflict the airspace and allow survey flights to be conducted with minimal disruption. Per FAA regulations, public airports require an avoidance area of 3 NM in radius and 1,500 feet AGL, while private airfields require an avoidance area of 1 NM in radius and 1,000 feet AGL. These avoidance areas allow the airports and airfields to accommodate incoming and outgoing aircraft while the MOA airspace is active.

Noise and residual materials from chaff and flares also have the potential to affect the wildlife and vegetation resources harvested by subsistence users. This proposed action's impacts on wildlife and vegetation are detailed in Section 3.1.8 while noise impacts are discussed in Section 3.1.2. As discussed in the biological resources section, low-level flights and supersonic events have noise and startle impacts on species on the ground. Noises that are close, loud, and sudden and combined with a visual stimulus produce the most intense reactions. Impacts on caribou and Dall sheep were of primary concern during scoping, as the area beneath the proposed Fox 3 MOAs and the new Paxon MOA include some of the largest hunting grounds for caribou as well as lambing and rutting areas for caribou and Dall sheep.

As described in Section 3.1.8, with the incorporation of mitigation measures and current flight restrictions over calving/lambing grounds, it is expected that this proposed action would have minor to moderate effects on wildlife that would not be measurable at the population level and would not be significant. The mitigation measures to be incorporated by the Air Force into the proposed action include the mitigations from the 1997 *Alaska MOA EIS*, by which all of Alaska airspace is currently operated to ameliorate potential adverse impacts. These mitigations include ensuring minimum overflight altitudes of 5,000 feet AGL over Dall sheep lambing areas and spring mineral licks and limiting overflights of "at-risk" wildlife during critical life periods determined in coordination with the ADFG. The Air Force also coordinates annual Letters of Agreement with the ADFG to avoid overflights of caribou calving areas. The Air Force would also minimize impacts on subsistence resources and subsistence hunting by not conducting MFEs during January, September, or December. Additionally, as suggested by comments received during scoping, the Air Force would consider regular meetings with regulating agencies and with communities dependent on subsistence resources under the proposed airspace with a view to monitoring the impacts of Air Force activities on subsistence.

Section 3.1.8 also describes potential effects of chaff and flare residual materials on wildlife species. The total amount of chaff and flares used in the new airspace is not projected to change under this proposed action. The area underlying the existing Fox 3 MOA is currently exposed of chaff and flare residual materials. Lowering the floor of the Fox 3 MOA would not change the dispersion of the residual materials. The amount of residual materials beneath the Fox 3 MOA can be expected to decrease as the total amount of chaff and flares used would be dispersed over a larger area, to include the new Fox 3 MOAs. In accordance with the 1997 *Alaska MOA EIS* mitigations, flares would be released at a minimum altitude of 5,000 feet AGL between June and September and 2,000 feet AGL between October and May. Flares are designed to burn out within 500 vertical feet from release.

Chaff and flare residual materials are not expected to have adverse impacts on wildlife, either birds, fish, or vegetation (see Section 3.1.8). Therefore, chaff and flare residual materials are not expected to adversely affect the population of subsistence wildlife or vegetation.

Therefore, with advanced notice of activation of the airspace through the SUAIS, and inclusion of the 1997 Alaska MOA EIS mitigations into the daily scheduling and operation of the airspace areas, no significant impacts to subsistence uses and resources are anticipated as defined by ANILCA.

3.1.13.3.2 Alternative E

Under Alternative E, the expanded Fox 3 MOA would be less extensive than that described for Alternative A. However, the altitude structure, number of proposed sortie-operations, and the use of chaff and flares would be the same under Alternative E as those described under Alternative A. Therefore, potential impacts to subsistence resources would be the same as Alternative A for those communities and subsistence areas beneath the proposed airspace in this alternative. Potential impacts to subsistence resources from the new Paxon MOA would be the same as those described under Alternative A.

3.1.13.3.3 No Action Alternative

Under the No Action Alternative, flight training would continue in the existing Fox 3 MOA with no expansions or new airspace being created. Civil aviation would be permitted under the same guidelines described in Section 3.1.1, and wildlife/vegetation species would be affected by the conditions described in Section 3.1.8. Therefore, subsistence resources and access to those resources would be the same as described in Section 3.1.13.

3.1.13.4 Mitigations

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts on subsistence resources. Mitigations proposed for other resources may benefit subsistence resources (see Sections 3.1.1.4, 3.1.3.4, 3.1.8.4, and 3.1.10.4). In addition, the following proposed mitigation would reduce impacts on subsistence resources.

- **VFR Flight Corridors.** Expand the VFR flight corridor over the Richardson Highway between Delta Junction and Glennallen to include the highway segment under the new Paxon MOA. The corridor will be 3 miles on either side of the Richardson Highway and up to 4,500 feet MSL. (The MOA would go to 5,000 feet MSL in the corridor to allow a 500-foot buffer). The Paxson Fish Hatchery would be afforded protection from low overflight noise as an added benefit of the VFR flight corridor.

3.1.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.14.

3.1.14.1 Affected Environment

The affected environment for the Fox 3 MOA expansion and new Paxon MOA proposal includes two boroughs and two census areas in which some portion of the proposal footprint is located. Figure 3-15 shows the location of this and other JPARC proposals. Table 3-25 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children for areas composing the proposal area. Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect. Locations of Alaska Native tribes underneath the existing and proposed airspace are shown in Figure 3-10. The list of tribes contacted for this EIS is contained in Appendix H, *Cultural Resources*.

The average percent minority in the proposal area ranges from 11.6 percent in Denali Borough to 27.9 percent in Valdez-Cordova Census Area, which is lower than the 35.9 percent average for the State of Alaska. The average percent low income ranges from 6.1 percent in Denali Borough to 11.6 percent in Southeast Fairbanks Census Area, compared to 9.6 percent for the State of Alaska. The average percent Alaska Native ranges from 5.5 percent in Matanuska-Susitna Borough to 13.6 percent in Valdez-Cordova Census Area, less than the 14.8 percent average for the state. The average percent children ranges from 22.5 percent in Denali Borough to 28.9 percent in Matanuska-Susitna Borough, similar to the 26.4 percent average for the state.

Table 3-25. Minority Population, Low-Income Population, and Children by Area

Fox 3 MOA Expansion and New Paxon MOA					
Area	**Total Population**	**Percent Low-Income**	**Percent Minority**	**Percent Alaska Native**	**Percent Children**
Valdez-Cordova Census Area	9,636	8.1	27.9	13.6	24.4
Matanuska-Susitna Borough	88,995	10.3	17.2	5.5	28.9
Denali Borough	1,826	6.1	11.6	3.6	22.5
Southeast Fairbanks Census Area	7,029	11.6	21.3	11.5	26.3
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005–2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.
Key: MOA=Military Operations Area.
Source: USCB 2010-1, 2010-2.

3.1.14.2 Impact Assessment Methodology

As described in Appendix B, *Definition of the Resources and Regulatory Settings*, environmental justice considers whether impacts from an action are unequally borne by a particular segment of the affected population, specifically persons that are part of an ethnic or racial minority group, have low incomes, or are children.

The environmental justice impact methodology includes the following tasks:

Review impacts by alternative for 13 resources. This step includes reviewing project-level and cumulative impact conclusions in order to identify significant unavoidable impacts. Only those impacts that are classified as significant and unavoidable have the potential to create environmental justice effects. Other impacts would not be reviewed further. The resources to be analyzed include airspace management and use (Section 3.1.1), noise (Section 3.1.2), safety (Section 3.1.3), air quality (Section 3.1.4), physical resources (Section 3.1.5), water resources (Section 3.1.6), hazardous materials and waste (Section 3.1.7), biological resources (Section 3.1.8), cultural resources (Section 3.1.9), land use (Section 3.1.10), infrastructure and transportation (Section 3.1.11), socioeconomics (Section 3.1.12), and subsistence resources (Section 3.1.13).

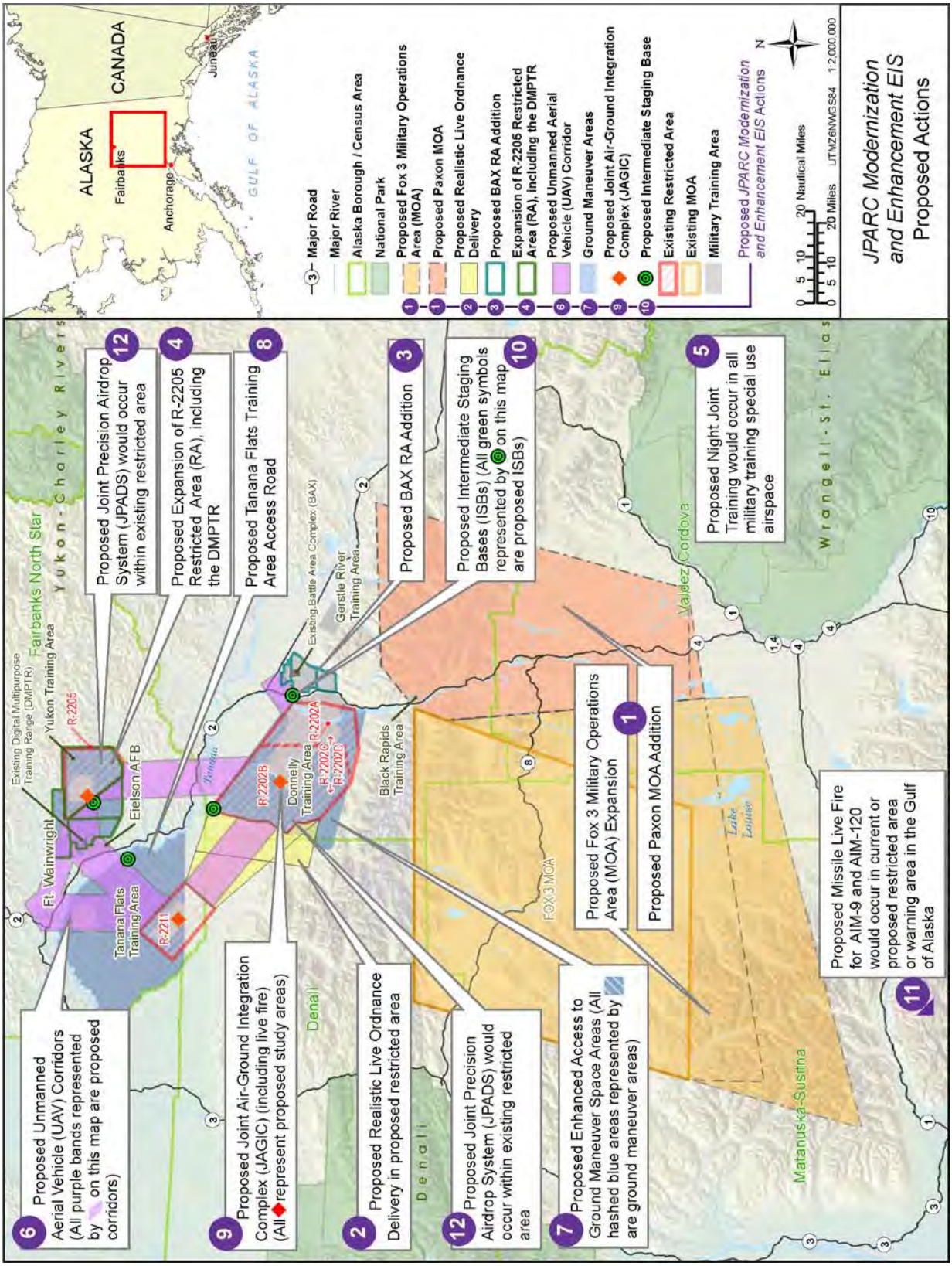


Figure 3-15. JPARC Modernization and Enhancement EIS Proposed Actions

Identify significant unavoidable impacts that would affect human populations. Significant unavoidable impacts that *would not* affect human populations would not be analyzed further because they would not have the potential to create environmental justice effects. For example, significant impacts on a wildlife species, assuming that it is not also important for recreation, hunting, subsistence, or cultural/traditional use would not be evaluated further. However, consultation with USFWS/NMFS/ADAC will be conducted for any species under protection of the ESA and MBTA.

Compile data on affected population groups and compare to surrounding populations. Use GIS to identify affected Native villages, communities, boroughs, and census areas. Use 2010 Census data to estimate affected minority populations and children. Use data from the 2005–2009 American Community Survey to estimate affected low-income populations. Calculate percent minority and percent low-income for adversely affected populations and compare to surrounding populations. Where applicable, identify schools or other child-serving organizations in affected areas to determine effects on children, mostly applicable in more densely populated areas. (*Note that no disproportionately high and adverse environmental or health effects on children are identified for any of the JPARC proposals.*) Disproportionately high and adverse environmental or health effects could be identified if percentages of affected minority or low-income populations in areas exposed to significant adverse effects (i.e., that may not be mitigated to less than significant) are appreciably greater than the general population.

3.1.14.3 Environmental Consequences

Fox 3/Paxon MOAs proposal Alternatives A and/or E could create the potential for unavoidable significant adverse impacts for the following resources evaluated to determine if they would cause disproportionately high and adverse environmental or health effects on minority and low-income populations or children: airspace management (Section 3.1.1.3), noise (Section 3.1.2.3), flight safety (Section 3.1.3.3), and socioeconomics (Section 3.1.12.3). Other resource impacts would not have the potential to create disproportionately high and adverse effects on minority or low-income populations or children and are not evaluated in detail. The topics of subsistence, and separately, traditional cultural resources and Alaska Native tribes are discussed briefly below as they relate to environmental justice, in order to provide an overview for this and other proposals in the EIS. These topics are not discussed elsewhere in the environmental justice sections for the definitive proposals because there would not be potential for unavoidable significant adverse impacts and therefore no disproportionately high and adverse environmental and health effects on minority and low-income populations or children would occur.

Adverse impacts on subsistence activities and access can be an environmental justice concern under EO 12898. Subsistence is discussed in detail in Section 3.1.13.3, which identifies the potential for adverse but less than significant subsistence impacts that may require mitigation. The impact is primarily related to limitations on civilian aircraft when military airspace is active, such that resultant delays or diversions could limit access to subsistence resources. Some of the subsistence communities that may be affected have a high percentage of Alaska Natives in the resident population and a high percentage of households participating in subsistence (see Table 3-24). The degree of impact would depend to some extent on how civilian pilots manage their flights within these constraints. A number of public concerns were expressed during scoping about these limitations. While some minority and low-income populations and children could be adversely affected by subsistence impacts, the underlying subsistence impact is not identified as significant in Section 3.1.13.3 or for other proposals in the EIS, and therefore environmental and health effects on these groups associated with subsistence impacts would not be disproportionately high and adverse.

Impacts on traditional cultural resources and Alaska Native tribes and activities can be an environmental justice concern under EO 12898. Cultural resource topics are discussed in greater detail in Section 3.1.9.3

and briefly in this paragraph. No significant unavoidable impacts on traditional cultural resources or related Alaska Native activities are anticipated to result from the changes that would occur for this or other proposals identified in the EIS. In the event that previously unrecorded or unevaluated cultural resources are encountered, the Air Force would manage these resources in accordance with the NHPA and other Federal and State laws, Air Force and DoD regulations and instructions, and DoD American Indian and Alaska Native Policy (DoD 1998). Therefore, impacts on traditional cultural properties, if identified, would not result in disproportionate effects on Alaska Native tribes and ANCSA corporations. (Note that on JPARC proposals for which the Army is the proponent including the Battle Area Complex (BAX), Digital Multi-Purpose Training Range (DMPTR), Enhanced Access to Ground Maneuver Space (EGMS), Tanana Flats Training Area (TFTA), Joint Air-Ground Integration Complex (JAGIC), Intermediate Staging Base (ISB), and Joint Precision Airdrop System (JPADS), the Army would be responsible for management actions and conducts the required consultation described above.)

3.1.14.3.1 Alternative A

Airspace management and use (Section 3.1.1.3). Alternative A could cause civilian pilots to delay or divert their flights while the military airspace is active. Changes in IFR and VFR flight would occur. When these MOAs are *inactive*, IFR air traffic would be permitted. When the MOAs are *active*, civil pilots would be permitted to fly through an active MOA using VFR see-and-avoid. However, for those pilots unwilling to fly VFR or if weather conditions do not permit VFR, additional wait times or delays may be expected until the MOAs are released to IFR traffic. The delays are not expected to be a daily occurrence, particularly for the lower altitudes. The extent to which such impacts may occur would depend on a pilot's decision to either delay or reroute their flights when this airspace is active at those altitudes or to fly through this airspace under see-and-avoid conditions. The public expressed concern about this issue.

Because resident populations would primarily experience airspace management impacts if they produced interrelated impacts on other resources such as socioeconomics (e.g., impacts on the local economy), flight safety (air mishaps), and subsistence resources (limited air access to harvest areas), no effects on minority or low-income populations or children are identified for airspace management impacts per se. Interrelated airspace management impacts are evaluated under other resource topics, where applicable. Airspace management impacts would therefore not create disproportionate effects on minority and low-income populations or children.

Noise (Section 3.1.2.3). Alternative A would create increases in subsonic noise levels of 10 dB or greater. While this final noise level would not increase to greater than 55 dB DNL, the USEPA identifies a threshold for impacts/increases in noise levels of 10 dB or greater as very noticeable, particularly in such a quiet environment. Mitigation in the form of new avoidance areas has been included but may not reduce all significant impacts on communities and inhabited areas. The population under the airspace for Alternative A is 206 persons of which approximately 22.1 percent are minority and 10.1 percent are low-income, which is considerably less than the State of Alaska's 35.9 percent minority population and approximately the same as its 9.6 percent low-income population. The community of Lake Louise is located under the Fox MOA, and has a total population of 46 persons including 6.5 percent minority. The community of Paxson is located under the new Paxon MOA and contains 40 persons of which approximately 5 percent are minority. The U.S. Census does not disclose poverty data for very small communities for privacy reasons and because interpretation of sample data for very small samples may not be meaningful. Based on available Census data, significant noise impacts on populations living under the military airspace would not result in disproportionately high and adverse effects for Alternative A.

Flight Safety (Section 3.1.3.3). The potential risk of a near miss/mid-air collision between military and VFR aircraft operating within active MOAs may not be fully avoided despite those initiatives/mitigations that ensure the active status of this airspace is publicized through available advisory services. Disproportionately high and adverse flight safety effects are not expected given the fact that populations living under the airspace comprise minority and low-income percentages that are less than or similar to the State of Alaska.

Socioeconomics (Section 3.1.12.3). Because of the unique dependence of residents and businesses on civilian aviation in the area, delays and diversions of civilian aircraft during active airspace times, combined with public scoping concerns, would result in the potential for significant adverse socioeconomic impacts. Additionally, significant noise impacts could affect residents and recreation and result in economic impacts. Socioeconomic impacts would not result in disproportionately high and adverse effects on minority or low-income populations or children because, as identified above, these impacts could affect a variety of businesses and inhabitants and would not primarily be borne by the population groups.

3.1.14.3.2 Alternative E

This alternative would reduce the size of the Fox 3 MOA compared to Alternative A with the southern boundary moved to the north. Like Alternative A, a new Paxon MOA would be established. Airspace management and flight safety impacts are not evaluated for environmental justice under this alternative because they would be less than significant.

- **Noise.** Fewer people would be located underneath the airspace under Alternative E, 169 persons instead of 209 persons, of which 22.4 percent are minority and 10.2 percent are low-income. Similar to Alternative A, no disproportionate effects would occur.
- **Socioeconomics.** Similar to Alternative A, no disproportionate effects would occur.

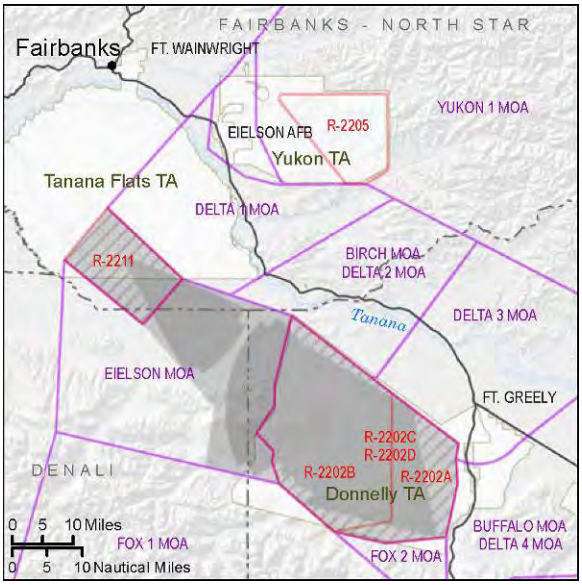
3.1.14.3.3 No Action Alternative

There would be no additional disproportionately high and adverse effects on minority and low-income populations or children from the No Action Alternative. Fox 3 MOA would remain as currently configured and no new Paxon MOA would be established.

3.1.14.4 Mitigations

No mitigations are identified for this resource.

3.2 REALISTIC LIVE ORDNANCE DELIVERY (DEFINITIVE)



The Air Force proposes to establish a realistic air and ground training environment that would accommodate live ordnance delivery of modern and emerging fighter aircraft and ordnance. The combined Realistic Live Ordnance Delivery (RLOD) proposal alternatives directly affect an area of 873,777 acres (1,365 square miles), of which 65 percent is military-owned land. (Refer to the gray-shaded area in the map to the right for orientation.) This action involves changes to military restricted airspace and utilizes underlying land to support Air Force training associated with live and inert weapons delivery from fighters and provide safety zones on both military and nonmilitary lands when training exercises are taking place. Potential for significant impacts for all resource topics is medium to high, with the exception of physical resources (low) and low to moderate for impacts to water, wetlands, and cultural resources. Following the impact assessment for each resource, the final mitigations are listed that have been selected by the Army and Air Force to avoid, reduce, or implement management actions for potential significant adverse impacts from implementing the proposed action. These are included to provide the public and other agencies with necessary information on the final mitigations proposed by the Army and Air Force.

3.2.1 Airspace Management and Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.

3.2.1.1 Affected Environment

The following sections describe representative baseline uses of all military and civil airspace within the region encompassed by the Alternatives A and B airspace proposals shown in Figure 3-16 and Figure 3-17. These figures depict these airspace proposals relative to the aeronautical features depicted on the Fairbanks and Anchorage Sectional Charts and the Alaska IFR Enroute High Altitude (H-1) Chart for the areas potentially affected by these two alternatives (FAA 2011-1, 2011-2, 2011-3).

MILITARY AIRSPACE USE

MOAs/ATCAAs and Restricted Areas

The airspace uses primarily associated with the Alternative A and B proposed actions include the Eielson MOA/ATCAA; R-2202 A, B, C, and D; and R-2211, as shown in Figure 3-16 and Figure 3-17. R-2202 and its Oklahoma Impact Area are managed by the Army and used by the Cold Regions Test Center (CRTC), USARAK, and Air Force aircraft to accomplish test and training requirements. R-2211 and its Blair Lakes Impact Area are managed by the Air Force. The general description and use of these areas are described in Chapter 2.0 and Appendix D, *Airspace Management*.

The current representative use of the Eielson MOA/ATCAA; R-2202 A, B, C, and D; and R-2211 reflect the general aircraft types, sortie-operations, and flight training activities that would occur in the future under the Alternative A and B proposals. R-2202 and R-2211 are used for both routine training and MFEs, and the Eielson MOA is normally used in conjunction with both restricted areas for maneuvering airspace.

Aircraft normally fly standard published routes ("STEREO ROUTES") when transiting between Eielson AFB and these ranges. R-2202 is a tactical range containing several impact areas and numerous target types on Army-controlled land where both live and inert munitions are permitted. Routine training air-to-ground weapons deliveries normally only occurs in R-2202B while MFEs use the entire R-2202 complex (A, B, C, and D). R-2211 is a manned Air Force training range containing simulated targets where only inert munitions are used.

Other Military Airspace Uses

Use of the MTRs, LATN areas, and ARs is not expected to change significantly under either the Alternative A or B proposals. Therefore, they are not discussed any further under this proposal.

CIVIL AVIATION AIRSPACE USE

The same types of general aviation activities discussed in Section 3.1.1.1 can occur within the areas encompassed by both the Alternative A and B proposals. Those airspace uses within the affected region of these airspace proposals are described in the following sections.

Federal Airways

Those Federal airways transiting near the Eielson MOA and two restricted areas include V444/T232, V515, V481/T226/B25, and V438/T227. FAA data on the average daily use of these routes are noted in Section 3.1.1. The airways are not currently affected by military operations due primarily to their location relative to the existing SUA and the coordination currently in effect between the FAA and military agencies to minimize any impacts.

Jet and RNAV Routes

Several jet and RNAV routes transit near the affected airspace of these alternatives. Included are J167, which transits east of R-2202 C and D; J502-515, transiting north of the Eielson ATCAA, R-2211, and R-2202 C and D; and Q43, transiting west of R-2211. FAA data on the daily average use of these routes are noted in Section 3.1.1. These routes are not currently affected by military operations due primarily to their distance from R-2202 and those standing coordination procedures used by the FAA and military agencies to minimize any impacts.

VFR Air Traffic

The recreational, hunting, mining, and other flight activities discussed in Section 3.1.1 may exist to a lesser extent in this more-distant area where the restricted areas and government-controlled lands may limit the areas where those flights can occur. As noted previously, the number of VFR aircraft flights conducted throughout this region is unknown, although the airport operations data shown in Appendix D, *Airspace Management*, Table D–5, provide some measure of the flights conducted in this area. The Richardson and Alaska Highways commonly used by VFR air traffic through this region are east of the existing and proposed airspace associated with both alternatives.

Those VFR pilots having a need to operate within the areas encompassed by the existing and proposed airspace can obtain information on their scheduled and real-time use via those available sources discussed in Section 3.1.1.1.

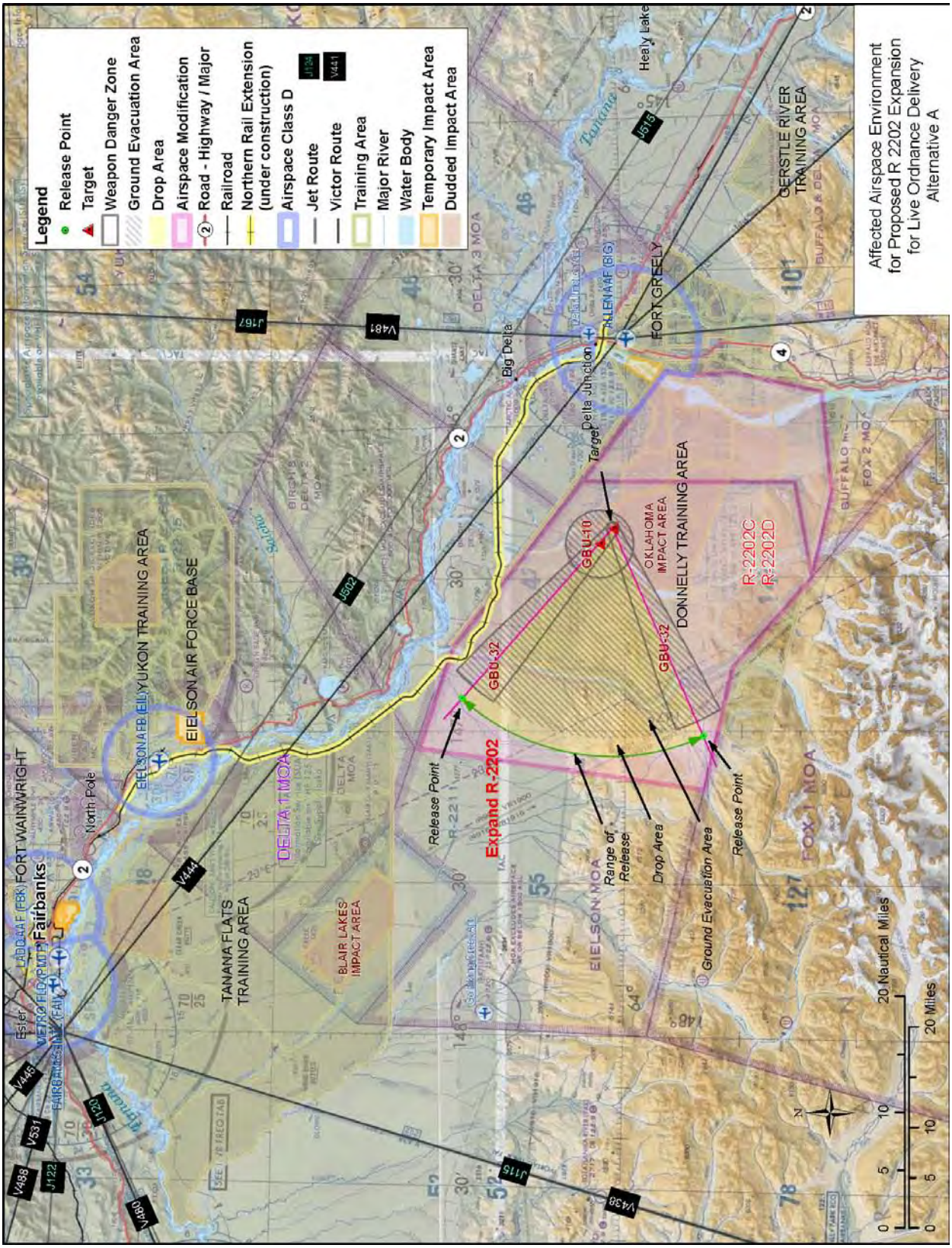


Figure 3-16. Affected Airspace Environment for Proposed R-2202 Expansion for Live Ordnance Delivery – Alternative A

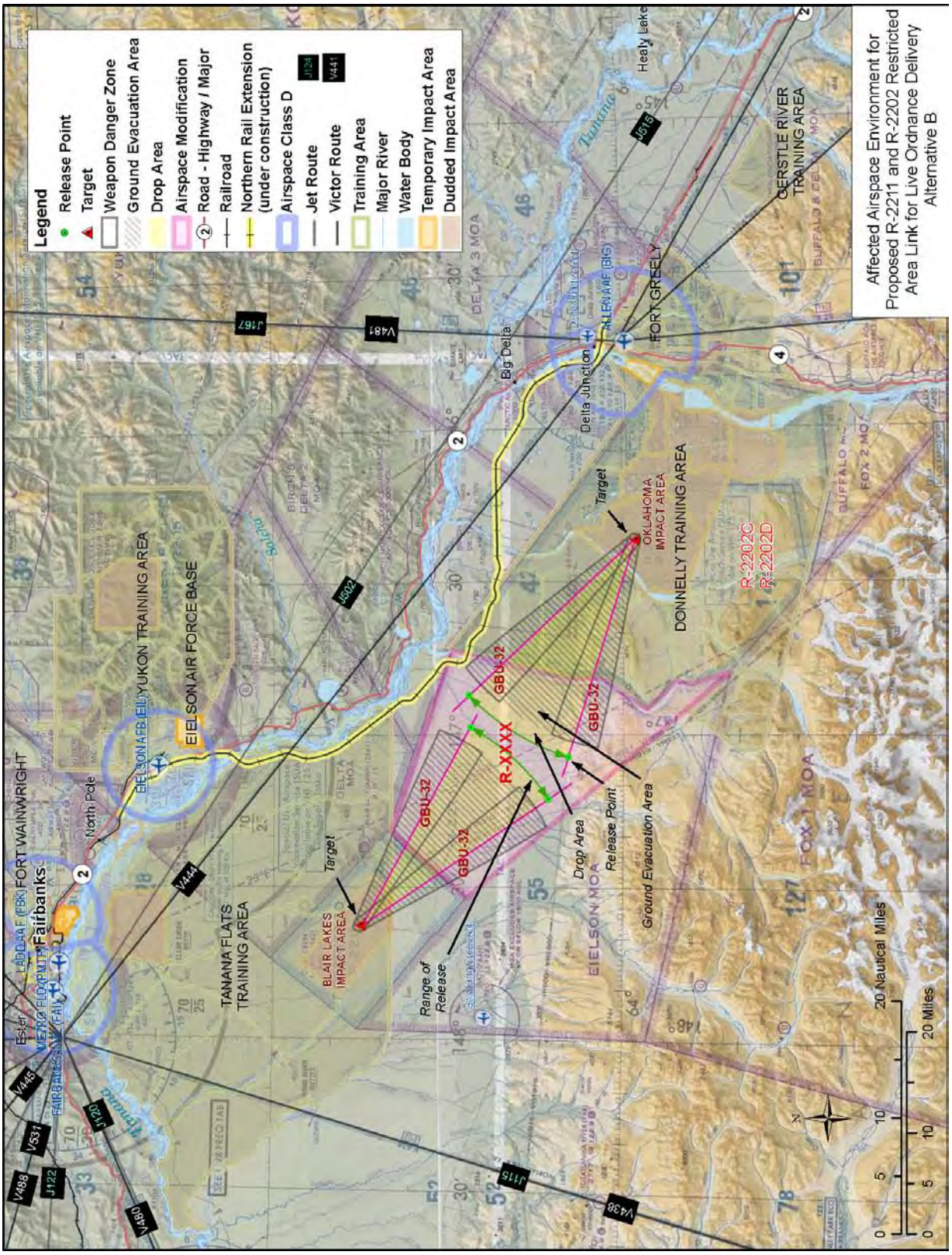


Figure 3-17. Affected Airspace Environment for Proposed Restricted Area Linking R-2211 and R-2202 for Live and Inert Ordnance Delivery – Alternative B

Public Airports and Charted Private Airfields

Appendix D, *Airspace Management*, Table D–5, describes and depicts those public airports and charted private airfields within the ROI. The public airports within the vicinity of the Alternative A and B proposed airspace include Fairbanks International, Gold King Creek, Black Rapids, and Delta Junction. The charted private airfields along the Alaska Highway closest to this airspace include Scotts, Arctic Angel, Delta Daves, Rocking T, and All West. There are minimal effects on these airfields in the existing restricted airspace environment.

3.2.1.2 Impact Assessment Methodology

The methodology described in Section 3.1.1.2 was used to assess impacts of this proposed action and alternatives within this specific affected environment.

3.2.1.3 Environmental Consequences

3.2.1.3.1 Alternative A

The potential consequences of this proposal are as discussed below.

MILITARY AIRSPACE USE

Proposed Restricted Area Use

Use of R-2202B/C/D is not projected to increase significantly above current representative levels under this proposal since live ordnance deliveries would be conducted by those fighter aircraft types currently conducting other ordnance deliveries on this range. The proposed expansion of this restricted area would only be activated as needed to support the live deliveries with the greater protective airspace and ground safety footprints required for these deliveries. The scheduled and real-time status of this restricted airspace would be available on the SUAIS and other previously discussed information sources.

CIVIL AVIATION AIRSPACE USE

The extent to which this Alternative may impact civil aviation airspace use in the region of the expanded R-2202 would be minimal as described below.

Federal Airways

Two Federal airways (V444 and V481) transit adjacent to the R-2202 complex with both being sufficiently distant and separated from this proposed airspace to be impacted. The FAA has noted that this active airspace may impact those arrival/departure gates used by Anchorage ARTCC and Fairbanks TRACON to route and transfer control of air traffic to/from the Fairbanks and Anchorage airports. This would be examined during the aeronautical study of this proposal to ensure airway traffic and Fairbanks arriving/departing aircraft are not impacted.

Jet/RNAV Routes

Two jet routes (J167 and J502/515) are located adjacent to the R-2202 complex but are sufficiently distant from this airspace to not be impacted by this proposed expansion. However, as noted above, there may be some impacts on those arrival/departure points used by ATC to transfer route traffic to/from Fairbanks and Anchorage airports. This potential impact would be examined as part of the aeronautical study of this proposal.

VFR Air Traffic

The Birch, Richardson Highway, and Alaska Highway VFR flyways provide a means for VFR aircraft to transit to the north and east of R-2202 while remaining clear of military aircraft. The area proposed for the R-2202 expansion and its periodic use for high altitude live ordnance deliveries would have no direct impacts on these flyways. For those VFR flights having a need to operate within the Eielson MOA west of R-2202 may be impacted to a minimal extent when this airspace is activated. There should not be any increased interactions with military aircraft in this region than currently experienced since there would be no increase in military flights. As noted previously, those pilots having a need to operate within this area would be able to obtain the scheduled and real-time status of its use via the SUAIS and other available advisory services for planning their flights through this airspace. This may result in a flight delay or diversion around this active airspace.

Public Airports and Private Airfields

No public airports or private airfields are located within the immediate area of the proposed R-2202 expansion and others are sufficiently distant from this proposal so as not to be directly impacted. Any VFR pilots operating from those airfields and within the affected area may have to either delay their flight plans or alter their routes, as necessary, to avoid this restricted airspace when active.

3.2.1.3.2 Alternative B

Alternative B would link Restricted Areas R-2202 and R-2211 with restricted airspace for the high altitude live ordnance deliveries which may have adverse effects on other uses of this airspace when active as discussed below.

MILITARY AIRSPACE USE

Proposed Restricted Area Use

This alternative would provide greater latitude for ordnance deliveries in both of the linked restricted areas. Projected use of either restricted area would not increase above current representative levels by the aircraft using their respective target impact areas. When activated, this airspace would restrict other uses of the Eielson MOA not associated with the live ordnance delivery missions. Therefore, the planned use of this airspace would require coordination among the other using agencies to schedule and prioritize their respective mission requirements for this SUA.

CIVIL AVIATION AIRSPACE USE

Restricted airspace linking the existing restricted areas would not permit civil aviation use of this airspace when activated for live ordnance deliveries, as discussed below.

Federal Airways

No Federal airways transit through the proposed restricted airspace and the there would be minimal or no impacts on the V444 and V481 airways. While this alternative would not affect the airway traffic, as noted for Alternative A, its active use may impact use of the Fairbanks Airport's arrival and departure gates used for routing and transferring ATC control of airport arrivals/departures. The extent of this impact and mitigation measures to be considered would be examined during the aeronautical study if this option is selected as the preferred alternative.

Jet/RNAV Routes

Three jet routes (J115, J167 and J502-515) transit adjacent to R-2211 and R-2202 with none being sufficiently close to this proposed airspace to be impacted. However, as noted previously, this proposal could impact that airspace and those points used by ATC to transfer control of airport arriving and departing air traffic between the Anchorage ARTCC and Fairbanks TRACON. This impact would be examined further as part of the aeronautical study if this proposal is selected as a preferred alternative.

VFR Air Traffic

Current uses of the Birch, Richardson Highway, and Alaska Highway VFR flyways would not be impacted by this proposal. However, when this restricted area link is active, it would prohibit use of the existing Eielson MOA airspace that may be currently used by those VFR flights having a need to transit through that airspace. This airspace restriction may have significant impacts on those VFR flights that would experience long delays or diversions when this restricted area is active. The SUAIS or other advisory services would need to be used during preflight planning to obtain the scheduled and real-time status of this restricted airspace.

Public Airports and Private Airfields

No public airports or private airfields are located within the area proposed for the R-2202 expansion and most others are sufficiently distant from this expansion so as not to be impacted by this proposal. One public airfield, Gold King Creek, is located within about 10–15 NM of the southern boundary of this proposed restricted area and any operations from this airfield having a need to travel east/northeast of R-2211 may be impacted by the active restricted airspace. As noted above, any VFR flights operating from this airfield through this area may have to either delay their flights or alter their routes, as necessary, to avoid this restricted airspace when active.

3.2.1.3.3 No Action Alternative

The No Action Alternative would not result in any change from existing conditions to the military and civil uses of this airspace environment.

3.2.1.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse impacts on civil aviation. The Air Force will continue to implement existing procedures and use of the SUAIS to inform pilots about training periods and closures. The Air Force will also incorporate any measures or adjustments to the proposals pending the FAA's final review and approval.

3.2.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.2.

3.2.2.1 Affected Environment

Implementation of RLOD proposed actions would potentially affect noise levels at and near the Oklahoma and Blair Lakes Impact Areas. The Oklahoma and Blair Lakes Impact Areas are currently used for training with a wide variety of munitions (Table 3-26). Time-averaged noise levels exceeding 62 dB CDNL generated by munitions usage in these two impact areas do not extend beyond range boundaries (Figure 3-18). Peak noise levels associated with a moderate likelihood of complaints (exceeding 115 dB PK15[met]) do occur in certain off-range locations to the north of DTA but these

noise levels are generated at DTA impact areas other than the Oklahoma Impact Area. Noise levels with a high likelihood of triggering noise complaints (exceeding 130 dB PK15[met]) do not occur at any off-range location (Figure 3-19). Military operations in this area include aircraft training as well as ground unit training. When military training is not under way, the sound environment is dominated by natural sounds.

Table 3-26. Air-to-Ground Large Munitions Used at Donnelly Training Area and Blair Lakes Impact Area Under Baseline Conditions

Munitions Type	Donnelly Training Area/R-2202	Blair Lakes Impact Area/ R-2211
20 mm (inert)	3,388	0
20 mm (high-explosive incendiary)	9,788	0
25 mm (high-explosive incendiary)	4,788	0
30 mm (high-explosive incendiary)	22,063	0
30 mm (inert)	0	25,090
Inert bombs	1,184	451
250-pound class bombs (live) (e.g., Small Diameter Bomb)	200	0
500-pound class bombs (live) (e.g., GBU-12, GBU-38, MK-82)	357	0
1,000 pound class bombs (live) (e.g., GBU-32, MK-83)	195	0
2,000-pound class bombs (live) (e.g., GBU-31, MK-84)	65	0
2.75-inch rocket (high-explosive)	244	0
2.75-inch rocket (inert)	99	248
AGM-65 missile (high-explosive)	60	0
AGM-65 missile (inert)	26	0
.50 caliber	0	26,050
7.62 mm	0	176,800

Key: AGM=air-to-ground missile; GBU=Guided Bomb Unit; MK=mark; mm=millimeter.
Source: Air Force 2011-1, CHPPM 2011.

3.2.2.2 Impact Assessment Methodology

Noise levels associated with proposed live-ordnance delivery were assessed using the program BNOISE2 (Blast Noise Impact Assessment for Artillery and Explosives) version 1.2.2003-07-03, which was developed by the Army (Hottman et al. 1986). The model was run using digital data on terrain elevation to account for effects of topography on the spreading of noise. The primary metric used to assess noise impacts associated with firing of large weapons is CDNL, which relates to public annoyance in the manner described in Table 3-7. Single-event unweighted peak noise level exceeded by 15 percent of events, denoted as "PK 15(met)," were also assessed. Noise impacts would be considered significant if noise levels exceeding 130 dB PK 15(met) or 62 dB CDNL were to impact areas not owned by the DoD and that were not already affected by these noise levels under baseline conditions.

3.2.2.3 Environmental Consequences

3.2.2.3.1 Alternative A

Under Alternative A, the western boundary of R-2202 would shift to the west accommodate weapon danger zones (WDZs) associated with realistic delivery profiles. The number of sortie-operations conducted in R-2202 would not be expected to change, and aircraft noise levels would remain

approximately the same as under baseline conditions. Supersonic weapons delivery would be conducted by F-22 aircraft at altitudes of 40,000 to 50,000 feet MSL (see Table 2-4). Supersonic flying is currently conducted in R-2202 and would also be permitted at altitudes above 30,000 MSL in the expanded R-2202. Sonic booms generated at these altitudes generally do not reach the ground due to atmospheric refraction and when they do intersect the ground are attenuated by the long distances travelled. The number of live Guided Bomb Unit-32 (GBU-32) (1,000-pound-class-bombs) dropped per year would be expected to increase from 70 to 200 while the number of Small Diameter Bombs (SDBs) dropped annually would remain the same as under baseline conditions. Time-averaged noise level (CDNL) contours calculated based on the proposed number of munitions dropped annually are shown in Figure 3-18. Noise levels exceeding 62 dB CDNL would not extend beyond the boundaries of DoD-owned land. Baseline PK 15(met), as shown in Figure 3-19, would not change, as only the number, not the type, of munitions dropped would change. The incremental increase in the frequency of live GBU-32 detonations could be noticed by persons living off-range and could potentially result in increased annoyance. Detonation of 1,000-pound-class munitions, such as the GBU-32, at the targets in the Oklahoma Impact Area result in approximately 114 dB PK 15(met) at the nearest range boundary, which is about 10 statute miles away. Several types of high-explosive munitions, including GBU-32, are used in the Oklahoma Impact Area under baseline conditions. The proposed increase from 70 to 200 GBU-32 munitions deployed per year under the RLOD proposal may be noticed and could potentially result in increased annoyance. However, the proposed incremental increase in munitions use at the geographically remote Oklahoma Impact Area would not result in noise impacts that would exceed significance thresholds established for this action.

3.2.2.3.2 Alternative B

Alternative B contains all of the elements of Alternative A but would also include establishing a new restricted area to allow realistic munitions drops in both the Oklahoma and Blair Lakes Impact Areas. Only inert bombs would be dropped at Blair Lakes Impact Area under RLOD. Inert munitions generate noise on impact that is noticeable only in the immediate vicinity of the impact location. Noise impacts in the Blair Lakes Impact Area under Alternative B would be minimal, and munitions usage and noise impacts in the Oklahoma Impact Area would be the same as under Alternative A. Impacts do not exceed the significance thresholds established for this action.

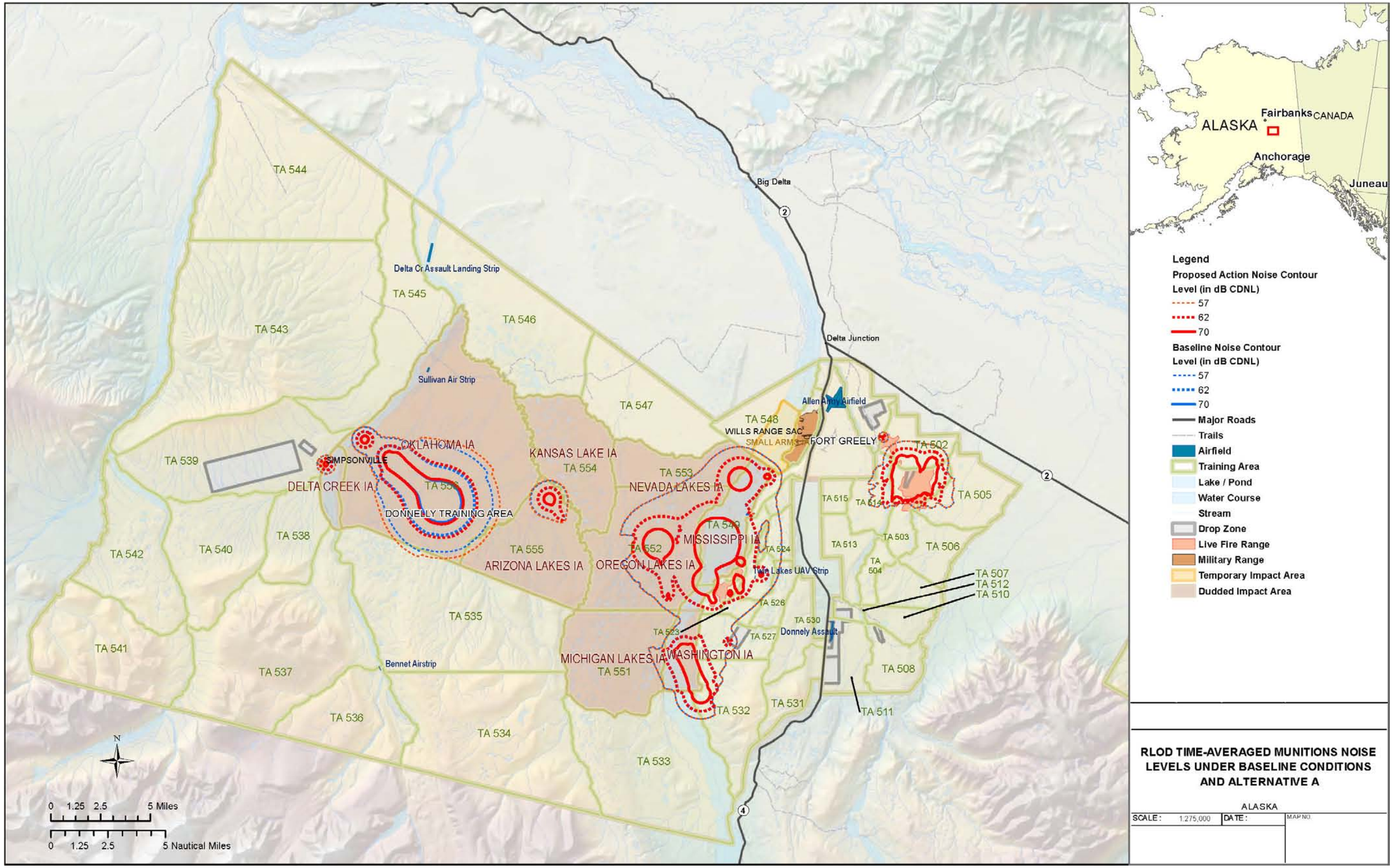


Figure 3-18. Realistic Live Ordnance Delivery Time-Averaged Munitions Under Baseline Conditions and Alternative A

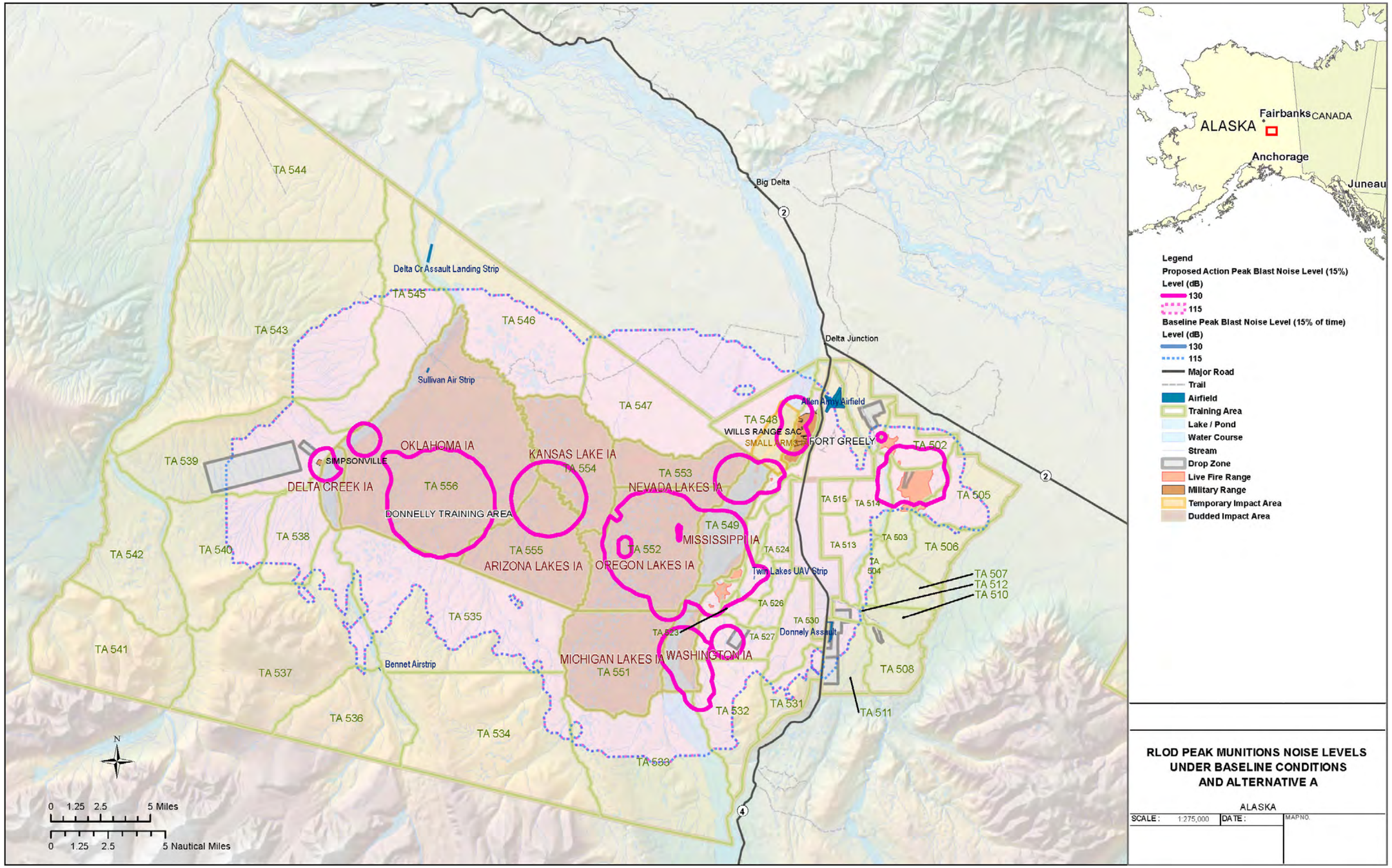


Figure 3-19. Realistic Live Ordnance Delivery Peak Munitions Noise Levels Under Baseline Conditions and Alternative A

3.2.2.3.3 No Action Alternative

Under the No Action Alternative, restricted area airspace extents would remain as they are currently, and no changes to munitions usage would occur. There would be no change from existing conditions for noise under the No Action Alternative.

3.2.2.4 Mitigations

No mitigations are identified for this resource.

3.2.3 Safety

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.3.

3.2.3.1 Affected Environment

FLIGHT SAFETY

The types of flight safety risks and conditions that would exist within the restricted airspace proposed for the two live-ordnance delivery alternatives and those measures implemented to help prevent mishaps, near misses, midair collisions, and bird/wildlife-aircraft strikes are generally the same as those present in the other SUA in this region that are addressed in Section 3.1.3.1.

GROUND SAFETY

The proposed action is to establish a realistic air and ground training environment that would accommodate live and inert ordnance delivery. The following issues related to the affected environment for ground safety are discussed: Range Safety and Control, Unexploded Ordnance and Munitions Safety, Public Access Control, and Fires and Emergency Response.

Range Safety and Control – Range safety and control is the responsibility of Army range management personnel. As previously stated, all training activities must be coordinated in advance with Army range scheduling and safety personnel. During training activities, the using unit will clear the affected training area (and overlying airspace) to ensure that unauthorized personnel, vehicles, or aircraft are not in the affected area during training. If any unauthorized personnel, vehicles, or aircraft are detected, the training activity is temporarily halted until the area is cleared and secured.

In order to define area to be evacuated during live-fire training activities, range safety personnel establish appropriate WDZs. These WDZs are established in accordance with AR 385-63, *Range Safety* (Army 2003), for munitions and laser systems.

The methodology for establishing WDZs combines munitions system science, computer modeling and BMPs. WDZs are developed considering several factors: weapon maximum range capability, blast fragmentation distances, blast overpressure levels, and flight termination system effects (if a weapon is so equipped). WDZs for ballistic weapons (e.g., gravity bombs, rockets, bullets) include safety zones for initial impacts as well as ricochets. These safety zones may be derived by using either empirical data or computer models to simulate a large sample of impact points, thereby allowing statistical methods to define the weapon safety footprint.

In addition to impacts from standard munitions, laser systems and RF defense threat emitters employed on the range may also pose hazards.

The primary hazard associated with laser use is eye damage. This damage can vary from small burns, undetectable by the injured person, to severe impairment. Laser target areas are typically used for laser ground-to-ground and air-to-ground firing. The Stuart Creek Impact Area in R-2205, as well as R-2202 and R-2211 may be used for routine laser training. Laser-guided munitions, both air and ground ammunition and platforms, do not have an internal active laser source; rather, the munition has a sensor that detects a target that has been "painted" with light from a laser target designation device. The designation device is usually operated by a third party; it is typically not located on the munition or on the weapons delivery platform. Range procedures and safety precautions associated laser training are described in USARAK 350-2, *Range Safety* (USARAK 2011). These may include the use of WDZs and personal protection equipment, such as safety glasses.

Hazards of RF exposure are primarily associated with heating of tissue (often referred to as "thermal" effects). High levels of RF radiation can be harmful due to the ability of RF energy to heat biological tissue rapidly. Tissue damage in humans could occur during exposure to high RF levels because of the body's inability to cope with or dissipate the excessive heat that could be generated. The extent of this heating would depend on several factors including radiation frequency; size, shape, and orientation of the exposed object; duration of exposure; environmental conditions; and efficiency of heat dissipation. At relatively low levels of exposure to RF radiation, i.e., field intensities lower than those that would produce significant and measurable heating, the evidence for production of harmful biological effects is ambiguous and unproven (Federal Communications Commission [FCC], 1999).

Procedures associated with RF training would include safety and awareness training and the implementation of personnel safety exclusion zones around transmitter sites. Additionally, areas where the potential exists for RF exposures to exceed exposure limits would also be clearly marked with appropriate signs. Safety procedures associated with RF training are contained in Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Standard 48-9, *Electro-magnetic Frequency Radiation Occupational Health Program*.

Unexploded Ordnance and Munitions Safety – Ammunition items and explosives that have been used (i.e., armed, fired, dropped, or launched) but fail to operate or detonate as intended (i.e., malfunction) are referred to as "unexploded ordnance" (UXO). These UXOs pose a safety hazard to military personnel and the general public. UXO is potentially present on all past and present (active) impact areas. As a result, access to these areas is strictly controlled. Note: These UXO buffer zones do not necessarily resemble the operational WDZs. Impact areas maintain posted warning signs of the potential risks due to UXO.

Management of UXO plays a crucial role in creating and maintaining a safe training environment, and that process inevitably involves the prompt removal of all ordnance residue from active training areas. As documented in USARAK 350-2, portions of the TFTA and DTA impact areas authorized for training are surface-cleared of UXO or duds (i.e., nonfunctioning ammunition) before access is permitted (USARAK 2011). Clearing typically involves rendering the munition safe on the range or removing it for proper disposal. Cleared areas that become contaminated during live-fire exercises/training are cleared when the exercise is completed. Any ammunition higher than .50 caliber found either along the boundary of or outside an impact area is reported to range safety personnel for evaluation by the 716th Explosive Ordnance Detachment. The R-2205 impact area is periodically scheduled for retargeting and UXO clearance. In addition, upon completion of live-fire training exercises throughout the training area, prepared positions, barriers, and training apparatus are removed (USARAK 2011).

Public Access Control – In many of the training areas there is no fencing to delineate installation boundaries; therefore, there is potential for unauthorized public access onto military property. All recreation activities must be conducted in accordance with applicable rules and regulations (USARAK

2006-2). All personnel requesting recreational access must obtain a Recreation Access Permit, which provides conditional authorization to enter Army training lands.

Prior to entering TFTA or DTA lands, Recreation Access Permit holders must log-in to the Army Recreational Tracking System (USARTRAK) to ascertain which training areas are available for recreational use (USARAK 2006-2). USARTRAK also employs an automated check-in phone system, which allows the public to access information regarding daily closures on the range. Additionally, areas prohibited to the public are marked by placard, blockade, verbal warning, red flag, or other means of communication.

While procedures are in place to allow authorized public access to portions of TFTA and DTA lands, unauthorized access (i.e., illegal entry/trespass) does occur. Crossing the installation boundary or internal boundary of an off-limits area without approval constitutes trespass. Because the training area boundary is not fenced, some trespass is accidental. Unauthorized individuals/trespassers risk bodily injury or death, property damage, or contamination from training or nontraining events, particularly from UXO and ordnance fragments.

Fire and Emergency Response – Munition items used during training pose a fire risk; incendiary devices and lightning are the two major causes of fires within the training areas (USARAK 2007-2). Various practices are in place within the training areas to minimize the potential for these fires. Existing procedures include the use and monitoring of the fire weather index. The fire weather index is based on the Canadian Forest Fire Danger Rating System. Four fire weather index rating categories apply: extreme, high, moderate and low. Monitoring of the fire weather index alerts range safety personnel to conditions where limitation of certain types of munitions are applicable (i.e., the use of pyrotechnics, smoke pots, and grenades may be restricted when fire danger level is high). The Integrated Wildland Fire Management Plan (created by then-named U.S. Army Garrison-Alaska [USAGAK], but which is now the U.S. Army Garrison Fort Wainwright, Alaska [USAG-FWA]) and AR 350-2 provide details on the restricted Air Force and Army activities within each fire weather index rating category.

Weather stations are located at Bolio Lake and Donnelly DZ in DTA and Blair Lakes in the TFTA. In addition to monitoring the fire weather index and modifying planned training activities accordingly, other prevention measures are used, such as establishing nontraining buffers within 0.5 miles of training areas adjacent to non-military land to protect the surrounding areas. The nontraining buffers would be established on military lands. Prescribed burns and mechanical thinning are routinely planned for the training areas.

The Alaska Fire Service is primarily responsible for fire suppression in TFTA and DTA (USARAK 2007-2). However, wildfire suppression is conducted by the BLM, the Alaska Fire Service, and/or the military fire department. Suppression operations are dependent on the wildland fire management category status of the respective area. Fire planning within the training areas is guided by practices of the Integrated Wildland Fire Management Plan and management practices for each training area by Alaska Wildland Fire Management Plan priorities: critical, full, modified, and limited. TFTA is classified as limited for wildland fire management because relatively few resources are at risk from fire (USARAK 2007-2). Both natural and human-caused fires occur in TFTA.

Most of DTA-West is classified for limited fire management; DTA-East, however, is classified for full fire management due to the close proximity of Delta Junction and other communities and the cantonment area (USARAK 2007-2).

3.2.3.2 Impact Assessment Methodology

FLIGHT SAFETY

The impact assessment methodology discussed in Section 3.1.3.2 is applicable for the assessment of any potential flight safety impacts of this proposal.

GROUND SAFETY

Impacts on ground safety were assessed by evaluating the relative scope and location of proposed activities associated with each of the project alternatives (as described in Chapter 2.0) and their potential to alter the existing conditions. No new studies or modeling were conducted in support of these analyses. Instead, the analyses were based on assessments of existing information and key findings from other representative ground safety studies.

The impact analyses considered the potential impacts on ground safety of each of the alternatives within the context of existing and proposed standard operating procedures (SOPs) for avoidance of accidents. An activity that resulted in the exceedance of one or more baseline criteria was deemed to have a significant impact. For a significant impact, a determination was then made as to whether the impact could be mitigated—i.e., reduced to a less-than-significant level.

Impacts on ground safety are evaluated for the following:

- Damage, injury, or death from ordnance use during training (ordnance releases or UXO) or from the employment of training equipment such as lasers or RF transmitters.
- Impacts on the safety of the public from unauthorized access or on surrounding communities from training-related wildfires.

3.2.3.3 Environmental Consequences

3.2.3.3.1 Alternative A

FLIGHT SAFETY

The overall potential for any flight safety risks under this alternative would be low to moderate. Aircraft sortie-operations and the overall number of flying hours within the existing and proposed airspace would not increase significantly above current representative levels, therefore, the potential risk for increased aircraft mishaps, bird-aircraft strikes or near misses/midair collisions should also not increase. The area covered by the R-2202 western extension has little or no human population; therefore, the effects of any aircraft mishap in this area, while still serious, would not put anyone inhabiting this region at great risk. Activation of the expanded restricted airspace and the limits it would place on nonparticipating aircraft, as discussed in Section 3.2.1, would reduce the potential for near misses/midair collisions within this active airspace. The higher-altitude flights that would normally be flown for live-ordnance deliveries within the expanded airspace would be above those altitudes at which bird activity and aircraft strikes would normally occur. Therefore, the potential for bird/wildlife-aircraft strikes would be the same as it is at those lower altitudes currently flown within the existing airspace. The flight safety programs and emergency response capabilities currently in place for preventing mishaps, near misses/midair collisions, and bird strikes would be SOPs for this proposed airspace.

GROUND SAFETY

Range Safety and Control – Existing procedures for range safety and control would continue to be implemented for proposed training activities in the Oklahoma Impact Area, as well as within land areas

underlying the proposed expanded R-2202 airspace. These procedures would include coordinating all training activities with range safety personnel, as well as closing range gates and trails and surveying the target areas prior to training to ensure that nonauthorized vehicles/personnel are not present. Current WDZs would be expanded to include land areas underlying the expanded R-2202 as needed. The specific geographic boundaries associated with WDZs would vary depending on the ordnance utilized. These would be developed using procedures previously discussed. Figure 3-20 presents WDZs associated with use of a GBU-32 or a GBU-10. For areas outside of the military land boundary, the Air Force would develop a Range Safety and Access Plan following the ROD for managing and ensuring public safety on non-military land. The plan would include details about timing and duration of limited access, public notifications, and roles and responsibilities for implementation of the plan.

In addition to impacts from standard munitions, laser systems and RF defense threat emitters employed on the range may also pose hazards. Range procedures and safety precautions associated laser training are described in USARAK 350-2, *Range Safety* (USARAK 2011), and may include the use of surface danger zones (SDZs) and personal protective equipment, such as safety glasses. Procedures associated with RF training would include safety and awareness training and the implementation of personnel safety exclusion zones around transmitter sites. Additionally, areas where the potential exists for RF exposures to exceed exposure limits would also be clearly marked with appropriate signs.

Unexploded Ordnance and Munitions Safety – As required, training areas would be cleared of UXO or munitions debris to reduce related hazards and provide a safe and constructive training environment for all training units. Any cleared areas that become contaminated during live-fire exercises/training would again be cleared when the exercise is completed. In addition, upon completion of live-fire training exercises, prepared positions, barriers, and ammunition residue would be removed.

Public Access Control – Current procedures designed to limit unauthorized public access would continue. These procedures include marking prohibited areas with placards, blockades, verbal warnings, or red flags as appropriate. Additionally, the following measures would be implemented to minimize unauthorized access:

- At least 2 weeks prior to a major training exercise, post a public notice throughout the Delta Junction community and have it published in all local media sources, such as the Fairbanks Daily News-Miner. The notice would indicate which range would be used, as well as the duration of the exercise/range closure.
- Establish new signage and increase law enforcement monitoring for the new temporary target areas. This would help prevent illegal access that may pose a hazard to human health and safety.
- Make available to the public range bulletins that include range maps with impact area borders, discussion of area closures, and information on the dangers of dudded ammunition and other UXO.
- Continue to implement the USARTRAK automated check-in phone system. This would provide information regarding daily closures and should greatly simplify the public access process.

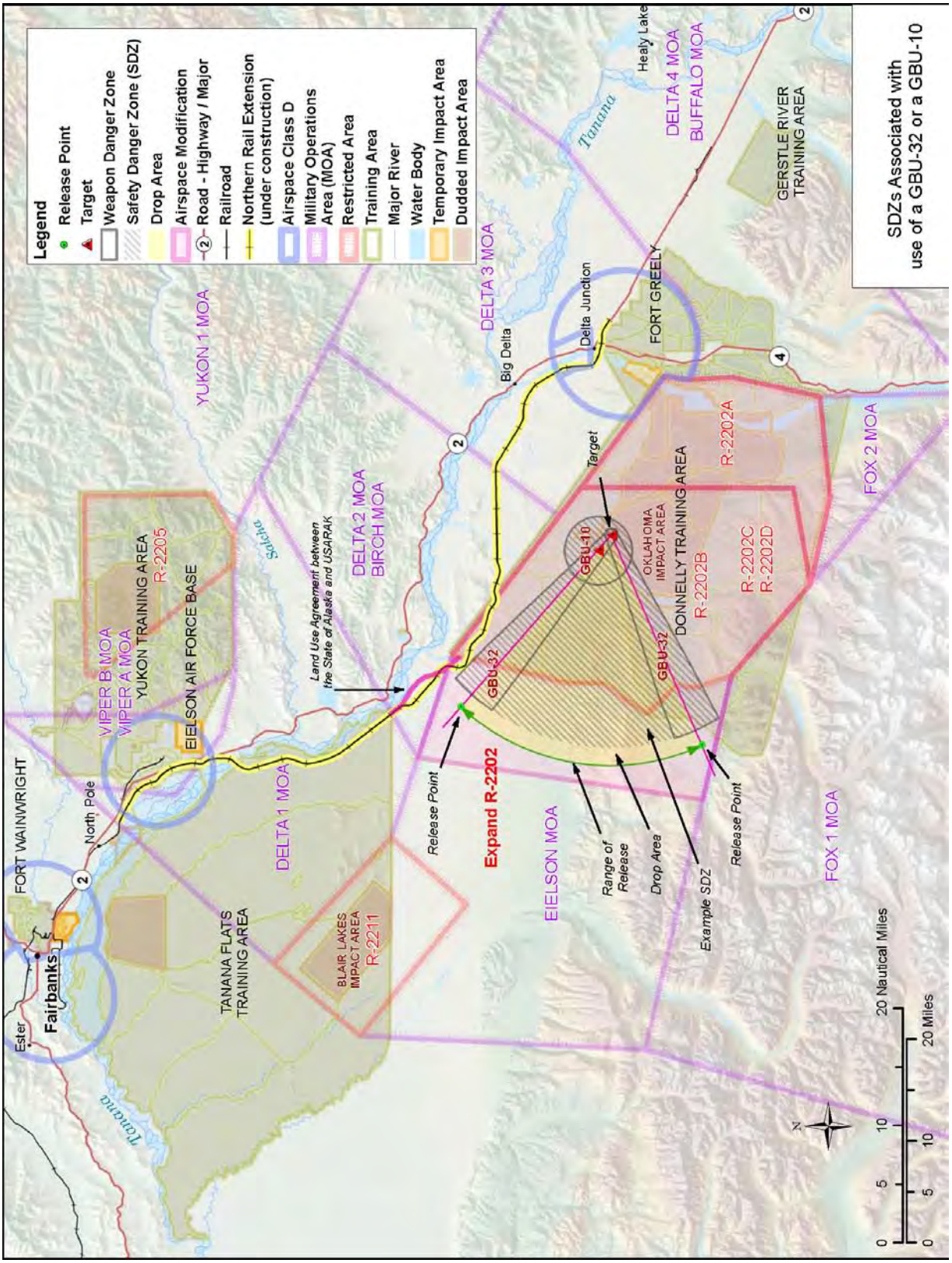


Figure 3-20. Surface Danger Zones Associated with Use of a GBU-32 or a GBU-10

Fire and Emergency Response – The Integrated Wildland Fire Management Plan would be updated to address training activities under Alternative A. All fire management and response practices currently employed would continue. These include monitoring the fire weather index and modifying planned training activities accordingly, establishing nontraining buffers within 0.5 miles of training areas to protect the surrounding areas, and conducting prescribed burns and mechanical thinning in training areas. Additionally, the following standard measures would be implemented:

- Continue use of firefighting materials and equipment by all units on ranges or training areas during high and extreme fire risk index rating periods. These firefighting tools would include but are not limited to pulaskis, beaters, and portable water extinguishers.
- Limit the use of certain ammunition and pyrotechnics during periods of elevated fire risk indices.

Implementation of the above listed measures would minimize the potential for significant adverse impacts on the military and the general public.

3.2.3.3.2 Alternative B

FLIGHT SAFETY

The overall potential for any flight safety risks under this alternative would be low to moderate. The restricted area proposed under this alternative would link R-2211 and R-2202 for conducting the types of live ordnance delivery missions described for Alternative A. The probability of any flight safety risks within this airspace, when active, would be relatively low, as discussed for the Alternative A proposal. Aircraft sortie-operations and the overall number of flying hours within the existing and proposed airspace would not increase significantly above current representative levels, therefore, the potential risk for increased aircraft mishaps should also not increase. During the time periods that this airspace would be used for ordnance deliveries, nonparticipating aircraft would not be permitted to enter this restricted area; therefore, there should be no risk of any near misses or mid-air collisions with other aircraft while these operations are in progress. Most of the delivery profiles would be flown at higher altitudes that would be well above those altitudes where most bird activity normally exists; therefore, the potential for bird/wildlife-aircraft strikes during these operations should be negligible. As stated previously, flight safety programs and emergency response capabilities already exist to help prevent and, if necessary, respond to any incidents/accidents that may occur under any circumstances.

GROUND SAFETY

Range Safety and Control – Existing procedures for range safety and control, as described under Alternative A, would be implemented for proposed activities in the existing targets at the Oklahoma and Blair Lakes Impact Areas, as well as within land areas underlying the proposed expanded R-2211 and R-2202 airspaces. There are no aspects of Alternative B associated with range safety and control not previously discussed under Alternative A. Consequently, significant impacts are not expected to occur.

Unexploded Ordnance and Munitions Safety – Existing procedures for UXO and munitions safety, as described under Alternative A, would be implemented for the proposed activities. There are no aspects of Alternative B associated with UXO and munitions safety not previously discussed under Alternative A. Consequently, significant impacts are not expected to occur.

Public Access Control – Current and proposed procedures designed to limit unauthorized public access would continue. There are no aspects of Alternative B associated with public access control not previously discussed under Alternative A. Consequently, significant impacts are not expected to occur.

Fire and Emergency Response – The Integrated Wildland Fire Management Plan would be updated to address training activities and new impact areas proposed under Alternative B, while all fire management and response practices currently employed or proposed under Alternative A would be implemented. There are no aspects of Alternative B associated with fire and emergency response not previously discussed under Alternative A. Consequently, significant impacts are not expected to occur.

3.2.3.3.3 No Action Alternative

FLIGHT SAFETY

The No Action Alternative would involve maintaining the current use of this airspace as well as those plans, procedures, and processes in place for minimizing flight safety risks within the existing airspace.

GROUND SAFETY

No change in ground operations would occur under the No Action Alternative; therefore, there would be no additional changes to existing conditions on public health and safety.

3.2.3.4 Mitigations

FLIGHT SAFETY

Flight safety mitigation measures within the affected airspace are the same as those discussed in Sections 3.1.1.4, Airspace Management and Use, and 3.1.3.4, Flight Safety, that address the measures and flight safety plans, programs, and procedures that have been implemented by the Air Force to address flight safety risks during all flight activities.

No mitigations are identified for flight safety.

GROUND SAFETY

Ground safety mitigation measures associated with Range Safety and Control, Unexploded Ordnance and Munitions Safety, Public Access Control, and Fire and Emergency Response would be the same as those discussed in Section 3.2.3.3.1. Existing plans and procedures associated with all aspects of ground safety would continue to be implemented.

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The following mitigation is proposed to reduce these impacts.

- **ADNR Compliance Items.** The Air Force will provide support to ADNR throughout the Special Use Designation process. The Air Force will develop a Concept of Operations (CONOPS) and an Access and Safety Plan for the exclusive use of State land to support RLOD. The Special Use Designation process will identify areas and dates of closure and will have to indicate which activities are affected. The Access Plan will provide the maximum public use to the ground evacuation areas, closing such areas for the minimum period of time necessary to conduct such operations. The Access Plan (updated annually) will identify areas and dates of closure and will indicate which activities are affected. It will describe roles and responsibilities for securing the area, ensuring it is evacuated, publishing and posting closure notices, signs, and other media to advertise and alert public of the hazards, times, and locations.

3.2.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.4.

3.2.4.1 Affected Environment

The proposed area that will be used to accommodate RLOD activities is within Valdez-Cordova Census Area, Alaska, which is in attainment of all NAAQS. Table B-12 in Appendix B, Section B.4.3 provides a summary of the estimated 2008 annual emissions for Valdez-Cordova Census Area.

3.2.4.2 Impact Assessment Methodology

The project air quality analysis evaluated the changes in operational emissions that would occur from the proposed RLOD. There are no proposed construction activities related to the RLOD action. All aircraft operations that would occur in the affected area under Alternative A will be above 3,000 feet. Thus, there are no ground-level impacts to air quality from aircraft operations.

Some limited ground-level maintenance and operational activities are needed to support the targets, including maintenance to the road and the use of small generators for lighting and communications. The emissions from these potential sources are not expected to differ significantly from existing conditions and thus were not analyzed.

The main change in emissions associated with the RLOD action would result from increased ordnance expenditures. Since the project region for this proposed action is in attainment of all NAAQS and EPA's General Conformity rule does not apply, the analysis used the PSD new major source threshold of 250 tons per year of each pollutant as an indicator of significance or nonsignificance of projected air quality impacts.

PSD CLASS I AREA IMPACT ANALYSIS

The PSD Class I area of concern for this proposed action is Denali National Park, which is approximately 60 miles from the closest proposed RLOD training areas. Potential impacts that would occur due to the RLOD activities are discussed below.

3.2.4.3 Environmental Consequences

3.2.4.3.1 Alternative A

CONSTRUCTION

There would be no significant construction activities associated with Alternative A for the RLOD action, as existing targets in the Oklahoma Impact Area would be used for the training activities under this alternative.

OPERATIONS

No changes will occur to aircraft operations in the affected area under Alternative A of this action. Thus, no analysis was performed on the air quality effects of aircraft operations in the region. The increase in ordnance usage would not be expected to cause a significant increase in maintenance activities. Therefore, the changes in emissions from maintenance activities would be considered negligible and were not analyzed.

Alternative A for the RLOD would result in an increase in GBU-32 expenditures in R-2202, which would result in an increase in criteria pollutant and HAP emissions. Table 3-27 presents estimates of the changes in annual operational criteria pollutant emissions that would result from the increase in ordnance expenditures associated with Alternative A. The data in Table 3-27 show that the increases in criteria pollutant emissions from Alternative A would not exceed their applicable PSD significance thresholds of

250 tons per year. Therefore, the criteria pollutant emissions that would be produced from the operations of the RLOD under Alternative A would result in less-than-significant air quality impacts. Given that the project region is in attainment of all NAAQS, a conformity determination is not necessary. Details of the munitions usage data and emission factors used to estimate emissions from Alternative A are included in Tables F–8 and F–9 of Appendix F, *Air Quality*, of this EIS. Table F–10 of Appendix F shows the change in emissions in the affected area from Alternative A.

Combustive emissions from the utilization of munitions in R-2202 would contain HAPs that could potentially impact public health. The low level of criteria pollutant emissions that would result from Alternative A provides a good indication that the HAP emissions are quite minimal. It is expected that significant impacts on public health would not occur from HAPs emitted in association with increased munitions utilization under Alternative A, as the intermittent nature of these sources and the isolated geographic regions of proposed operations would produce minimal impacts in a populated area.

Table 3-27. Change in Annual Operational Emissions Resulting from Implementation of Alternative A

Restricted Area	Change in Criteria Pollutant Emissions (tons per year)					
	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
R-2202	0.06	4.59	0.00	--	0.01	0.00
Significance thresholds	**250**	**250**	**250**	**250**	**250**	**250**

Key: CO=carbon monoxide; NO_x=nitrogen oxide; $PM_{2.5}$=particulate matter 2.5 microns or less in diameter; PM_{10}=particulate matter 10 microns or less in diameter; SO_2=sulfur dioxide; VOCs=volatile organic compounds.

IMPACTS ON DENALI NATIONAL PARK

As the increases in emissions resulting from RLOD Alternative A would be minimal, the impacts on air quality–related values at Denali National Park would be expected to be negligible.

3.2.4.3.2 Alternative B

CONSTRUCTION

Similar to Alternative A, there would be no significant construction activities associated with Alternative B of the RLOD action.

OPERATIONS

Similar to Alternative A, all aircraft operations that would occur in the affected area under Alternative B will be above 3,000 feet. Thus, there would be no change in air quality impacts due to aircraft operations under Alternative B, and there would be no ground-level air quality impacts. The increase in ordnance usage is not expected to cause a significant increase in maintenance activities. Therefore, the change in emissions from maintenance activities would be considered negligible and was not analyzed.

Alternative B would result in an increase in GBU-32 expenditures in R-2202 and R-2211, which would result in an increase in criteria pollutant and HAP emissions. Table 3-28 presents an estimate of the change in annual operational criteria pollutant emissions that would occur from the increase in ordnance expenditures associated with Alternative B for the RLOD action. The data in Table 3-28 show that the increases in criteria pollutant emissions from increased munitions expenditures at R-2202 and R-2211 would not exceed their applicable PSD significance thresholds of 250 tons per year. Therefore, the criteria pollutant emissions that would be produced from the operations of the RLOD under Alternative B would result in less-than-significant air quality impacts. Given that the project region is in attainment of all NAAQS, a conformity determination is not necessary. Details of the munitions usage data and

emission factors used to estimate emissions from Alternative B of the proposed action are included in Tables F–8 and F–9 of Appendix F, *Air Quality*, of this EIS. Table F–11 of Appendix F shows the change in emissions in the affected area from Alternative B.

HAP emissions from the proposed utilization of munitions in R-2202 and R-2211 under Alternative B would not be expected to result in significant impacts on public health, as the intermittent nature of these sources and the isolated geographic regions of proposed operations would produce minimal impacts in a populated area.

Table 3-28. Change in Annual Operational Emissions Resulting from Implementation of Alternative B

Restricted Area	Change in Criteria Pollutant Emissions (tons per year)					
	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
R-2202	0.03	2.30	0.00	--	0.00	0.00
R-2211	0.03	2.30	0.00	--	0.00	0.00
Total change in emissions	**0.06**	**4.59**	**0.00**	**0.00**	**0.01**	**0.00**
Significance thresholds	**250**	**250**	**250**	**250**	**250**	**250**

Key: CO=carbon monoxide; NO_x=nitrogen oxide; $PM_{2.5}$=particulate matter 2.5 microns or less in diameter; PM_{10}=particulate matter 10 microns or less in diameter; SO_2=sulfur dioxide; VOCs=volatile organic compounds.

IMPACTS ON DENALI NATIONAL PARK

As the increase in emissions resulting from RLOD Alternative B would be minimal, the impacts from proposed emissions under this alternative on air quality–related values at Denali National Park would be expected to be negligible.

3.2.4.3.3 No Action Alternative

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations at R-2202 and R-2211. Therefore, the No Action Alternative would not result in any new air quality changes from existing conditions.

3.2.4.4 Mitigations

Since the impacts from all alternatives are expected to be insignificant, no actions to reduce air quality impacts are being proposed.

3.2.5 Physical Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.5.

3.2.5.1 Affected Environment

Alternative A would use existing target arrays at the Oklahoma Impact Area, located in the north-central portion of DTA. Soils in the portion of DTA-West where the Oklahoma Impact Area is located are categorized as silt loam associations. Soils located in river floodplains consist of alternating layers of sand, silt loam, and gravelly sand; soils in boggy areas are very organic and wet and are close to the high water table. Upland soils are moist and loamy, as compared with mountainous soils, which are rocky, nonvegetated, and steep. Soils in lowlands generally have low wind and water erosion potential; soils at foothills and higher elevations have greater erosion potential (USARAK 2004-1). More detailed

characteristics of representative soils in DTA and the Oklahoma Impact Area are provided in Section 3.9.5.1.

Permafrost conditions within the Oklahoma Impact Area are irregular, particularly in areas where there are rapid elevation transitions. Permafrost tends to occur in DTA on north-facing slopes and valley bottoms, but is absent on south-facing slopes, in coarse-grained sediments, and in areas of groundwater movement (U.S. Army Corps of Engineers [USACE] 2001). A large portion of DTA contains discontinuous permafrost, but areas below existing and abandoned river channels, lakes, wetlands, and other low-lying areas are likely free of permafrost.

Alternative B would also use the existing targets in the Oklahoma Impact Area, in addition to the Blair Lakes Impact Area, which lies to the west of the Blair Lakes in the south-central portion of TFTA. Soil characteristics at Oklahoma Impact Area would be the same as those described for Alternative A. Soils in the Blair Lakes Impact Area are predominantly categorized as glaciofluvial outwash, and are composed of residual fine-grained soils deposited by past flooding events. Sediments range from sandy silts to clay materials. Coarser-grained sediments on the upper alluvial fans are generally more well-drained than the fine-grained sediments found in lower alluvial fan areas (USACE 1999). More-detailed characteristics of representative soils in the Blair Lakes Impact Area are provided in Section 3.8.5.1.

Permafrost conditions in the Oklahoma Impact Area are the same as described for Alternative A. Permafrost conditions on Blair Lakes Impact Area are dependent upon soil conditions and local topography, but much of the impact areas are located in an area described as having nearly continuous permafrost (USACE 1999). The active permafrost layer can be found at only 1 foot below the surface in some places, but can extend to 23 to 50 feet in others. The majority of TFTA is experiencing widespread permafrost degradation (estimated at over 40 percent of the total land area), which is expressed on the surface as various thermokarst features (USACE 1999).

3.2.5.2 Impact Assessment Methodology

This section analyzes and compares the soil and permafrost impacts associated with each proposed action. Soil conditions in Alaska demonstrate great diversity due to regional and local variations in climate, topography, parent material composition, and the presence (or lack) of permafrost. Soils are able to support a given use based largely upon their defining characteristics, but are sometimes unsuitable for other uses and, as a result, impacts will differ in type and severity according to location and local conditions. Due to wide variations of soil type and prevalent conditions, impact severity can vary greatly, even when considering rather small areas. Any disturbance of permafrost is typically irreversible, can be highly problematic, and can lead to thermokarsting. There are currently substantial restrictions on activities in many areas that may affect permafrost. As a result, any action-related disturbance of permafrost is considered significant.

3.2.5.3 Environmental Consequences

This section analyzes the potential impacts on physical resources (including soils and permafrost) associated with ground-based aspects of the proposed action. Baseline conditions in areas potentially affected by the proposed action were addressed in Section 3.2.5.1.

3.2.5.3.1 Alternative A

The proposed action would include the use of existing and new, live and inert targets in DTA, with land underlying existing airspace used as a hazard area. With respect to existing targets, the proposed action would result in an annual increase in ordnance use on Oklahoma Impact Area of 200 SDBs and 200 Joint Direct Attack Munitions (JDAMs) (GBU-32), fired from F-22s. The increased use of ordnance would

potentially result in an increase in soil erosion; however, soils on flat areas of DTA and the Oklahoma Impact Area are typically not susceptible to wind or water erosion (USDA 2005). In addition, the proposed additional use of ordnance represents a fraction of total yearly munitions use, such that no beneficial or adverse soil erosion impacts would occur.

This proposal also includes the use of proposed new temporary target areas in DTA Training Area (TA) 544, for inert GBU-32 ordnance delivery south from JBER, and DTA TA 533, for inert GBU-32 ordnance delivery north from Eielson AFB. The proposed new targets in TAs 544 and 533 would be classified as temporary impact areas. Creation of new targets could result in short- and long-term soil erosion, as well as degradation of permafrost, including thermokarst features; therefore, there is potential for significant adverse impacts to occur. Components of metals found in the munitions proposed for use have the potential for dissolution and mobilization in soils with pH values less than 5.5, specifically those in permafrost areas. However, the presence of the relatively impermeable permafrost below such areas would prevent excessive mobility of any dissolved metals. The potential for mobility of residual metals is further discussed in Section 3.2.6.3.

Pre-planning for siting of new targets and infrastructure or new activities at ranges or on training areas requires coordination between the (Air Force/proponent/user) and the USARAK Installation Range Office (IRO). The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the (Air Force/proponent/user) to select a location suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations, as well as information from the Installation Training Area Management (ITAM), Range and Training Land Assessment (RTLA), and Land Rehabilitation and Maintenance (LRAM) programs would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up.

3.2.5.3.2 Alternative B

Under this alternative, live ordnance delivery would be conducted on existing targets in the Oklahoma and only inert ordnance in the Blair Lakes Impact Area. Impacts would be similar to those described for Alternative A. No beneficial or adverse soil erosion impacts in excess of baseline conditions would occur.

3.2.5.3.3 No Action Alternative

Under the No Action Alternative, there would be no change to current activities at Blair Lakes Impact Area or the Oklahoma Impact Area and conditions would remain as described in Section 3.2.5.1.

3.2.5.4 Mitigations

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The following mitigation is proposed to reduce these impacts.

- **Continued compliance with Army regulations on R-2202.** All applicable conservation, monitoring, and management procedures currently followed by USAG-FWA in the management of R-2202 will be applicable to the proposed action, including measures for the protection of soils and permafrost, including but not limited to, the Fort Wainwright Integrated Natural Resources Management Plan (INRMP) and Storm Water Pollution Prevention Plan (SWPPP) and the monitoring guidelines of the ITAM Sustainable Range Awareness.

3.2.6 Water Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.6.

3.2.6.1 Affected Environment

Alternative A would be conducted using the existing target array at the Oklahoma Impact Area. The existing (fiscal year 2010) munitions usage in the Oklahoma Impact Area is provided in Table 3-26. The Oklahoma Impact Area is located in the center of DTA between Delta Creek and One-Hundred-Mile Creek and up to the confluence of these two waterways. Delta Creek and One-Hundred-Mile Creek drain into the Tanana River. Delta Creek originates from meltwater from the Trident and Hayes Glacier and has extensive sections of abandoned floodplain terraces above the current active braided floodplain. One-Hundred-Mile Creek is a clear water stream originating the foothills of the Alaska Range. Along the east side of One-Hundred-Mile Creek are numerous kettle ponds, which are shallow water bodies formed by retreating glaciers. Large quantities of groundwater are available from the alluvial fan deposits and floodplain deposits in this area. Existing target arrays lay along abandoned floodplain terraces on the west side of Delta Creek. Based on sampling of impact areas in DTA in 2001 and 2002, the explosive residues are at very low concentrations (parts per billion) over most of the impact areas. However, where ordnance failed to detonate, the underlying soil can have locally high parts-per-million concentrations of explosive residue (USACE 2004). Explosive residue can move to the surface water by erosion of the floodplain terrace. Wetland coverage in the Oklahoma Impact Area is 86 percent.

Alternative B would be conducted using the existing targets at the Blair Lakes Impact Area and the Oklahoma Impact Area. The Blair Lakes Impact Area lies to the west of the Blair Lakes in the south-central portion of TFTA and includes portions of the headwaters of Willow Creek and Clear Creek. Willow Creek and Clear Creek flow into the Tanana River. There is substantial surface and groundwater flow in the area, with small streams forming a dense network of nearly straight channels. Thermokarstic topography dominated by organic fens and bogs is common (USACE 1999). Typical thermokarstic landforms consist of uneven marshy hollows and small hummocks, which form in permafrost areas as ice thaws. Wetland coverage in the Blair Lakes Impact Area is 85 percent.

In both Alternatives A and B, new targets would be established in northwest DTA in TA 544 and southeast DTA in TA 533. These new targets would not be located within an existing impact area. It would only involve the use of inert GBU-32 ordnance. The new target in TA 544 would be located in the Little Delta River watershed. The new target in TA 533 would be located in the Delta River watershed.

Munitions discharges are regulated under the National Pollutant Discharge Elimination System (NPDES) established by the CWA. This permit program is scheduled to be transferred from the EPA to the State of Alaska on October 31, 2012, as part of the Phase IV transfer of the Alaska Pollutant Discharge Elimination System. Existing target arrays at Oklahoma and Blair Lakes Impact Area lie outside of the active river floodplains, and munitions are not directly discharged into a navigable waterway; therefore, NPDES permit coverage has not been requested for the Oklahoma and Blair Lake munitions usage.

3.2.6.2 Impact Assessment Methodology

Impacts on water resources were categorized by considering the size and location of activities associated with each of the alternatives (as described in Chapter 2.0) and their potential to alter the quality, quantity, or beneficial uses of existing resources (described in Appendix B, Section B.6). No new modeling was conducted in support of these analyses. Instead, the analyses were based on assessments of existing

information and key findings from other representative studies and maps that addressed water resources as related to potential impacts associated with the project alternatives.

Evaluation criteria (standards for evaluating the severity of impacts) were developed, and the effects of the proposed project were then assigned significance according to these criteria. Adverse impacts are defined as serious consequences for water quality and quantity, floodplains, and wetlands that could result in (1) degradation of the quality of surface water or groundwater, resulting in noncompliance with applicable Federal water quality standards, laws, and regulations, and/or regional standards, laws, and regulations as appropriate; (2) increased risks to housing, structures, or humans from activity within the 100-year floodplain; (3) impairment of long-term water supplies for JPARC and surrounding communities; and (4) disturbance, degradation, or loss of wetlands or other aquatic features.

The following categories were used to define potential impacts:

- Beneficial impact.
- No beneficial or adverse impacts are expected to occur.
- Potential for adverse impacts that would have measureable but not significant impacts on water quality, stream flow, floodplains, and/or wetlands. No water quality standards would be exceeded; construction may occur within floodplains, but stream flow would not be impeded or channelized; and wetlands impacts could include compaction of wetland soil, disturbance of vegetation, and reduced vegetation but not severe wetland degradation. Proposed actions may require management actions or mitigations to avoid or reduce impacts.
- Potential for significant adverse impacts and would include exceedances of water quality standards, construction in the floodplains that impede or channelize flow, and/or permanent degradation of wetland vegetation and soils. Proposed actions would require management actions or mitigations to avoid or reduce impacts.

The first three qualitative impact categories (none, minor, and moderate) are considered insignificant in this analysis. The next category (severe) is considered significant. Mitigation measures have been developed to offset adverse impacts.

3.2.6.3 Environmental Consequences

3.2.6.3.1 Alternative A

Alternative A would result in an annual increase in ordnance use on the Oklahoma Impact Area of 200 SDBs and 200 JDAMs (GBU-32) fired from F-22s. Under Alternative A impacts would be limited to the existing target arrays that currently undergo live-fire practice. Water quality could be impacted by the metals and explosive fillers used in the ordnance. Iron, manganese, copper, molybdenum, lead, nickel and zinc are found in shell and various projectile components of the GBU-32 and SDBs. Soil samples from various training areas in DTA were collected and analyzed in 2001 and 2002 for metal concentrations. Low levels of zinc, copper, lead, and antimony were detected within impact areas and target berms where munitions were used. The metal concentrations were above the background but no samples in DTA had values approaching levels of concern (USACE 2004). The primarily sandy and gravelly soils in the areas sampled in DTA have neutral pH values of 6 to 7.8 and should not be conducive to dissolution and mobilization of metals deposited from munitions components. Metals such as lead can more readily dissolve and mobilize in acidic soils where pH is below 5.5. Soils in permafrost areas with black spruce and sphagnum moss cover are often acidic and have pH levels of 4.0 to 5.0,

although the shallow active layer and impermeable underlying permafrost limit mobility of any dissolved metals. Preliminary data from water quality monitoring indicate that metals from munitions residues are not moving out the impact areas through surface water, ground water, windblown soils, or wildlife (USARAK 2006-2). The increase in ordnance use is not expected to raise levels of metal concentrations to levels of concern; therefore, water quality impacts from metals deposited in the environment by exploded ordnance would be potentially adverse but not significant (USARAK 2006-1).

Low order detonation or UXO also have the potential to impact surface water quality. The explosive filler left over in duds and low order detonations can be mobilized through dissolution in water. The explosive fillers typically include trinitrotoluene (TNT), Royal Demolition Explosive (RDX), and/or High Melting Explosive (HMX). The GBU-32 and SDBs do not contain white phosphorus. White phosphorus has adverse and potentially lethal impacts to waterfowl, as documented in the Eagle River Flats impact area at Fort Richardson.

Soil sampling at Delta Creek Impact Area in 2001 and 2002 found locally high concentrations of TNT around UXO, but no detection of explosive fillers upstream or downstream of the site (USACE 2004). Delta Creek Impact Area is not part of Alternative A, but the existing use is similar to Alternative A (500- to 2,000-pound ordnance delivered from aircraft) (USACE 2004). In general, 3.8 percent of bombs delivered by the Air Force become either a dud or low order detonation (Shaw et al. 2001). In the most conservative case, assuming all ordnance dropped are live ordnance and applying this failure rate to Alternative A, up to eight of the GBU-32s and eight SDBs delivered to the Oklahoma Impact Area could become duds or low order detonations per year. In this most conservative case, it would result in an increase of 1,800 kg (4,000 pounds) of unexploded explosive filler deposited near the target areas and high-hazard impact area per year. Explosive contaminants could be adsorbed to humus or by clay minerals, biotransform by microorganisms or by uptake in the roots of plants, which would reduce the local concentration in the soil. However, preliminary data from water quality monitoring indicates that munitions residues are not moving out the impact areas through surface water, ground water, windblown soils, or wildlife (USARAK 2006-2). Therefore, impacts on surface water and groundwater downstream of the target arrays would be potentially adverse but not significant.

Ordnance used in the RLOD training explodes on or near the ground, forming a crater. Using the expected increase in ordnance and assuming a crater radius for each munitions type (Shaw et al. 2001), the approximate increase in the annual cratered surface area is estimated to be approximately 12.6 acres (5.1 ha). A study of craters in the nearby Washington Impact Area in DTA found that craters provide a depression that captures windblown leaves, silt, and organic particulates including seeds as well as capturing more snow and serving as a moisture source for plants (Shaw et al. 2001). Craters were colonized by balsam poplars after 4 years. Given the resiliency of the ecosystem in response to cratering and the slight increase in sedimentation compared to base sediment loads, impacts under Alternative A on sedimentation and surface water quality would be potentially adverse but not significant.

Wetlands at or near the target arrays could also be impacted by cratering. The Oklahoma Impact Area is covered by approximately 86 percent wetlands. Available wetland data are limited and wetland occurrence is not uniform or homogenous. Using the available data by applying the approximate percent wetland cover to the annual cratered surface area, it is estimated up to 10.7 acres (4.3 ha) of wetlands could be impacted per year. The explosion would likely disturb wetland vegetation, but would not result in a net loss of wetlands. The depressions created by the craters in the nearby Washington Impact Area were moisture sinks that were colonized by small saplings within 4 years (Shaw et al. 2001). Therefore, any net loss in wetland acreage would be minimal and potential impacts to wetlands would be adverse, but not significant.

New targets for inert GBU-32 ordnance would be located in the DTA in TAs 544 and 533. Inert GBU-32 ordnance consist of metal casing, concrete fill, a transmitter, and a battery pack. Preliminary data from water quality monitoring indicates that metals from munitions residues are not moving out of the impact areas through surface water, ground water, windblown soils, or wildlife (USARAK 2006-2). Therefore, impacts on surface water and groundwater downstream of the target arrays would be minimal and not significant. The inert ordnance would not create significant craters; therefore impacts to wetlands would minimal and not significant.

3.2.6.3.2 Alternative B

The Blair Lakes Impact Area is designated as a nondudded range and only inert ordnance would be used. Table 3-29 compares the quantity of metallic residue generated from proposed RLOD Alternative B training activities to quantities generated in 2010 (Baseline). In addition, there is the potential for inert munitions-related contamination of surface water and groundwater as a result of chemical residue within spotting charges, flares, etc. However as discussed in Alternative A, preliminary data from water quality monitoring indicate that munitions residues are not moving out the impact areas through surface water, ground water, windblown soils, or wildlife (USARAK 2006-2). Therefore, impacts on surface water and groundwater downstream of the target arrays would be potentially adverse but not significant. The inert ordnance would not create significant craters that could impact wetlands, therefore, impacts to wetlands would minimal and not significant. The impacts on the Oklahoma Impact Area and new targets in TA 544 and TA 533 in the DTA would be the same as described in Alternative A.

3.2.6.3.3 No Action Alternative

There would be no change to water quality in association with munitions use under current existing conditions and no additional changes would occur in association with munitions use.

3.2.6.4 Mitigations

Impacts on surface water quality, groundwater quality, and wetlands would be potentially adverse but not significant. The following mitigation is proposed to reduce these impacts.

- **Continued compliance with Army regulations on R-2202.** All applicable conservation, monitoring, and management procedures currently followed by USAG-FWA in the management of R-2202 will be applicable to the proposed action, including measures for the protection of soils and permafrost, including but not limited to, the Fort Wainwright INRMP and SWPPP and the monitoring guidelines of the ITAM Sustainable Range Awareness.

3.2.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.7.

3.2.7.1 Affected Environment

The Oklahoma Impact Area in R-2202B of DTA is included as part of Alternatives A and B in the RLOD proposed action. Both live-fire high-explosive and inert ordnance are used in the Oklahoma Impact Area during aerial bombing exercises. This area is classified as a dudded impact area.

The Blair Lakes Impact Area in R-2211 of TFTA, which is included as part of Alternative B, is currently used by the Air Force for non-live-fire bombing exercises and is classified as a dudded impact area.

MUNITIONS-RELATED RESIDUE

The Air Force and Army currently conduct a number of training missions in the Oklahoma and Blair Lakes Impact Areas that generate munitions-related residue. In general, munitions-related residue sources include practice bombs, expended artillery, small arms and mortar projectiles, bombs and missiles, rockets and rocket motors, grenades, incendiary devices, experimental items, demolition devices, and any other material fired on or upon a military range. More specific to the Oklahoma and Blair Lakes Impact Areas, munitions-related residue sources would include GBU-32 and SDB-type ordnance.

Munitions that fail to detonate properly (duds) and munitions that only partially detonate (low-order detonations) can result in the deposition of munitions residues (explosives and metals) at impact sites. Duds and low-order detonations have the potential to create environmental contamination by the leaching of explosive filler into soil, sediment, surface water, and groundwater.

The expenditure of live ammunition or detonations has the potential to release hazardous chemicals or other elements, such as heavy metals, into the environment. The existing condition is considered to be the baseline levels released into the environment from current training and testing missions in the Oklahoma and Blair Lakes Impact Areas (Table 3-29).

Table 3-29. Oklahoma and Blair Lakes Baseline Munitions-Related Residue

Chemical	2010 Quantity at Oklahoma Impact Area in R-2202 B (Baseline) (pounds)	2010 Quantity at Blair Lakes Impact Area in R-2211 (Baseline) (pounds)
Antimony	0	0
Chromium	573	0
Cobalt	106	0
Copper	21,284	0
Lead	603	0
Manganese	6,217	0
Nickel	305	0
Vanadium	25	0

Source: EPA 2011.

In addition, there is the potential for inert munitions-related contamination of surface water and groundwater as a result of chemical residue within spotting charges, flares, etc., which would provide a route for migration of the explosives residues across military installation boundaries.

CONTAMINATED SITES

There are no active hazardous and/or petroleum waste sites located within either impact area listed in the ADEC contaminated sites database.

3.2.7.2 Impact Assessment Methodology

The methodology for evaluating general hazardous materials and waste is described in Section 3.1.7.2.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

The analysis methodology involved in estimating ordnance-related chemical releases and evaluating the potential impact of these releases on proposed action areas, including reporting requirements. Potential impacts of chemical releases to specific media (i.e., soil, water, air, and biological resources) are discussed for each of the proposed action areas.

Chemical releases to the environment from metallic residue resulting from the use of munitions were based on the type and quantity of ordnance associated with range operations, combined with chemical composition data obtained from the Toxic Release Inventory–Data Delivery System (TRI-DDS). The TRI-DDS database, which is a product of the Joint Service Emergency Planning and Community Right-to-Know Act (EPCRA) Workgroup, is intended to provide a consistent method for assessing chemical constituent data that may be used by DoD installations when reporting chemical releases and waste management practices.

Appendix J, *Hazardous Materials*, lists the ordnance items and quantities that are projected to be used as part of range operations for each of the proposed actions. Where detailed information regarding the munitions item (e.g., the specific DoD Identification Code [DODIC]) was available, TRI-DDS characterization data for that item were employed. In cases where only the item type was available, characterization data for a similar munitions item (a surrogate) were utilized. Appendix J also includes a description of the ordnance item used in the analyses (obtained from the TRI-DDS) and the associated DODIC.

Releases to the environment from munitions used in training require reporting to EPA under the EPCRA Toxic Release Inventory (TRI) program. Training is subject to a TRI reporting threshold of 10,000 pounds per year for most common chemicals, with lower reporting thresholds for chemicals classified as persistent, bioaccumulative, and toxic. These chemicals include mercury, with a reporting threshold of 10 pounds, and lead, with a threshold of 100 pounds. In cases when a threshold is exceeded, the installation must report to EPA on a "Form R" the quantity of munitions-related waste released to the environment or recovered and recycled.

JPARC operations areas have procedures to comply with TRI reporting requirements and would track ordnance use associated with the proposed alternatives. This could require new procedures if proposed training activities were to result in the exceedance of reporting thresholds for any new chemicals.

3.2.7.3 Environmental Consequences

3.2.7.3.1 Alternative A

GENERAL HAZARDOUS MATERIALS AND WASTE

This alternative would involve the expansion of the boundaries of R-2202 to the west, to allow for the larger footprint of GBU-32 and SDB ordnance. There would be no construction, refueling or maintenance conducted within the restricted area footprint. This alternative would utilize the existing target array in the Oklahoma Impact Area. By utilizing the existing road network within R-2202, no new road construction would be necessary. This proposal also includes the use of proposed new target areas in DTA TA 544, for inert GBU-32 ordnance delivery south from JBER, and DTA TA 533, for inert GBU-32 ordnance delivery north from Eielson AFB. The proposed new targets in TAs 544 and 533 would be classified as temporary impact areas. There would be no refueling or maintenance conducted in the restricted area footprint.

Pre-planning for siting of new targets and infrastructure or new activities at ranges or on training areas requires coordination between the (Air Force/proponent/user) and the USARAK IRO. The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the (Air Force/proponent/user) to select a location suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations, as well as information from the ITAM, RTLA, and LRAM programs would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up. Therefore, no beneficial or adverse general hazardous materials-related construction and operational impacts would occur in association with this alternative.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

This alternative involves an increase in ordnance use, including 200 SDBs (250 pounds) and 200 JDAMs (1,000 pounds, GBU-32), fired from F-22s annually at target arrays in the Oklahoma Impact Area. Impacts associated with this proposed action would be limited to the existing target arrays that currently undergo live-fire practice. Soil and surface waters can be impacted by the metals and explosive fillers used in the ordnance. Iron, manganese, copper, molybdenum, lead, nickel and zinc are found in shell and various projectile components of the JDAMs. Soil samples from various training areas in DTA were collected and analyzed in 2001 and 2002 for metal concentrations. Low levels of zinc, copper, lead, and antimony were detected within impact areas and target berms where munitions were used. The metal concentrations were above the background but no samples in DTA had values approaching levels of concern (USACE 2004). The mainly sandy and gravelly soils in the areas sampled in DTA have neutral pH values of 6 to 7.8 and should not be conducive to dissolution and mobilization of metals deposited from munitions components. Metals, such as, lead can dissolve and mobilize in acidic soils where pH is below 5.5. Soils in permafrost areas with black spruce and sphagnum moss cover are often acidic and have pH levels of 4.0 to 5.0, although the shallow active layer and impermeable underlying permafrost limit mobility of any dissolved metals.

Low order detonation or UXO also creates the potential for impacts on soil and surface water quality. The explosive filler remaining in duds and low order detonations can be mobilized through the dissolution in water. The explosive fillers typically include TNT, RDX, and/or HMX. Soil sampling at Delta Creek Impact Area in 2001 and 2002 found locally high concentrations of TNT around UXO, but no detection of explosive fillers upstream or downstream of the site. Delta Creek Impact Area use is similar to the proposed action (500- to 2,000-pound ordnance from aircraft) (USACE 2004). In general, 3.8 percent of bombs delivered by the Air Force become either a dud or low order detonation (Shaw et al. 2001). Applying this failure rate to the proposed action, up to eight JDAMs and eight SDBs delivered to the Oklahoma Impact Area could become duds or low order detonations per year. In the most conservative case, this would result in 7,700 kg (17,000 pounds) of unexploded explosive filler deposited near the target areas and high-hazard impact area per year. Explosive contaminants can be adsorbed to humus or clay minerals, biotransform by microorganisms, or by uptake in the roots of plants, which would reduce the local concentration in the soil. In addition, preliminary data from water quality monitoring suggest that munitions residues are not moving out the impact areas through surface water, groundwater, windblown soils, or wildlife (USARAK 2006-2), thus reducing downstream impacts.

Table 3-30 compares the quantity of metallic residue generated from proposed RLOD Alternative A training activities to quantities generated in 2010 (Baseline).

Table 3-30. Munitions-Related Residue from Realistic Live Ordnance Delivery Alternative A

Chemical	Estimated Quantity from Training (pounds)*	Ground Release Quantity at 2010 (Baseline) (pounds)*	Total Estimated Quantity (pounds)	Estimated Increase from Baseline (percentage)	EPCRA TRI Reporting Threshold (pounds)	New EPCRA TRI Reporting Required
Chromium	1,055	573	1,628	184	10,000	No
Cobalt	113	106	219	107	10,000	No
Copper	11,152	21,284	32,436	52	10,000	No
Lead	610	603	1,213	101	100	No
Manganese	6,631	6,217	12,848	107	10,000	No
Nickel	413	305	718	135	10,000	No
Vanadium	79	25	104	316	10,000	No

Key: EPCRA=Emergency Planning and Community Right-To-Know Act; TRI=Toxic Release Inventory.
*** Source:** TRI-DDS 2011.

As the table indicates, metallic releases would be expected to increase for each of the residual metals concentrations, in comparison to baseline quantities. As previously stated in Section 3.2.7.2, Impact Methodology, training is subject to an EPCRA TRI reporting threshold of pounds per year for most common chemicals, with a 100-pound reporting threshold for lead. USAG-FWA already submits a Form R report from on-going training activities for chromium, copper, lead, and manganese; therefore, proposed RLOD training activities would not require additional Form Rs to be submitted. Reporting would also not be required for other chemicals generated as part of training (i.e., cobalt, nickel, vanadium), because the quantities associated with these chemicals would be well below reporting thresholds.

Assessing the levels of explosives residues by sampling the soil and water has been a challenge because of the large size and varied terrain of these impact areas, the safety hazards associated with UXO, and on-going live-fire and nonlive-fire training. However, these impact areas would be managed in accordance with current Federal, State of Alaska, Air Force, and Army regulations for the management, safe handling, and disposal of hazardous waste and materials associated with live and inert ordnance and UXO, as the result of aerial bombing exercises at each impact area. Therefore, Alternative A would result in the potential for adverse but not significant impacts.

As previously discussed, this proposal also includes the use of proposed new target areas in DTA TA 544, for inert GBU-32 ordnance delivery south from JBER, and DTA TA 533, for inert GBU-32 ordnance delivery north from Eielson AFB. The proposed new targets in TAs 544 and 533 would be classified as temporary impact areas. There is no potential for adverse munitions-related hazardous materials impacts, as only inert ordnance delivery would be conducted.

3.2.7.3.2 Alternative B

GENERAL HAZARDOUS MATERIALS AND WASTE

This alternative would involve the creation of a new restricted area that would connect R-2211 and R-2202. There would be no refueling or maintenance conducted in the restricted area footprint. This alternative would utilize the existing target arrays in the Oklahoma and Blair Lakes Impact Areas and

create a new restricted area to allow for the larger footprint of GBU-32 and SDB ordnance. By utilizing the existing road network within R-2202, no new road construction would be necessary. Therefore, no beneficial or adverse general hazardous materials-related construction and operational impacts would occur in association with this alternative.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

The impacts on the Oklahoma Impact Area would be the same as described in Alternative A. With respect to the Blair Lakes Impact Area in R-2211, as wells as proposed new target areas in DTA TA 544 and DTA TA 533, there is no potential for adverse munitions related hazardous materials impacts, as only inert ordnance delivery would be conducted.

3.2.7.3.3 No Action Alternative

Under the No Action Alternative, there would be no expansion of the footprint, associated WDZ, and hazard areas for ordnance delivery or the use of ordnance requiring an expanded footprint. Therefore, no change or additional impacts to existing conditions would occur for hazardous materials and waste.

3.2.7.4 Mitigations

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The mitigation proposed for physical resources (Section 3.2.5.4) and water resources (Section 3.2.6.4) would prevent impacts from munitions contamination.

3.2.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.8.

3.2.8.1 Affected Environment

Under Alternatives A and B, the proposed actions would establish additional restricted area airspace from the surface to high altitudes (unlimited ceiling), allowing the use of long-distance standoff weapons fired at existing targets within existing impact areas. The overflight and weapons release activities allowed by the proposed airspace modifications would not have substantial impacts on vegetation or wildlife and, therefore, a complete biological resources analysis will not be conducted for these alternatives. The development of new target areas up to 2 acres in extent for inert ordnance delivery is described below.

3.2.8.2 Impact Assessment Methodology

The impact assessment for biological resources focuses on the establishment of new target areas.

3.2.8.3 Environmental Consequences

3.2.8.3.1 Alternative A

Under Alternative A, which includes the proposed establishment of new target areas outside the existing impact areas as part of the north-south ordnance delivery run-in headings, some potential exists for biological impacts at these new target sites. The target sites would be approximately 1 to 2 acres in extent and would be located within existing ordnance impact areas in DTA and TFTA. For north-south run-in headings, however, targets would be located within DTA-West, but outside of existing ordnance impact areas. Only inert ordnance would be used at these targets. Biological surveys have been conducted for

wetlands and raptor nests and no raptor nests were recorded in proposed target areas. Wetland areas were mapped and are further discussed in Water Resources (Section 3.2.6.4). If adjustments for final siting of targets are made, they would be according to established procedures used by USARAK and the USAG-FWA Environmental Division, working with the Air Force to select a suitable location while also considering a range of environmental, operations, and land use constraints that would minimize impacts on wildlife and vegetation.

Based on their small size, the use of inert ordnance, and the siting and environmental review process described above, potential impacts of establishing new targets would be adverse but not significant, but would require management actions (siting process) and mitigation to avoid or reduce impacts.

3.2.8.3.2 Alternative B

The expected impacts to biological resources would be the same as those under Alternative A.

3.2.8.3.3 No Action Alternative

No changes to existing biological resource conditions are expected from implementation of the No Action Alternative and no additional impacts would occur.

3.2.8.4 Mitigations

The preceding analysis has identified adverse impacts to biological resources. Proposed mitigations for physical resources (Section 3.2.5.4) and water resources (Section 3.2.6.4) would benefit biological resources.

3.2.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.9.

3.2.9.1 Affected Environment

The ROI for the RLOD action consists of the Oklahoma Impact Area of DTA, the Blair Lakes Impact Area of TFTA, and the land beneath the existing Eielson MOA where the expanded or new restricted areas would be located (Figure 2-6 and Figure 2-7). Archaeological and historic architectural resources at the training areas were characterized using existing survey and analysis information from installation Integrated Cultural Resources Management Plans (ICRMPs). The ROI also includes the land where a new target area in northeast DTA in Training Area (TA) 544 and a new target area in southwest DTA in TA 533 are proposed for both alternatives.

Archaeological and historic architectural resources under airspace, which are unlikely to be affected by aircraft overflights (see Section 3.1.9.2), were characterized using the records of the National Register and National Historic Landmark.

DONNELLY TRAINING AREA

The Donnelly Training Area (DTA) is located in central Alaska, north of the Alaska Range in the Tanana River valley, and consists of DTA-East, DTA-West, and three outlying training sites. DTA-East and DTA-West cover approximately 623,585 total acres (USARAK 2010-3).

ARCHAEOLOGICAL RESOURCES

Donnelly Training Area

More than 26 archaeological investigations have been conducted on DTA since 1963, identifying 449 prehistoric sites, six historic sites, and one archaeological district (USARAK 2005-3, USARAK 2010-4, USAG-FWA 2012). The majority of the archaeological surveys conducted in DTA have been limited to DTA-East, which constitutes 25 percent of the entire training area. Of the archaeological sites identified, 99 have been evaluated for inclusion in the National Register, resulting in 29 sites being determined eligible for listing. The archaeological sites identified in DTA generally consist of small surface or shallowly buried lithic scatters, reflective of temporary task-related activities or short-term residential camps. Archaeological survey of the land area in northeast DTA in TA 544 and in southwest DTA in TA 533 for the two proposed new target areas was performed in June 2012, and no archaeological resources were identified.

Tanana Flats Training Area

TFTA is a large tract, 653,748 acres in size, south and west of the Tanana River approximately 32 miles south of the city of Fairbanks between the Wood and Tanana Rivers. TFTA is located in the Tanana-Kuskokwim lowlands, and the landscape is characterized by several features that are topographically higher than the surrounding landscape. Most of the area is composed of recent swamp deposits and floodplain alluvium. Higher landforms such as the Wood River Buttes, Clear Creek Butte and the Blair Lakes hills are capped by a thin mantle of aeolian silt (loess) (USARAK 2010-4).

TFTA is home to 147 known archaeological sites and three Archaeological Districts, all three districts having been determined to be eligible for inclusion in the National Register. Of the 147 individual archaeological sites, 11 have been determined to be eligible for inclusion in the National Register, two are not eligible, and 134 have not been evaluated (USARAK 2010-4, USARAK 2005-3, USAG-FWA 2012). Unevaluated archaeological sites are managed and treated as eligible for the National Register until formally evaluated. The Archaeological Districts consist of Clear Creek Buttes Archaeological District (five sites on the crest of Clear Creek Buttes); Wood River Buttes Archaeological District (27 prehistoric sites located among the Wood River Buttes); and Blair Lakes Archaeological District, which consists of four prehistoric sites yielding flaked stone artifacts and faunal remains from a buried context and two historic sites (log cabin structural remains and cache pit remains and artifacts associated with the late 1930s Walter "Tex" Blair homestead). The Blair Lakes Archaeological District is located on the north shore of Blair Lakes South (USARAK 2010-4).

TRADITIONAL CULTURAL PROPERTIES AND ALASKA NATIVE CONCERNS

No properties of traditional religious and cultural importance are known to be located in either DTA or TFTA. The Army is aware that there may be properties of traditional religious and cultural importance on their lands. Several studies have indirectly addressed the possible presence of such properties but no direct inventory on Army land exists (USARAK 2005-3).

Training Airspace

Archaeological sites under training airspace include Native burial grounds, village and settlement sites, and historic mining sites (Air Force 2006-1). Architectural resources under the proposed expansion of R-2202 and the proposed change in the Eielson MOA include structures relating to gold mining, trapping, or the railroad (Air Force 2006-1). In addition to National Register–listed sites, there are likely to be additional cultural resources that are either eligible or potentially eligible for National Register listing

under airspace. Locations of Federally recognized Alaska Native tribes under or near the airspace discussed below are illustrated in Figure 3-10.

NATIONAL REGISTER-LISTED PROPERTIES

No National Register–listed properties are located on lands underlying the existing Eielson MOA.

TRADITIONAL CULTURAL PROPERTIES AND ALASKA NATIVE CONCERNS

No Federally recognized Alaska Native tribes are located under the Eielson MOA (Figure 3-10), and no properties of traditional religious and cultural importance are known to be located there.

3.2.9.2 Impact Assessment Methodology

The general methodology for evaluating cultural resources is described in Section 3.1.9.2.

3.2.9.3 Environmental Consequences

3.2.9.3.1 Alternative A

This alternative would expand R-2202 to the west into Eielson MOA and utilize targets in the Oklahoma Impact Area in DTA. The expanded restricted airspace would be used during MFEs for 60 days annually at a maximum of 4 hours daily. This alternative also proposes to establish a new target area in northeast DTA in TA 544 and a new target area in southwest DTA in TA 533. The proposed new targets would not, however, be located within an existing DTA impact area, but it would provide the ability to train only with inert GBU-32 ordnance while staying within the existing R-2202 restricted area in DTA.

AIRSPACE USE

No significant impacts are anticipated to cultural resources from the expansion of R-2202 and its training use. The annual average noise levels under the proposed change in the Eielson MOA airspace structure are not expected to noticeably change as a result of increased training activities. As described in Section 3.2.2.3, the number of sortie-operations conducted in R-2202 would not be expected to change, and aircraft noise levels would remain approximately the same as under baseline conditions. Changes in instantaneous noise levels of less than 3 dB are typically not noticeable in nonlaboratory conditions, nor would the noise be sufficient to damage any archaeological or historic architectural sites. Scientific studies of the effects of noise and vibration on historic properties have considered potential impacts on historic buildings, prehistoric structures, archaeological cave/shelter sites, and rock art. These studies have concluded that overpressures generated by supersonic overflight were well below established damage thresholds and that subsonic operations would be even less likely to cause damage (see Appendix E, *Noise*).

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed expansion of the restricted area. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed expansion of the restricted area (see Section 1.6.5).

GROUND-BASED USE

The existing target array in the Oklahoma Impact Area would be used under Alternative A, and no significant impacts on cultural resources on DTA are anticipated. The underlying land would be used as a hazard area to support the western expansion of R-2202, and likewise no impacts on DTA cultural resources are anticipated.

Establishing a new target area in northeast DTA and a new target area in southwest DTA is not anticipated to have impacts on cultural resources, as archaeological survey of the areas located no archaeological resources.

In compliance with Section 106 of the NHPA, ALCOM, on behalf of the Air Force, completed consultation with the Alaska SHPO and determined that no historic properties will be affected by implementation of the proposed action. All compliance requirements for consultation with potentially affected Alaska Native tribes, ANCSA corporations, and Tribal government entities regarding ALCOM's finding of no historic properties affected has been completed. In accordance with AFI 32-7065 (Air Force 2004-3), all NHPA Section 106 consultation has been completed.

3.2.9.3.2 Alternative B

Alternative B would establish a new restricted area that would link R-2211 and R-2202. This alternative would use the Blair Lakes Impact Area on TFTA and the Oklahoma Impact Area on DTA. This alternative also proposes to establish a new target area in northeast DTA in TA 544 and a new target area in southwest DTA in TA 533, as described for Alternative A.

AIRSPACE USE

No significant impacts are anticipated to cultural resources from the creation of a new restricted area linking R-2211 and R-2202 and its training use. As described in Section 3.2.2.3.2, noise impacts at Blair Lakes Impact Area under Alternative B would be minimal and munitions usage and noise impacts at Oklahoma Impact Area would be the same as under Alternative A. Changes in instantaneous noise levels of less than 3 dB are typically not noticeable in nonlaboratory conditions. Scientific studies of the effects of noise and vibration on historic properties have demonstrated that flight operations would be unlikely to cause damage (see Appendix E, *Noise*).

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed new restricted area. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed new restricted area (see Section 1.6.5).

GROUND-BASED USE

Similar to Alternative A, no significant impacts to cultural resources are anticipated from establishing new temporary impact areas and targets or from their use for training with inert ordnance. The existing target array in the Oklahoma and the Blair Lakes Impact Areas would be used under Alternative B, and no significant impacts on cultural resources on TFTA or DTA are anticipated. No impacts on cultural resources are anticipated due to the expansion of the hazard area.

3.2.9.3.3 No Action Alternative

Under the No Action Alternative there would be no expansion of the footprint, associated WDZ, and hazard areas for ordnance delivery or the use of ordnance requiring an expanded footprint. Existing use of the restricted areas would continue under this alternative and resources would continue to be managed in compliance with Federal law and DoD policy and regulations.

3.2.9.4 Mitigations

No mitigations are identified for this resource at this time.

3.2.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.

3.2.10.1 Affected Environment

A total surface area of approximately 758,710 acres underlies proposed modified airspace for this proposal. The following section focuses on the land use, management, and recreational uses of areas potentially affected by proposed modifications and new surface restrictions associated with the proposal.

LAND STATUS, MANAGEMENT, AND USE

Land Status

Land status in the proposal area is a mixture of Federal and State owned and managed, as shown in Figure 3-21. Most of the land in the proposal area is DoD-owned, within DTA-West (about 523,730 acres). The State of Alaska owns 163,230 acres under the footprint of the proposed expanded restricted airspace in Alternative A, and 234,600 acres in Alternative B. Within the R-2202 expansion area footprint, DoD is the surface owner/user of about 12,900 acres within the DTA-West boundary of the proposal area (far southwest corner), which is underneath the proposed expansion area for R-2202. The proposal area overlaps two boroughs: Fairbanks North Star and Denali, as well as the Southeast Fairbanks census area.

Land Management and Use

The ADNR is responsible for planning and management of the non-military lands under the proposed expanded restricted airspace. For this area, the Eastern Tanana Area Plan is under development by ADNR. It will replace the 1991 Tanana Basin Area Plan that includes this area currently. A brief description of applicable management plans for the proposal area are provided in Appendix I, *Land Use, Public Access, and Recreation*.

On Army lands in Alaska, pre-planning for siting of new targets and infrastructure or new activities at ranges or on training areas requires coordination between the proponent (in this case, the Air Force) and the USARAK IRO. The USARAK IRO and USAG-FWA Environmental Division review the range user's proposal and work directly with the a proponent/range user to select a location that is suitable for the proposed purpose, while also considering a range of environmental, operations, and land use constraints. These considerations as well as information from the Installation Training Area Management (ITAM) RTLA, and Land Rehabilitation and Management (LRAM) programs would factor into site selection and specific restrictions or BMPs that the proponent must agree to follow. This includes periodic or post-activity assessments, restorative actions, and site clean-up.

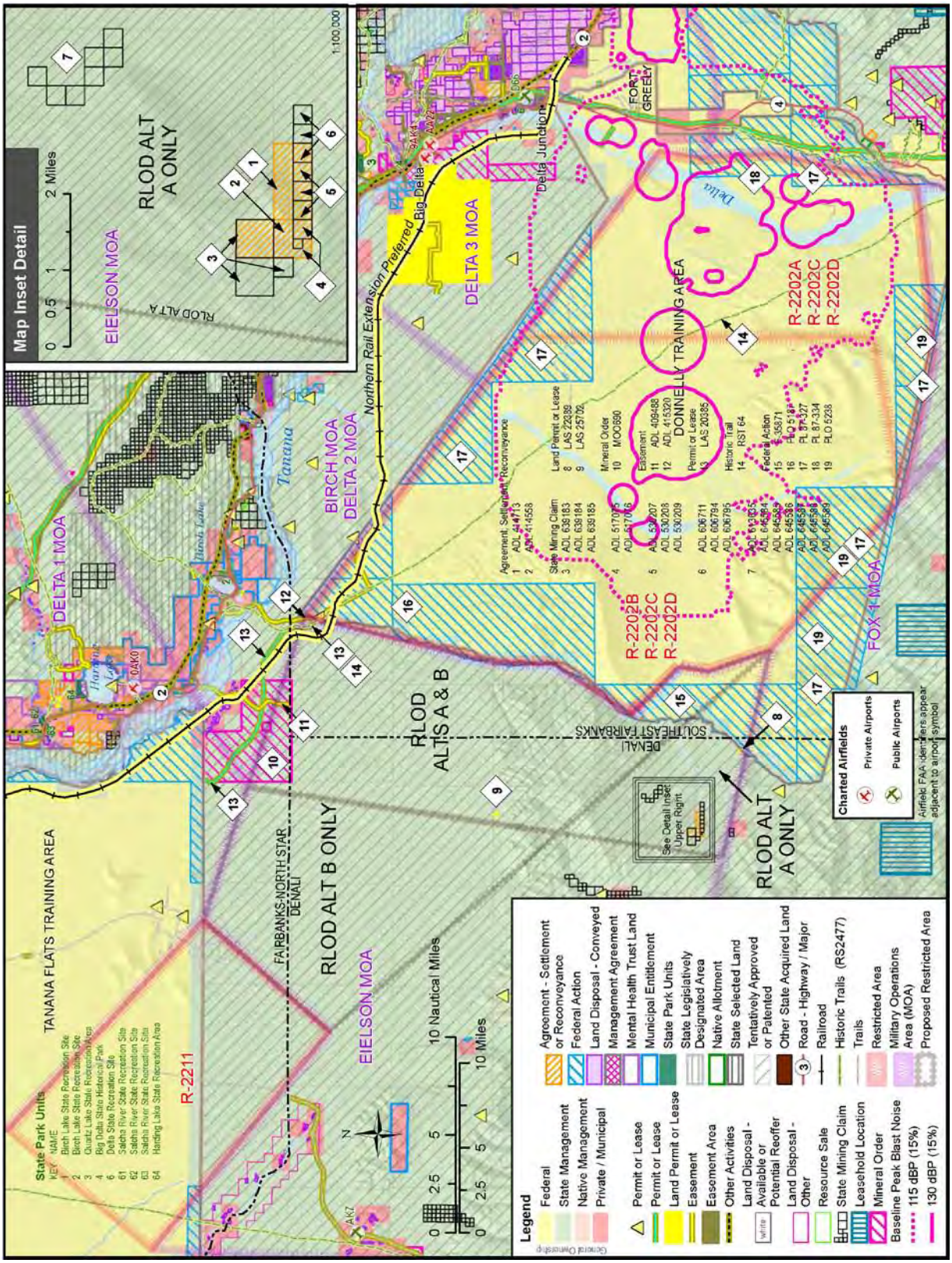


Figure 3-21. Land Status and Real Estate Interests in the Realistic Live Ordnance Delivery Proposal Area
Source: ADNR 2009-1, ADNR 2009-2, ADNR 2009-3, ADNR 2011-2, ADNR 2011-3, ADNR 2011-7, ADNR 2011-8, ADNR 2011-9

Land Uses on Military Lands. This proposal involves use of targets and surface activities on DTA and TFTA. TFTA is directly adjacent to the southern boundary of Fort Wainwright Main Post along the Tanana River. Within TFTA, there are three impact areas totaling about 59,000 acres: the Blair Lakes, Alpha, and Dyke Impact Areas. About 595,000 acres are used for light maneuver training. TFTA is bounded on the north and east by the Tanana River, on the west by the Wood River, and on the south by private and public lands. Due to lack of year-round access, TFTA is largely used by the Air Force for non-live-fire bombing exercises (USARAK 2010-5).

DTA is located on about 631,000 acres approximately 106 miles to the southeast of Fort Wainwright within the Tanana River Valley, near the confluence of the Delta River and Jarvis Creek. It is bordered by the Alaska Range on the south. DTA comprises two areas: DTA-West (523,730 acres) to the west of the Delta River, and DTA-East/Fort Greely (137,730 acres) to the east of the river. Together the two areas include approximately 493,570 acres of land used for large-scale maneuver events and live-fire exercises by the Air Force and Army. An additional 137,715 acres is classified as a dudded impact area, with restricted access and use (USARAK 2010-5). Dudded areas are off-limits to all public use.

Classifications used for planning and scheduling military operations reflect activities and functional requirements. Land may support discrete or multiple activities, depending on safety parameters and ability to sustain activities without environmental degradation. Figure 3-22 shows the extent of these overlapping military use areas. The following is a list of the classifications described in the USARAK Range and Training Lands Program Development Plan (USARAK 2010-5).

- *Foot use* areas have good horizontal concealment and open forest floors that promote ease of pedestrian operations. These areas may have some vegetation and terrain that provides both visual obstructions for training realism and cover for maneuvering through an area. Much of Fort Wainwright and DTA is classified as foot use area.
- *Maneuver areas* are generally open to semi-open areas where vehicles can move without running into obstacles such as trees, range buildings, streams, wetlands, or lakes. Maneuver areas may support light or heavy maneuver vehicles, depending on vehicle types. Other areas that typically receive a good deal of maneuver training include all roads, trails, DZs, and training ranges.
- *Bivouac areas* are designed to provide temporary living accommodations within a defended position. They receive occasional short-term concentrated use by small units for both vehicular and foot Soldier operations. Field operations may involve some digging and shallow ground disturbance for setting up temporary camps.
- *Firing points* are small areas from which either artillery or mortars are fired into designated impact areas. These areas are often in open brushy habitats, or in cleared areas with high levels of vegetation disturbance from artillery units digging in. Firing points require level ground, cleared of vegetation.
- *Firing ranges* are permanent or semi-permanent facilities used for weapons firing, demolition, or urban assault courses, and often have associated buildings or berms. Military uses of firing ranges on DTA include direct-fire weapons training, Military Operations on Urban Terrain (MOUT) training, hand grenade training, and demolition training.
- *Drop zones(DZs) and landing zones* are typically cleared areas used for airdropping troops and equipment, and are maintained free of trees (less than 10 trees per acre) and shrubs by mowing, prescribed fire, and hydro-axing.

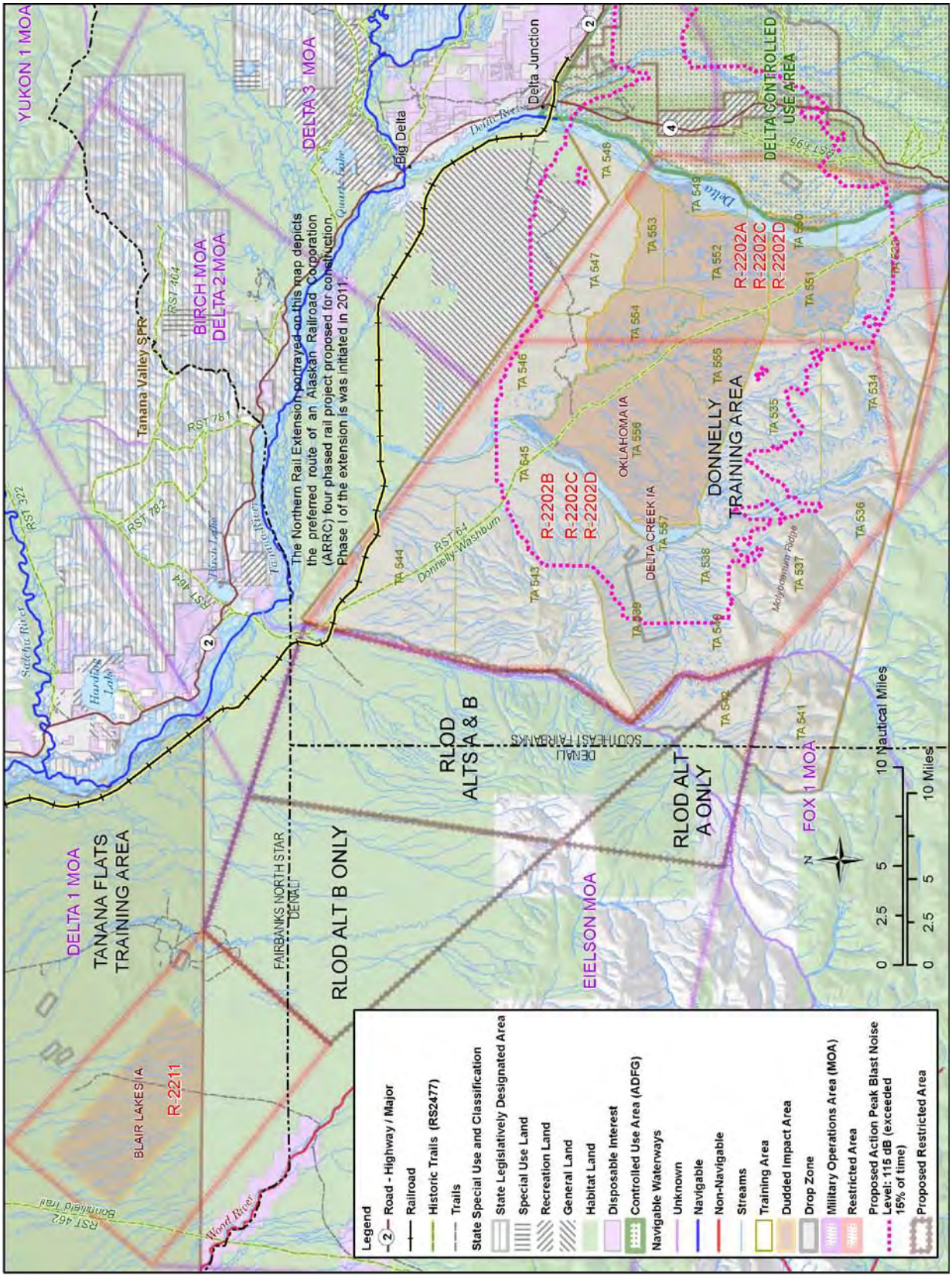


Figure 3-22. Military Uses, Special Use Areas, and Productive Uses in the Realistic Live Ordnance Delivery Proposal Area
Source: ADNR 2007, ADNR 2009-2, ADNR 2009-3, SAIC 2011-2, ADNR 2011-3, ADNR 2011-13

- *Observation Points* are small overlooks on elevated vantage points such as ridge tops or river bluffs surrounding an impact area. Most have a small building used to shelter an observer, who reports to an artillery unit on the results of their firing. They are also sometimes used as firing points for small arms and mortars and as bivouac areas.
- *Airstrips and assault strips* are semi permanent or permanent facilities for aircraft landing and takeoff that are not paved or part of an urban area. Airstrips and assault strips are sometimes associated with DZs, but are often not vegetated or have minimal vegetation.
- *Stryker Maneuver Corridor* consists of 20- to 30-foot-wide "lanes" cut through upland forest for use by Stryker vehicles. The ideal maneuver corridor incorporates irregularly spaced clumps of trees that provide avenues in which vehicles operate.

The primary public use on these training areas is recreation (described below, Section 3.2.10.1 in the Public Access subsection). There are very limited commercial productive activities on USAG-FWA land (USARAK 2006-2). There are a number of existing rights-of way, leases, and easements on DTA-West (for power lines, roads, and other infrastructure) that constrain other uses.

Land Uses on State-owned Land. Most of the non-military land underlying the Eielson MOA and restricted airspace is State-owned, with fish and wildlife habitat as the primary management value and use. This area has a history of previous military use for bombing and training, and is identified as an Military Munitions Response Program (MMRP) site with possible UXO (see the figure entitled "Contaminated Sites in the Fairbanks Area" in Appendix B, *Definition of the Resources and Regulatory Settings*). The area is administratively divided, falling partially within Denali Borough, FNSB, and the undesignated Southeast Fairbanks census area. Under State management, the area is also divided between the Yukon Basin and the East Tanana Area Plan boundaries.

This area is not road-accessible and remains largely remote and natural. As shown on Figure 3-12, areas along the Wood River have high levels of hunter activity, as does the area between the Wood and Tanana Rivers on TFTA and between TFTA and DTA West. These areas are particularly active in late summer/fall for hunting, fishing, and other remote recreation. A few isolated private parcels have hunting cabins that are used seasonally (mostly in September). Portions of the land are identified for settlement along the Wood River.

Special Use Areas. There are no legislatively designated special use areas on Federal or State lands in the RLOD proposal area. A small portion of the Delta CUA (about 2 percent), an ADFG management area, overlaps with the east side of DTA West. ADFG restricts the use of motorized vehicles for hunting in this CUA.

Resource and Productive Use. The majority of State-owned land within the proposal area is managed as habitat land by the ADNR. The area also has several leases, conveyances, permits, and easements. Table 3-31 identifies real estate interests and permitted uses on State land within the RLOD proposal area. On the remainder of the State lands, generally permitted land uses (see Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.3.1) are allowed unless specifically restricted. The locations of these existing interests are shown on in Figure 3-22.

Table 3-31. Real Estate Interests, Permits, Easements and Productive Uses on Non-Military Land in the Realistic Live Ordnance Delivery Restricted Airspace Expansion Areas

ID #[1]	Real Estate Interest	RLOD A (only)	RLOD B (only)	RLOD A+B (common to both)	Notes
	Area under modified airspace (acres)	39,224	105,276	137,312	
	Mineral Estate (acres)				
1	Federal Mining Claim, Reconveyance ADL 414713	320	NA	NA	Bureau of Land Management – Active
2	Federal Mining Claim, Reconveyance ADL 414588	320	NA	NA	Bureau of Land Management – Active
3	State Mining Claim ADL 639183 ADL 639184 ADL 639185	360	NA	NA	Single owner
4	State Mining Claim ADL 517075 ADL 517076	50	NA	NA	Single owner
5	State Mining Claim ADL 530207 ADL 530208 ADL 530209	120	NA	NA	Single owner
6	State Mining Claim ADL 606711 ADL 606794 ADL 606795	120	NA	NA	Single owner
7	State Mining Claim ADL 613635 ADL 645584 ADL 645585 ADL 645586 ADL 645587 ADL 645588 ADL 645589	280	NA	NA	Single owner
8	Land Permit/Lease LAS 22389	UNK	N/A	NA	Year-round recreational camp; private permit holder
9	Land Permit/Lease LAS 25702	NA	NA	UNK	Year-round recreational camp; private permit holder
10	ADNR Mineral Order – Open MOO 690	NA	NA	5,721	Mariana Disposal Area (opened 1994)
11	Easement ADL 409488	NA	NA	UNK	Public right-of-way, 0.91 miles
12	Easement ADL 415320	NA	NA	UNK	ADFG Public Right-of-Way 0.55 miles
13	Permit/Lease LAS 20385	NA	NA	UNK	USARAK miscellaneous land use (portion of Maneuver Corridor), 1.11 miles

Table 3-31. Real Estate Interests, Permits, Easements and Productive Uses on Non-Military Land in the Realistic Live Ordnance Delivery Restricted Airspace Expansion Areas *(Continued)*

ID #[1]	Real Estate Interest	RLOD A (only)	RLOD B (only)	RLOD A+B (common to both)	Notes
14	Permit PLO 5187	NA	NA	UNK	Historic trail, RST 64, Donnelly-Washburn trail, 1.28 miles
15	Federal Action F-35871	5,663	NA	5,789	F-35871 (portion), Other Federal Action; land within DTA
16	Federal Action Public Land Order 5187	N/A	N/A	52	PLO 5187 (portion)

Key: ADFG=Alaska Department of Fish and Game; ADNR=Alaska Department of Natural Resources; DTA=Donnelly Training Area; LAS=Land Administration System; MOO=Mineral Opening Order; N/A=not applicable; PLO=Public Land Order; RLOD=Realistic Live Ordnance Delivery; RST=indicates a trail number; UNK=unknown; USARAK=U.S. Army Alaska.
Source: ADNR 2009-2, ADNR 2011-7, ADNR 2011-8, ADNR 2011-9.

Two permits on State land allow for commercial guide trips to cabins within the RLOD proposal footprint. The status of 20 existing mining claims (to four separate individuals) underlying the expanded R-2202 footprint is unknown. A small, active mining area is situated along Portage Creek in the Little Delta River drainage. The area has one open mineral order, two mining claim reconveyances to BLM, two public right-of-way easements (for about 1.5 miles), a historic trail right-of-way for the Donnelly Washburn RST-64 trail (an RS 2477 trail), and a Federal action for lands within DTA-West.

Private and Native Lands

There is no private property within the proposal footprint. Private mineral claims and leases on State land are identified on Figure 3-22 and discussed above.

Outside the proposal footprint, underlying the Eielson MOA, there are two areas of State land disposal that contain several remote settlement land holdings. One area is along the Bonnifield Trail and one is served by a public right-of-way (ADL 401880). Both are along tributaries of the Wood River system and both have several small private land parcels.

LOCATIONS OF INTEREST

The ADNR has indicated that the Wood River area has potential for settlement for FNSB, and is important as a hunting area for residents of Fairbanks due to proximity, wildlife resources, and existing access trails into remote areas.

PUBLIC ACCESS

Land Access

Roads and trails within the RLOD proposal area, including RS 2477–designated routes, are listed in Table 3-32 and shown in Figure 3-21.

Table 3-32. Public Access Within the Area of Influence for the Realistic Live Ordnance Delivery Proposed Action and Alternatives

Public Access	Designation	Length
Bonnifield Trail	RS 2477 Trail/ RST 462	5
Donnelly Dome: Old Valdez Trail Segment	RS 2477 Trail/ RST 695	< 1
Donnelly-Washburn	RS 2477 Trail/ RST 64	45

Source: ADNR 2009-2.

Public access areas under the Eielson MOA on non-military lands include one RS 2477 trail, Donnelly-Washburn (RST 64), and at least one non–RS 2477 trail, the Winter Trail.

Public access areas under R-2211 include one RS 2477 trail, Bonnifield Trail (RST 462). In addition, there are at least two non–RS 2477 trails, including the Tractor Trail, which crosses the Blair Lakes Impact Area, and an unnamed trail located in the southeast corner of the Blair Lakes Impact Area.

R-2202 overlies portions of DTA including Fort Greely West Training, the Oklahoma/Delta Creek Impact Area, the Mississippi Impact Area, and the Washington Impact Area within DTA. The public access areas under R-2202 include two RS 2477 trails: Donnelly Dome: Old Valdez Trail Segment (RST 695); and Donnelly-Washburn (RST 64). In addition, there are a number of non–RS 2477 trails, including the Winter Trail, which crosses R-2202 from the northwest corner to the southeast corner.

Access to Military Land

Public access to training areas is allowed subject to safety restrictions, military security, military training schedules, and compatibility with the military mission. Currently, public access is allowed to 89 percent of USAG-FWA-managed lands, primarily for recreation. Military training takes priority over recreational use of military lands; USARAK accommodates access to military lands during hunting seasons to the maximum extent possible.

Access is readily available to DTA, especially from the eastern side from Meadows Road, Dome Road, Old Richardson Highway, and Fleet Street, connecting directly to either the Richardson or the Alaska highways. Additional access was historically available through the Fort Greely cantonment area (now managed by Space and Missile Defense Command [SMDC]), but general or recreational access is no longer available.

In addition to ground access via roads, much of DTA is available to aerial and ORRV access. ORRV and winter trails exist across both the eastern and western parts of the training area. The 33-Mile Loop is one of the more popular trail systems in DTA-East. DTA-West is only accessible in winter when the Delta River is frozen over, or by air or boat.

Public use is limited on some parts of DTA where there are potential or ongoing safety hazards. DTA has four primary categories of recreation use areas: Open Use, Modified Use, Limited Use, and Off-Limits areas. These areas may be permanently closed to public access due to specific military activities. Range Control can provide a listing and description of such access restrictions within DTA.

DTA is subject to temporary closures and recreational use restrictions due primarily to priority military training operations that would be incompatible with joint use. Seasonal closures are implemented during freeze-up or break-up. Public users are required to follow access procedures, including use of the USARTRAK automated check-in phone system, to ensure that land area is available for recreational use. This information is also available through both the Range Control office and the Environmental Resources Department.

Limitations and restrictions on public access also depend on the type of designated military use for each area. Some common incompatible uses of military lands include non-military structures, easements, and leases. Three general categories of military land affecting public access are discussed below and include: (1) training areas and nonfiring facilities; (2) firing ranges, SDZs, and nondudded impact areas (dedicated impact areas); and (3) dudded impact areas.

Training Areas and Nonfiring Facilities. Public access to training areas is allowed subject to safety restrictions, military security, and military training schedules, and compatibility with the military mission.

Compatible uses may include hunting, fishing, trapping, bird watching, hiking, skiing, dog sledding, and ORRV operation. Currently, range operators indicate that access is generally provided during September for the peak hunting season, and, overall, these areas are available for non-military uses between 70 and 80 percent of the time.

Firing Ranges, Surface Danger Zones and Nondudded Impact Areas. Public access into firing ranges, SDZs, and nondudded impact areas is normally disallowed due to conflicts with the military mission. However, there are times during the year when public use does not conflict with military training and the public is allowed into these areas.

Dudded Impact Areas. Impact areas are used for weapons targeting and firing practice. High-hazard (dudded) impact areas are closed to the public due to the hazard of UXO. Nondudded impact areas are not permanently restricted, although permission to enter these areas is limited. Dudded impact areas in DTA are shown in Figure 3-13.

The central portion of DTA-West is designated primarily as an impact area and off-limits to public access, even though it has good road access. Permanent, dedicated impact areas include Oklahoma, Delta Creek, Mississippi, Washington, portions of the Allen Army Controlled Fire Area, and the Lakes Maneuver Impact Area. Surrounding training areas are classified as Modified (open for nonmotorized recreation year-round and to motorized recreation during appropriate snow cover) and Open Use areas. The CRTC complex at Bolio Lake is off-limits to public access and use.

Warning signs have been placed in DTA, the majority being east of the Delta River. Eleven gates have been constructed along the eastern boundary of the Delta River, and one is located in the northern portion of the Allen Army Controlled Fire Area. The lands between Meadows Road and the impact area boundary (Delta River) are off-limits and are posted accordingly. The Wills Small Arms Complex and the battalion bivouac site area are also off-limits and gated and posted. Warning signs exist on all probable approaches to restricted areas.

TFTA is bordered by the Tanana and Wood Rivers, and there are no permanent bridges to TFTA. Summer access is by boat or plane only. Constructed ice bridges over the Tanana River provide for ground access to TFTA in the winter. Development of the Northern Rail Extension project was recently approved and is moving into the first phase of construction. That project will provide a bridge over the Tanana River just northeast of the TFTA. Signs have been posted in TFTA, primarily on maintained approaches to the Blair Lakes Impact Area. Several maneuver trails run near or across parts of this impact area, and these approaches have been heavily posted to indicate significant safety hazards in the impact area.

The winter sled trail entering the Blair Lakes Impact Area from the north is gated and posted with warnings. This is the primary access route to the impact area, and warning signs are posted at lengths along the access route. Other warning postage around the Blair Lakes Impact Area is sparse, due to lack of additional access and the remote location. Blair Lakes Impact Area access is managed by the Air Force.

TFTA has two impact areas, of which the Blair Lakes Impact Area, is within the ROI for this alternative. The Blair Lakes Impact Area has been used as a bombing range, historically, and is off-limits to public access.

Access to Non-military Land

In the proposal area, the Bonnifield Trail and Donnelly Washburn trails provide access into the Wood River and Little Delta River areas. These trails intersect with access points along the Tanana River.

Areas south of proposal area (south of the Wood River) are also accessible via an extension of the Rex trail from the Parks Highway and along the river corridors. Many hunters fly into these areas and the northern parts of the Alaska Range using small private airstrips and flat areas to land.

Aerial Access

The locations of public and private airports and airstrips providing access to the proposal area are shown in Figure 3-21. Table 3-33 lists charted airports in the area and indicates which communities and special use areas are potentially served by each. None of these airfields lie directly under the proposed airspace footprint.

Table 3-33. Charted Airports Serving the Realistic Live Ordnance Delivery Proposal Area

Charted Airport	Areas Underlying or Within 20-mile Service Radius	
	Community	Special Use Area
Clear Creek Airport	Calcha CDP, Eielson AFB CDP, Harding-Birch Lakes CDP	Tanana Valley SFR, Salcha River SRS
Gold King Creek Airport	None	None
Greg'N Sage Airport	Badger CDP, North Pole City, Moose Creek CDP, Salcha CDP, Eielson AFB CDP, Harding-Birch Lakes CDP	Tanana Valley SFR, Chena River SRA, Harding Lake SRA, Birch Lake SRS, Salcha River SRS
Scotts Airport	Harding-Birch Lakes CDP, Salcha CDP, Eielson AFB CDP	Tanana Valley SFR, Harding Lake SRS, Salcha River SRS, Birch Lake SRS

Key: AFB=Air Force Base; CDP=Census Designated Place; SFR=State Forest; SRA=State Recreation Area; SRS=State Recreation Site.

Navigable and Public Waters

There are numerous water bodies within the proposal footprint. The Tanana River and a portion of the Wood River, bordering the west side of TFTA, are categorized as navigable.

RECREATION

Recreation on Military Land

Historic recreational use numbers for DTA were reported in the *Final Environmental Impact Statement for Transformation of U.S. Army Alaska, Vol. 2, Appendix E* (USARAK 2004-1). Recreational use statistics for the entire DTA are summarized in Table 3-34, as no statistics exclusive to DTA-West were available.

Donnelly Training Area

Hunting. All Federal and State hunting laws apply within DTA. DTA-West is located in GMU 20A and DTA-East in GMU 20D. The ADFG regulates all activities—e.g., hunting seasons, bag limits, weapon restrictions, accessibility—for these GMUs.

Hunting occurs on DTA land throughout the year, with a disproportionate amount of use occurring in fall. Most big game, upland bird, and migratory waterfowl seasons begin in August or September. Moose is the most popular game species pursued in DTA (USARAK 2004-1). Its season starts on or about September 1. Other big game species hunted include bison and bear (USARAK 2004-1). More data on wildlife populations in DTA can be found in Section 3.1.8, Biological Resources. Hunting is allowed within open areas of DTA as determined by Range Control.

DTA-West is open from September 1 through September 20 (this end date may change annually) for hunting. Antler restrictions may apply in this GMU and are described in the Alaska Hunting Regulations. Data compiled by ADFG (see Figure 3-12) indicates moderate use (about 40 to 100 days of hunter use days per year) on DTA West outside of the "No Access" areas.

State of Alaska regulations allow black bear hunting year-round in GMU 20D, with a harvest limit of three per regulatory year. Black bears may also be taken over a State-registered bait stand from approximately April 15 to June 30. Black bear baiting is allowed in DTA after registration of the stand with the State of Alaska and USAG-FWA. As with all recreational activities, some areas may be temporarily closed to bear baiting due to training.

Table 3-34. Recreational Use in the Donnelly Training Area and Tanana Flats Training Area

Recreational Category	Average Annual Users
Donnelly Training Area	
Hunting	1,150
Trapping	50
Fishing	1,500
Trail Use	200
Off-Road Recreational Vehicles	400
Other	1,700
Tanana Flats Training Area	
Annual permits issued	Not available
Hunting	Not available
Trapping	Not available
Fishing	Not available
Trail Use	Not available
Off-Road Recreational Vehicles	Not available

Source: USARAK 2004-1.

Grizzly (brown) bear hunting is open from approximately August 10 to June 30, with a harvest limit of one per regulatory year. The caribou hunt (bulls) in DTA-East is open to residents only through a registration hunt. This season occurs approximately August 15 to August 25. Bison hunts are allowed through an ADFG drawing process. The number of permits issued is based on that year's population estimates and composition. There is insufficient habitat for Dall sheep in DTA-East; thus, no hunting occurs. Access through DTA-East for Dall sheep hunting in other areas off-post does occur, as the Granite Mountains (to the east of DTA-East) are part of an ADFG drawing permit sheep hunting area.

Trapping. Trapping is allowed in DTA. Trapping in the area requires registration of traplines with the USAG-AK Environmental Division, a Recreational Access Permit, and a daily phone call to the USARTRAK system. Popular furbearer species for trapping include lynx, beaver, pine marten, fox, and wolves. Trapping use has been fairly constant in the training area, and trappers' lines are usually placed in the same general location each year.

Fishing. Fishing is a popular recreational activity in DTA. In addition to naturally existing populations of many sport fish, there are 16 lakes with stocked sportfish populations, including grayling, rainbow trout, arctic char, and king salmon. Stocked lakes include Bolio, Bullwinkle, Chet, Nickel, J, Doc, Shellfish, Mark, North and South Twin, Rockhound, Luke, Ghost, and No Mercy within the Meadows Road–Windy Ridge Road loop. Fifteen of these areas accessible by road or trail through the training areas west of Richardson Highway. Weasel Lake, near the southern boundary of the training area, and Koole Lake, in the northwest, are also stocked. Koole Lake is accessible by floatplane in summer and

snowmachine in winter. ADFG is responsible for maintaining stocked fish populations on military lands. Fishing in the State of Alaska requires that all persons 16 and older purchase a State fishing license. Fishing on DTA requires a Recreational Access Permit and a daily phone call to the USARTRAK system.

Icehouses are permitted on DTA lakes. Icehouses not removed from the ice at the end of the fishing day must be registered, and permit must be obtained from ADFG. A separate military permit for icehouses is not required.

Trail Use. DTA contains many trails east of the Delta River within the west part of the training area and throughout the east side of the training area. The most common hiking route in DTA is the trail to the top of Donnelly Dome, east of the Washington Range along the Richardson Highway. Public access for trail use is allowed with a valid Recreational Access Permit, but is subject to closures and to safety and military security restrictions. A call to the USARTRAK system is also required before entering the area.

Other popular trail activities on Army lands include sightseeing, bird watching, berry picking, skiing, and dog sledding. Many recreational activities are seasonal and occur in brief bursts each year. Records of nonextractive recreational use of most Army lands are unavailable.

Off-Road Recreational Vehicles. ORRVs use in DTA includes airboats, snowmachines, dirt bikes, three- and four-wheelers, and four-wheel-drive vehicles. ORRVs are used in association with many activities in interior Alaska. These vehicles are primarily used to access hunting, fishing, and trapping areas, and for recreational riding.

Prohibited Activities. Typical recreational activities prohibited on DTA include recreational swimming in streams, ponds, or lakes; walking of pets that are not under voice or leash control; hang gliding, ballooning, paragliding, or bungee-jumping; commercial rafting or boating; building of structures without prior approval; littering or abandonment of any man-made objects (including geocaching); and removal of minerals (including gold panning, dredging, and mining of any kind) or fossils.

Tanana Flats Training Area

TFTA is an open use area except for the impact areas, including the Blair Lakes Impact Area, underlying R-2211, which are closed areas and off-limits to public access and recreational uses. TFTA is not linked to any road system and is accessible by airplane, and boat in the summer, and snowmachine in the winter. Hunter access is a significant issue with regard to the impact Areas on TFTA. These areas are closed to access due to UXO and the related safety and liability concerns. However, there is often illegal access during hunting, fishing, off-road vehicle (ORV), ORRV, and boating activities. The public is expected to comply with all rules concerning restricted access along with permanently and temporarily closed portions of TFTA. The public may use unimproved remote landing areas after complying with notification requirements, provided this use does not interfere with military activities or incur Federal liabilities. Landing areas may or may not be maintained by the Army and their use by the public is at one's own risk. Users must have a Recreational Access Permit. Signs are posted to warn the public of impact areas and other closed areas. Warning/Information signs are posted on flagpoles at all major access points along the Richardson Highway. When an area is in use, a red flag is raised at the access point, warning the public of current off limits areas.

Hunting. TFTA is located within GMU 20A. Hunting, particularly for moose, is popular in TFTA. Hunting and fishing are the main recreational activities occurring on Fort Wainwright lands. Data show that 21 percent of the interior Alaska moose harvest occurs on military lands, while 2.3 percent of the Interior caribou harvest and 2.1 percent of the sheep harvest are also on military-controlled lands (USARAK 2007-2). Twenty hunters registered bait stations for black bears in 2010. Between 1997 and

2010, an average of eight bears per year have been taken (USARAK 2010-6). As shown on Figure 3-12, the number of hunting use in central and east edge of TFTA is high to very high.

Trapping. During the 2009/2010 season, lynx (177) and marten (90) were the most frequently harvested fur-bearing animals on TFTA, followed by fox, beaver, mink, coyote and wolf at lesser levels (USARAK 2010-7).

Fishing. Fishing is a popular public activity in TFTA. There are no stocked lakes in TFTA, although the Blair Lakes range offers pike fishing opportunities. In addition, salmon runs on the Tanana River attract sport fishers. Blair Lakes are used for fly-in hunting and fishing and hunting.

Trail Use. The primary trails on TFTA include Blair Lakes Trail and Bonnifield Trail. Shelters exist along the Wood River, Willow Creek, Clear Creek, Salchaket, Salchaket East, and Blair Lakes Trail. However, little hiking is known to occur in TFTA due to the widespread wetland areas throughout the training area and the lack of all-season ground access. Drier trails are remote and less accessible.

Off-Road Recreational Vehicles. ORRV use on TFTA has been high. All-terrain vehicles are brought over by boat during summer months, and snowmachines are used in winter. USAG-FWA manages ORRV use to reduce the level of ORRV damage to wetlands in TFTA. Airboats are also popular ORRV activities in TFTA. Most airboat traffic into the fens occurs after July 15 annually. Airboats are well suited for use on the shallow Chena and Tanana Rivers, as well as on a unique system of floating mat fens in TFTA. USAG-FWA is planning to designate the Tanana Flats Special Use Recreational Management Area between Salchaket Slough, Willow Creek, the Tanana River, and Bonnifield Trail. This area is divided into the upper and lower fens (swamps). The Tanana Flats Special Use Recreational Management Area would be open to all types of ORRV with no restrictions when the soil was frozen. All ORRVs must stay on existing trials during unfrozen conditions. This special use management area would be open to airboats and other motorized watercraft with no restrictions between August 15 and April 1 each year. Between April 1 and July 15, the special use management area would be off-limits to all ORRV vehicles, including airboats and other motorized watercraft. Between July 15 and August 15, access into the upper and lower fens (managed separately) is dependent on water level. The Tanana Flats Special Use Recreational Management Area would be open to all other recreational activities year-round. Outside of the Special Use Recreational Management Area in TFTA, airboats and other motorized watercraft would be limited to open water; they could not access the fens. USAG-FWA has also proposed to create a Special Interest Area between Willow Creek and Crooked Creek, which would restrict creation of on new trails in this area (USARAK 2006-2).

Recreation on Non-military Land

Figure 3-22 shows State land classified for recreational values. The Tanana Basin Area is mostly classified as State Habitat Area is located on non-military land under the Eielson MOA, R-2211, and R-2202, and within the ROI for the RLOD proposal.

Hunting and Trapping. The RLOD proposal area within GMU 20A is managed by ADFG. This area is considered a world-class area for moose hunting, with over 4,000 moose permits issued annually, and harvest levels well above 1,000 animals over the last several hunting seasons (ADFG 2010-1). The primary moose hunting periods are from mid-August to mid-September, mid-November to mid-December, and mid-January to the end of February; however, these seasons can vary from year to year. Also harvested are brown bear, black bear, and Dall sheep. Trapping also occurs throughout the entire area, and is a priority use area by residents from the Fairbanks area. As shown on Figure 3-12, the number of hunting use in central and east edge of TFTA is high to very high. A description of the primary management focus, recreational hunting and trapping resources, and seasons for this unit is provided in Appendix I, *Land Use, Public Access, and Recreation*. As shown in Figure 3-12, the area

between R-2202 and R-2211 under the Eielson MOA has relatively high use for hunting, as does the area along the Wood River. This high use is largely due to the prime moose habitat, and proximity to the Fairbanks population base. Table 3-35 shows that moose is by far the dominant species harvested in GMU 20A, which encompasses the State and military lands of this proposal. Lynx are the most harvested fur-bearing animal.

Fishing. The Tanana River basin fisheries offer some diverse quality fishing opportunities but do not have the richness and fish numbers of those nearer the coast. Fish habitat in this area changes rapidly with elevation. Burbot are caught in river systems, primarily in the Tanana River, with a few lakes supporting burbot populations as well. The ADFG has increased fishing stocks several lakes in the basin ranging from 3 to 600 acres in size with rainbow trout, silver salmon, lake trout, arctic char, and arctic grayling.

Table 3-35. Harvest of Game Species within Game Management Unit 20A

Game	Reported Hunter Harvest-Estimated Total	Reporting Period
Hunting		
Moose	1,108	2008-2009
Brown Bears	26	2007-2008
Black Bear	34	2006-2007
Dall Sheep	85	2006-2007
Trapping		
Lynx	512	2008-2009
River Otter	8	2008-2009
Wolverine	7	2008-2009

Sources: ADFG 2011-5; ADFG 2011-6; ADFG 2011-7; ADFG 2011-8; ADFG 2011-9.

3.2.10.2 Impact Assessment Methodology

The general methodology for evaluating land use, public access, and recreation are described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The following are the primary impacts of this proposal on land use, including public access and recreation:

- Effects of military overflights on underlying uses and activities (primarily from aircraft noise), as described in Section 3.1.10.2
- Effects of countermeasures deployment on land uses and recreation, as described in Section 3.1.10.2
- Indirect effects of limited civilian air access on land use and recreation, as described in Section 3.1.10.2
- Effects of weapons and munitions use on land uses, private and public access, and recreation, as described below

Land Management and Use. Expending weapons causes temporary hazardous conditions on the ground requiring the exclusion of persons from the hazardous area. This assessment locates the spatial extent of the exclusion areas affected by hazardous conditions and identifies the ownership, current permitted or ongoing uses or these areas, and any specially designated areas. It also provides the temporal extent of exclusion from affected areas—in terms of frequency, duration, and seasonality—for current and

proposed levels of military operations, where data are available. Based on this, the viability of land uses or change in suitability for ongoing, intended, or authorized uses (per plans, special designations or controls, or existing rights) is evaluated (as none, minor, moderate, high/substantial, or beneficial). The analysis considers changes to both public uses on affected military land and public and private uses on the proposed restricted area addition on non-military land.

Expending weapons also generates impulsive noise. The method used to assess the impacts of impulsive noise on land use is similar to that described for noise from aircraft overflight, as described in Section 3.1.10.2. The compatibility standards presented in Section 3.1.1.2 and Table 3-21 provide guidelines for evaluating effects on persons and populated areas and productive uses. Other factors are considered in evaluating noise impacts on uses in remote areas, where absence of noise is an intrinsic value (see Section 3.1.10.2, General Methodology). The impulsive noise from weapons firing can yield impacts ranging from annoyance to physiological damage. Table 3-36 indicates expected risks from impulsive noise levels. Frequency of peak events is one of the major factors affecting annoyance and impact.

Table 3-36. Noise Risks from Impulsive Noise

Predicted Sound Level, Peak	Risk
<115 dB	Low risk of noise complaints
115–130 dB	Moderate risk of noise complaints
130–140 dB	High risk of noise complaints, possibility of damage
>140 dB	Threshold of permanent physiological damage to unprotected human ears. High risk of physiological and structural damage

Indirect effects of UXO, primarily a safety issue, are addressed in Sections 3.2.3.3 and 3.2.7.3. The land use analysis describes the potential for accumulation of UXO from proposed operations to render land unsafe for use or for development for current or future uses.

Public Access. The analysis identifies the segments of public roads and trails, serving both public and private land that would have limited access due to operations under the proposal alternatives and quantifies the duration and frequency of closures. The analysis identifies which areas are served (and therefore not accessible) during closures. The degree of impact is dependent on the loss of availability to use access routes and the volume of use on these routes (where data are available). It also considers whether alternative routes exist to areas that are not affected by hazardous conditions but are inaccessible due to route closures.

Recreation. The evaluation of impacts on recreation uses a similar approach to that described above for land ownership, management, and use. The analysis identifies areas and sites used for recreation, and, where relevant, the specific types of recreational activities affected. The effect on recreation is primarily one of access rather than a change in intrinsic qualities. A small number of local residents have expressed the high value of subsistence and recreational use value.

3.2.10.3 Environmental Consequences

Due to safety regulations, this analysis assumes that the proponent would restrict ground access to all nonparticipating individuals, and would provide evacuation notice to all persons with surface interests in the areas under the expanded airspace, outside of DoD boundaries during periods of hazardous operations. For analysis it is assumed that these hazardous activities would occur on up to 150 days per year, for a maximum of 5 hours per day. All applicable existing mitigations, BMPs, and SOPs in effect for military

lands would apply for this proposed action. Information on existing mitigations is provided in Appendix K, *Mitigations, Best Management Practices, Standard Operating Procedures.*

The Air Force, in coordination with the Army range management elements, would retrieve and "render safe" any areas where munitions land outside of designated impact areas on DTA-West or Blair Lakes Impact Area. The Air Force would not conduct RLOD training using the restricted airspace or DTA-West in the month of September in order to avoid one of the busiest months for hunting. The Air Force would publish advanced notification of the schedule of where and when ground access restrictions occur, in order for individuals to plan for these closures. Additionally, the Air Force would have responsibility for verifying that nonparticipating individuals are clear of the WDZ and the restricted airspace prior to undertaking hazardous training activities.

3.2.10.3.1 Alternative A

Land Status, Management and Use

Effect of Impulsive Noise on Public and Private Land Use. Section 3.2.2.3 provides current and projected noise levels for proposed operations of the RLOD. Sections 3.1.10.2 and 3.1.10.3.1 provide information on the noise metrics used to evaluate effects of noise on land use and annoyance to persons.

Impulsive noise levels of 62 dB CDNL would remain within the boundary of the existing Oklahoma Impact Area on DTA-West. These noise levels are compatible with military training uses on military land. Areas exposed to peak noise levels exceeding 115 dB PK 15(met) extend beyond military land (see Figure 3-22). As the figure shows, a large area of State-owned land to the northeast of DTA-West is affected by peak noise levels above 115 dB PK 15(met). Table 3-37 shows the acres affected by peak noise levels under the RLOD proposal. The table indicates that current firing activity on DTA-West currently affects 21,841 acres outside the installation boundaries. An increase of about 550 acres would affect State land only. The affected area to the north of DTA-West is mostly forested with valuable moose habitat and good hunting opportunities. Within the noise exposure footprint is the "key hole" area between DTA-East and DTA-West. This area (7,290 acres) is composed primarily of private and BLM land. The area is also forested and essentially uninhabited. Some persons using this area may be annoyed by peak levels above 115 dB PK 15(met), but less than 130 dB PK 15(met), while engaging in outdoor activities (as indicated in Table 3-36). However, peak noise levels of 115 dB PK 15(met) already affect this area on a regular basis, and the change is relatively minor (less that 4 percent increase in non-military land), resulting in no adverse impact.

Table 3-37. Peak Noise Exposure Associated with the Realistic Live Ordnance Delivery Proposal

Location	Current 115 dB PK 15(met) Exposure (acres)	Proposed 115 dB PK 15(met) Exposure (acres)	Change (acres)
Military Land:	328,129	334,028	5,899
Non-military Land			
State	14,351	14,902	551
Private	4,068	4,068	0
BLM	1,895	1,895	0
Military-managed	1,527	1,527	0
Total Non-military	21,841	22,392	551
Total (all lands)	**349,971**	**356,420**	**6,449**

Key: BLM=Bureau of Land Management; dB = decibel.
Source: ADNR 2011-2.

Effects of Restricted Access on Military Land. When hazardous training and MFE operations use the proposed RLOD airspace and capabilities, civilians and nonparticipating persons would be excluded from training areas exposed to surface hazards. The proposed RLOD activities would restrict access to most of the training areas on the west side of DTA-West. Most of this training land is categorized as open use and limited use. This proposal would not change permitted public uses on DTA-West; however, the training schedule for RLOD would limit availability to about 60 percent of weekdays (i.e., 3 days). Generally, access would continue on weekends and in September. These areas are highly valued by a small number of local residents for various uses, including subsistence activities and recreation (discussed below). These users may be annoyed by reduced access or experience inconvenience if they must schedule their uses for times when military activities are not occurring. This would mostly affect uses (predominantly recreation and hunting) in TAs 538, 539, 540, 541, 542, 543, 544, and 545. The proposal would have no effect on portions of the Winter Trail that pass through existing impact areas, because they are off limits already. There is limited productive land use occurring on DTA-West (with no mining and agriculture, but some managed timber harvesting). Therefore, only minor impacts on non-military uses other than recreation on DTA-West would result. Impacts on non-military recreation uses of DTA-West are discussed separately, below under recreation.

Effects of Restricted Access on Non-military Lands. No public use would occur within WDZs when mission activities occur. Under Alternative A this would include about 163,630 acres of non-military land underlying the extended R-2202 airspace beyond the boundary of military land. As described in Section 3.2.10.1 and Table 3-31, there are several private and some State and Federal interests held on parcels within this land area. The proposed military training schedule for the RLOD would limit access for any commercial or personal purposes by about 60 percent of weekdays. In most cases this would make it infeasible to use the land for potential or intended productive purposes and would severely constrain availability for recreational uses. This would also disrupt any permanent habitation; however, there are no private parcels directly under the Alternative A airspace, and no continually occupied homesteads. Limited access would not impact the State surface management priority for "habitat" values, but would significantly affect availability for recreational use (see below).

Three easement/rights-of-way for USARAK and ADNR are located in the project area. One public trail (Donnelly Washburn) passes under the north end of the proposed extension of R-2202. This portion of trail would become inaccessible during RLOD training (potentially about 2 or 3 days each week), as would the greater segment of this trail (Winter Trail) that crosses DTA-West. This trail intersects the Little Delta River, which would serve as a natural trail when frozen in winter. Under this proposal, the portion of the Little Delta River under the restricted airspace would also be closed for safety purposes. However, this situation exists for current operations. The status of the existing open mineral order is unknown. Similarly, the status of any currently active mineral claims is not known, nor the potential of any nonactive claims. The location of 20 mining claims is within the proposed restricted airspace extension but outside of the largest WDZ for the RLOD. Uses that rely on daily access would not be feasible with more than a 50 percent reduction in access. Some types of commercial operations may need less than daily access and may have options for sustaining uses with a high degree of coordination with the proponent.

The Air Force has identified two flight avoidance areas over the mining claims on the north and south ends of the R-2202 expansion area as a mitigation for this proposal. This mitigation would allow any activities on the ground in those locations to continue, even when RLOD activities are taking place. This would minimize the potential impact on mining interests and claim holders. Access to the southern group of claims may be limited nonetheless (either by air or surface modes) when RLOD missions are active.

Two commercial use permits allow for guided trips to two cabin sites underlying the proposed R-2202 extension. These would remain accessible on most weekends and in September, coinciding with times

that are most popular for recreational activities and hunting in the affected area. For individuals holding these permits, reduced access could cause a high impact on their commercial interest for the duration of the current permit, causing a loss in revenues and opportunity to use public resources. Overall, exclusion of access to valid existing permits, leases, claims and other real estate interests is a potentially significant impact on specific individuals or the public. Coordination with ADNR is needed to determine if suitable arrangements can accommodate particular interests (such as schedule planning), or general public access. If not, then terms and conditions of a land use agreement or acquisition process must be negotiated prior to implementing this action.

Overall, restricted access may cause an adverse impact on existing leases, permits, and claims on State land, limited in extent to the few entities that hold these property interests.

In addition to uses associated with the parcels listed in Table 3-31, many Alaskan residents use this area for hunting and other recreational and subsistence-type activities (even though this is a nonsubsistence area). The land is managed by ADNR for its habitat values that are the basis for these activities. Because of existing trails and proximity to Fairbanks this area has high value for hunting, fishing, and trapping (ADNR 2010). Access would normally continue on weekends and during September, the most popular time for outdoor activities, vacationing, camping and hunting. While this would minimize impacts on these uses and activities, access would be limited in other popular seasons, such as summer and winter. In addition, getting to remote locations using surface vehicles may be difficult in a 2-day period. Air access would remain an option into these areas for some individuals. To minimize impacts, coordination between military and public users could identify optimal patterns of use to enable reasonable access for public (non-military) uses. The action would not impact the habitat value of the area, and would therefore not conflict with management priority of ADNR. Overall, limited access would have an adverse and potentially significant impact on general land uses and access, but coordination and selected mitigations could reduce these to moderate levels. The Air Force will provide a more detailed CONOPS and Access and Safety Plan to ADNR for the Special Use Designation process. The plan will specify the location of closures, frequency and duration of closures, and methods to manage access when hazardous operations occur, with the purpose of providing maximum public access to ground evacuation areas and limiting closures to the shortest time possible in order to reduce impacts on multiple users of the affected area.

In order to establish persistent, exclusive use for hazardous military operations on State land (shown on Figure 3-21 as RLOD A and RLOD A and B), ADNR would need to implement a regulatory reclassification of the affected land area through the State's Special Use Designation public process. The ADNR Special Use Designation would undergo a review process, including public meetings and input prior to approval. Following this, ADNR would propose a change in State regulations to codify the Special Use Designation. The resulting decision can be appealed by affected members of the public. A Range Safety and Management Plan detailing access control measures and roles and responsibilities would be prepared by the Air Force for ADNR approval following the State Special Use Designation.

Effects of Weapons Expenditures on Land Use. The Air Force would clean up and render safe any location where a munitions lands outside of a designated impact area. In some cases, munitions may penetrate the earth or land in an irretrievable location. The proposal includes the use of small (2-acre) temporary impact areas outside of the existing dudded impact areas for inert munitions. These areas could over time develop some residual debris and some UXO in the vicinity of the selected site. This could add a surface hazard requiring restricted access to a small areas in the northwest and southeast part of DTA-West. This would remove this land from general use in the future. The quantity of land is a extremely small fraction of the military land and would have no effect on surrounding land. This would have a minimal impact on land use and recreation, but may require clean up when and if it is returned to the public domain. USAG-FWA would review selected target sites on DTA-West to ensure the location

avoids key infrastructure (both surface and underground) and land restricted by existing leases, permits, easements, and rights-of-way.

Public Access

Ground and air access and travel is currently permitted on DTA-West within the proposal area subject to temporary use restrictions with the exception of the Oklahoma Impact Area, which is an off-limits area. The ground evacuation area shown in Figure 2-2 and Figure 2-4 for R-2202 expansion would be off limits to all civilians and military personnel not participating in military operations during training activities. This analysis assumes that no access is allowed within any SDZ when activated for a training activity (about 90 to 150 days per year).

Military Land. Direct impacts on public ground access, including Donnelly Dome and Donnelly-Washburn Trails (both RS 2477 trails) and the Winter Trail, are expected on DTA-West under this alternative. An increase in training activities and MFEs would lead to more frequent closures of these trails and other ground access for military purposes. Impacts would be moderate, depending on the duration and timing of access closures. Portions of this trail pass through the DTA-West dudded impact area so that they do not serve as through trails to locations to the south of DTA-West.

No charted airports are located within the project area on military lands. Therefore, no direct impacts on air access would occur. The restricted airspace would continue to affect public air access across R-2202 within the project area during activation. An increase in training activities and MFEs and the addition of WDZs would lead to more frequent airspace closures for military purposes. Indirect impacts on temporal and spatial availability of airspace to public aviation would be minor.

Non-military Land. Direct impacts on public ground access on non-military land within the project area would occur. Trails under the expanded R-2202, including Donnelly-Washburn Trail (an RS-2477 trail) and the Winter Trail, would be closed to civilians and nonparticipating military personnel during military training activities. This would result in a potentially significant adverse impact on primary public access routes into this area.

No charted airports are located within the project area on non-military lands. Therefore, no direct impacts on air access would occur. The portion of the proposed R-2202 airspace located over non-military land currently underlies the Eielson MOA, which currently experiences restrictions on air access. Training activities within the proposed airspace would lead to an increase in airspace closures for military purposes. Therefore, indirect impacts on temporal and spatial availability of airspace to public aviation would be moderate. The Air Force would continue to use the SUAIS and other communications to provide information on when airspace is active. It would be the responsibility of civil pilots to check on the status of MOAs prior to and during a general aviation flight**.**

Navigable and Public Waters. No navigable and public waters are located within the project site or vicinity. Therefore, no direct or indirect impacts on navigable and public waters would occur.

Recreation

Effects of Noise and Limited Access on Recreation. As described above, projected noise from weapons firing in the expanded airspace would not alter peak noise exposure perceptibly compared to current conditions. This would alter the degree of quietness found in this area for the purpose of recreation.

Training frequency and closures within the project area would increase under this alternative, including areas used for recreation on the west side of DTA-West. Training areas on the west side of DTA-West are currently accessible about 80 percent of the time on average, which would diminish to about 40 percent. While this is a high degree of change, the priority use for these lands is military. This would

make it more difficult for USAG-FWA to provide public access opportunities, resulting in a moderate adverse impact due to spatial and temporal availability of recreational uses in this part of DTA-West.

The affected area is located within GMU 20A. There is a moderate level of recreation activity on State lands underlying the Eielson MOA (Air Force 1997-1) and very high use of the land under the proposed restricted airspace extension for hunting. Primary recreational activities include sport hunting and fishing, ORV use, snow machining, and cross-country skiing (Air Force 1997-1). The change in average noise levels in this area would not change appreciably. Impulsive noise over 62 dB CDNL would not extend off military land. This area would not experience peak noise over 115 dB PK 15(met). Limited access to this State land would have a significant impact on local hunting opportunities and resources.

During routine training, aircraft activities in any specific area would occur in low numbers and would generally be dispersed over broad geographic area underlying the Eielson MOA. With the new RLOD capability, aircraft would use flight paths that vary horizontally and vertically on a regular basis. These overflights may disturb ongoing recreation activities underlying these run-ins, but effects would be short term, consisting of isolated and infrequent overflights, and of low intensity (i.e., low numbers of aircraft). There would be no access for recreation during regular RLOD training times. This area is one of the most popular for moose hunting in Alaska, as indicated in the high harvest numbers for GMU 20A. This could have adverse impacts on persons who use this area frequently and preferentially for their recreational and hunting activities.

Indirect effects of changes in civilian ground and air access (reported in Section 3.1.1.2) would affect spatial and temporal availability to specific areas, and associated recreational uses and activities including GMUs. The Air Force would provide advance schedules of training missions in R-2202 and the public would have access to information about MOA activation during scheduled training and/or the SUAIS, NOTAMs, and other communications methods, as appropriate. Advanced notice of military training schedules allows hunters and other public users to plan their activities in advance. While this does not eliminate the impact of restricted access, more predictable training times lessens the impact.

Overall, implementation of RLOD Alternative A would have potentially significant adverse impacts on land use, recreation, and access on State lands, but coordination and selected mitigations could reduce these to moderate levels.

3.2.10.3.2 Alternative B

Impacts on land use, public access, and recreation would be similar under Alternative B as those described for Alternative A (Section 3.2.10.3.1). Differences are presented in the subsections that follow.

LAND STATUS, MANAGEMENT AND USE

Effects of Impulsive Noise on Public and Private Land Use. Under this alternative, JDAM GBU-32 inert ordnance would be added at Blair Lakes Impact Area but this would not cause any appreciable change in noise exposure levels TFTA, because inert weapons have no explosive charges. Operations at Oklahoma Impact Area on DTA-West and within the surrounding training areas would be the same or less as under Alternative A; therefore, noise exposure and effects on land use on DTA-West would be the same as described for Alternative A. Impulsive noise of 62 dB CDNL or greater and peak noise above 115 dB PK 15(met) do not extend into the areas under the proposed restricted airspace linking R-2202 and R-2211. Noise from impulsive sources in this area currently may be audible in some surrounding locations outside the military land. Any change resulting from the proposal would be negligible outside DTA-West and TFTA boundaries.

Effects of Restricted Access on Land Use. The primary impact resulting from this action is displacement of ongoing land uses. This includes existing subsurface interests and claims, and lack of access to areas with hazards during training times. Table 3-31 presents surface and mineral estate interests affected by Alternative B.

There are no private parcels directly under the Alternative B airspace. Outside of the hazardous footprint areas, remote private parcels in two separate areas south of R-2211 along the Wood River, have access from the Bonnifield trail and an airstrip (with a 1,500-foot flight avoidance). A worst-case scenario would exclude access to the area between R-2211 and R-2202, if ingress roads and trails along the Richardson and Denali Highways were closed during training periods. This would preclude access for hunting on about 40 percent of days each year, except during September. As described for Alternative A, lack of access could make it difficult to use property interests and permits on State lands (listed in Table 3-31). Revoking valid claims and rights is governed by ADNR and may involve compensation to affected parties. Partial access may be unviable for some commercial uses (such as mining), resulting in financial loss or takings of a property interest.

Limited access could cause substantial disruption to access land along and south of the Wood River and on the north part of the Alaska Range. These represent potentially significant adverse indirect impacts on land management, ownership, and multiple uses. Road and trail closures would inhibit access to private parcels outside the WDZs. These locations may be accessible by air but this would involve circumnavigating around the enlarged block of restricted airspace. This would be inconvenient to private land holders south of the proposed RLOD operating areas but provide limited access.

Table 3-31 lists the real-estate interests on non-military land. Alternative B has no interests that are additional to Alternative A. Therefore, impacts on these real estate interests would be similar to Alternative A. Even though several mineral orders are not within the footprint for the Alternative B airspace configuration, limited access would affect them as described for Alternative A. Only one commercial use permit allows for guided trips to a cabin site underlying the proposed R-2202 extension. This location would remain accessible on most weekends and in September, coinciding with times that are most popular for recreational hunting in the affected area. Notwithstanding, the impact on this single use could be moderate. Further coordination with ADNR on each of the existing property interests, including rights-of-way easements, could clarify methods to minimize impacts on these uses.

Many Alaskan residents use TFTA and the area underlying the proposed restricted airspace for hunting and other recreational and subsistence-type activities (even though this is a nonsubsistence area). Impacts would be similar to those described above for Alternative A. There is little active productive land uses occurring on TFTA (such as mining and agriculture). Timber harvesting could occur at times to avoid overlap with training activities, similar to other range management functions. Therefore, impacts on non-military (nonrecreational) uses are negligible. Overall, because this area is close to Fairbanks and has trail access, it is used and valued by some local residents for hunting and recreation; therefore, decreased access would have a moderate impact on its varied uses. The action would not impact the habitat value of the area, and would therefore not conflict with management priority of ADNR.

For Alternative B, the area underlying R-2211 outside the boundary of Blair Lakes Impact Area would experience new access hazards from RLOD activities. This would affect 7 percent (42,420 acres in portions of TA 205, 206 and 207) of the training areas that are generally accessible for recreational access (596,170 acres). TFTA is particularly popular for moose hunting, due to the high quality of that resource, proximity to Fairbanks population, and relative accessibility from Parks Highway, Fairbanks, and the Wood River. To limit the area of exclusion to just the new hazard footprint under R-2211 (42,420 acres), would require adjustments to the public recreation maps, to define a new intermittent exclusion area. Any future change in the delineation of closed-access areas on TFTA would be reflected on the USARTRAK

website and range recreation maps, and by posting signage or using features that are easily recognizable to persons on the ground. A worst case scenario would close access to all of the publicly accessible parts of TFTA on two or three days per week, and for 2-week periods during MFEs. The impact of this exclusion is somewhat reduced since the Air Force would not conduct RLOD training in September when hunting use is the highest. Overall, spatial and temporal limited access to 7 percent of TFTA would cause an adverse but not significant impact on recreational use and hunting on TFTA. Under the worst case, significant adverse impacts on multiple uses on military and non-military land would result.

Effects of Munitions Debris and UXO on Land Use. Similar to Alternative A, the Air Force would clean up and render safe any location where any munitions lands outside of a designated impact area. In some cases, munitions may penetrate the earth or land in an irretrievable location.

Public Access

Limitations on ground access and travel would similar to Alternative A. The ground evacuation area shown in Figure 2-2 for the R-2211 expansion and areas under the new restricted airspace would be off limits to all civilians and military personnel not participating in military operations during training activities. This analysis assumes that no access is allowed within any SDZ when activated for a training activity (about 90 to 150 days per year).

Military Land. Direct impacts on public ground access, including Donnelly Dome and Donnelly-Washburn in DTA-West, and additionally, Bonnifield Trails (RS 2477 trails), Winter Trail, Tractor Trail, and an unnamed trail in and near TFTA. Public access to DTA-West would be similar. This would result in more frequent trails closures Impacts would be moderate to high, depending on the duration and timing of access closures and the affected activities.

No charted airports are located within the project area on military lands. Therefore, no direct impacts on air access would occur. The restricted airspace would continue to affect public air access through R-2202 and R-2011 within the project area when in use for RLOD. An increase in training activities and MFEs and the addition of WDZs would result in less availability of airspace to public aviation, causing inconvenience and indirect impacts on the activities dependent on air access in and around the proposal area.

Non-military Land. Reduced access to trails (listed above) would result in a significant adverse impact to surface access in the local area.

Access to public lands would be controlled using the regulatory guidance described in DoD guidance (including AR 350-2, AR 385-63 and AFI 13-212, USARAK Regulations 350-2, 190-13, and AFI 13-212 11th AF Supplement 1), as administered for existing range spaces, and in coordination with ADNR using mutually developed procedures as part of the State of Alaska's Special Use Designation process. As part of this, the Air Force would provide advance schedules of training missions in R-2202, and the public would have access to information about MOA activation during scheduled training through the SUAIS and other communications. This would allow recreational users to plan their activities to avoid times when military operations take place and somewhat reduce the potential for impacts on recreationists seeking quiet. A Range Safety and Management Plan detailing access control measures and roles and responsibilities would be prepared by the Air Force for ADNR approval following the State Special Use Designation.

No charted airports are located within the project area on non-military lands. Therefore, no direct impacts on air access would occur. Non-military land within the project area is currently located under the Eielson MOA. Proposed training activities within the new restricted area and Eielson MOA would lead to an increase in airspace closures for military purposes. Therefore, indirect impacts on temporal and spatial

availability of airspace to public aviation are expected to moderate. The Air Force would continue to use the SUAIS in combination with other communications, as appropriate, to provide information on when airspace is active. It would be the responsibility of civil pilots to check on the status of restricted areas prior to and during a general aviation flight**.** Existing mitigation measures are provided in Section 3.3.10.4. These mitigation measures should be applied to Alternative B, where applicable.

Navigable and Public Waters. A portion of the Wood River bordering TFTA on the west is navigable. However, this stretch of river does not underlie the proposed airspace. Restricted access to trails may limit access to this portion of the river.

Recreation

Military Lands. Impacts from restricted access to DTA would be the same as described for Alternative A. Under Alternative B, limited access to Blair Lakes and the Bonnifield Trail would persons who use this area for recreation and hunting. Access would continue on weekends and in the month of September, as training schedules permit. Most of TFTA is outside the SDZs for the RLOD operations and could remain open for use. However, the entire TFTA may be unavailable for public use during RLOD training. Because TFTA is favored for moose hunting (due to its high moose population and closeness to Fairbanks) limited access (whether spatially or temporally) would have a potentially significant adverse impact on hunting and recreation. DTA-West would experience similar impacts on recreational as described for Alternative A.

Non-military Lands. Impacts on recreation underlying the new restricted airspace and R-2211 would be similar to those described for Alternative A. Closure would affect a larger area between DTA-West and TFTA under this alternative that supports widespread but general use by local residents (mostly for recreation and hunting). The area would remain accessible on weekends and in the month of September.

Indirect effects of changes in civilian ground and air access (reported in Section 3.1.1.2) would affect access to areas south of the proposal area along the Wood River, Little Delta River, and northern slopes of the Alaska Range, and associated recreational uses and activities in GMU 20A. Pilots may circumnavigate the restricted airspace, with some inconvenience, but ground access would be substantially impeded, reducing the ability to use these popular areas for recreation, fishing, and hunting.

Overall, RLOD Alternative B would have potentially significant adverse impacts on land use and real estate interests, public access, and recreation in the directly and indirectly affected areas. Selective mitigations could reduce these impacts to less than significant.

3.2.10.3.3 No Action Alternative

Under the No Action Alternative, no expansion of SDZs or hazardous areas would result. There would be no change in munitions use or access to military or non-military areas. Therefore, no changes or additional impacts to existing land use, access or recreation conditions would occur.

3.2.10.4 Mitigations

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The following mitigations are proposed to reduce these impacts.

- Land Use – Management
  - **ADNR Compliance Items.** The Air Force will provide support to ADNR throughout the Special Use Designation process. The Air Force will develop a CONOPS and an Access and Safety Plan for the exclusive use of State land to support RLOD. The Special Use

Designation process will identify areas and dates of closure and will have to indicate which activities are affected. The Access Plan will provide the maximum public use to the ground evacuation areas, closing such areas for the minimum period of time necessary to conduct such operations. The Access Plan (updated annually) will identify areas and dates of closure and will indicate which activities are affected. It will describe roles and responsibilities for securing the area, ensuring it is evacuated, publishing and posting closure notices, signs, and other media to advertise and alert public of the hazards, times, and locations.

- Land Use – Management, Access
  - **State Land/Leasehold Avoidance.** Comply with ADNR comments to avoid leasehold properties in the north and south corners of the proposed restricted area by adjusting the borders of the Alternative A airspace.

3.2.11 Infrastructure and Transportation

Transportation routes, electricity, water, sewage, and natural gas are necessary to support various missions, as well as to maintain the residences of military personnel. These resources are described further in the Affected Environment section below. Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for additional information regarding resources throughout this region.

3.2.11.1 Affected Environment

ELECTRICAL TRANSMISSION

This section presents proposed action specific to electrical transmission infrastructure and analyzes the electrical transmission impacts associated with the RLOD proposed action and alternatives. Golden Valley Electric Association (GVEA) provides electricity in the region. GVEA operates 3,131 miles of transmission and distribution lines and 35 substations. This electrical system is interconnected with Fort Wainwright, Eielson AFB, Fort Greely, the University of Alaska–Fairbanks, and all electrical utilities in the Alaska Railbelt that extends from Homer to Fairbanks. Peak load in 2009 was 200.5 megawatts (MW) (GVEA 2011).

Electrical distribution within DTA is limited to the area east of the Delta River. Even within that area, not all range facilities have electric power. DTA falls within the GVEA service area.

Currently no commercial power is available in TFTA. GVEA's Northern Intertie is routed along the northwestern and northern sections of TFTA (GVEA 2011).

WATER SUPPLY AND WASTEWATER TREATMENT

This section presents proposed action specific to water supply and waste water infrastructure and analyzes the potential impacts associated with the RLOD proposed action and alternatives. Water in this area is produced from local wells and is treated for consumption (ADCCED 2011). All homes and group quarters are plumbed in this area (ADCCED2011). Regulations covering water appropriation are contained in 11 AAC 93.010-970. Neither the Alaska Constitution nor the Water Use Act differentiate between surface water and groundwater uses.

NATURAL GAS AND OIL PIPELINES

No natural gas or oil pipeline infrastructure is affected by the RLOD proposed action and alternatives.

TRANSPORTATION

Richardson Highway is the primary terrestrial transportation artery, providing access to Fairbanks and the statewide road system. Allen Airfield has a 7,500-foot asphalt runway but is restricted to military aircraft (ADCCED 2011).

Roads, Bridges, and Trails

No bridges are within the RLOD proposed action area. Approximately 10 miles of roadway is present within the RLOD project area boundaries. Meadows Road falls entirely within DTA underneath the R-2202 A/C/D footprint. Approximately 106 miles of trails are present within the RLOD project area boundaries. These trails fall within DTA, TFTA, or outside current DoD facility boundaries. Individual trails with their distances and names (where available) are presented in Table 3-38.

Rail

No rail lines or associated railroad infrastructure intersects with the proposed action area.

Table 3-38. Trails in Realistic Live Ordnance Delivery Areas

Project Area	Miles	On Facility	Trail Name
R-2202A	5.294103	Donnelly Training Area	N/A
R-2202B	13.56297	Donnelly Training Area	N/A
R-2202B	6.637486	Donnelly Training Area	Winter Trail
R-2202C	18.85707	Donnelly Training Area	N/A
R-2202C	6.637486	Donnelly Training Area	Winter Trail
R-2202D	18.85707	Donnelly Training Area	N/A
R-2202D	6.637486	Donnelly Training Area	Winter Trail
R-2211	4.745159	N/A	Tractor Trail
R-2211	7.116253	Tanana Flats Training Area	N/A
R-2211	8.425428	Tanana Flats Training Area	Tractor Trail
R-2477	1.283	Donnelly Training Area	Donnelly-Washburn Trail
RLOD A and B	0.553512	N/A	N/A
RLOD A and B	5.027428	N/A	Winter Trail
RLOD B	4.043531	N/A	N/A

Key: N/A=Not Applicable; RLOD=Rural Lands Overlay District.
Source: ADNR 2009-2, 2009-3.

3.2.11.2 Impact Assessment Methodology

INFRASTRUCTURE

Potential impacts on infrastructure elements are assessed in terms of the effects of construction projects and personnel changes on existing service levels. Impacts on utilities are assessed with respect to the potential for disruption or improvement of current utility systems; for deterioration, obsolescence, or improvement of existing utility service levels; and for changes in existing utility safety levels. Impacts may arise from physical changes to utility corridors, construction activity, and changes in personnel and thus in demand for services.

TRANSPORTATION

To assess potential environmental consequences associated with transportation resources, increased utilization of the existing roadway system due to the potential increase of personnel is analyzed, as well as potential effects of construction activities. Impacts on the operational characteristics of these roadways are determined using levels of service and other applicable metrics.

3.2.11.3 Environmental Consequences

3.2.11.3.1 Alternative A

To support the targets, maintenance roads need to be in place. Currently the Richardson Highway is the primary road providing access to the State and local road system. Year 2030 traffic volumes are forecast along most segments of the Richardson Highway between 1,500 and 4,500 annual average daily traffic (AADT). AADT is an estimated number of vehicles traveling over a given road segment during one 24-hour day. Based on these forecast traffic volumes, a qualitative planning level assessment of the Richardson Highway by the Alaska Department of Transportation and Public Facilities (ADOT&PF) revealed no major roadway capacity constraints over the near- and long-term (ADOT&PF 2009; ADOT&PF 2010-1).

In addition, approximately 10 miles of roadway and 107 miles of trails are present within the RLOD project area boundaries. These trails fall within the current DTA, TFTA or outside current DoD facility and are available for upgrade and expansion.

Extensive rail access is planned for these areas with new rail lines are included in the Access to Joint Tanana Military Training Complex and the Denali Park Passenger Train Turnaround Track. The Northern Rail Extension project would construct a new line between North Pole and Big Delta (ADOT&PF 2010-1). Despite this infrastructure, there is a current lack of accessibility due to limited access roads within DTA.

Most permanent electrical infrastructure is within the general area is located at Fort Greely. In the past, if Fort Greely electrical loads exceed the 2.5-megavolt ampere (MVA) transformer rating, diesel generators were used to meet peak loads. Doyon Utilities recently constructed a new 138-kilovolt (kV) Switching Station, new 138 kV Substation with 20 MVA transformer to increase energy capacity at Fort Greely (Doyon 2011-1). Specific alternatives for electrical requirements for DTA are not developed to the point where specific decisions or plans can be made. The proposed 20-year vision for USARAK calls for increased power and fiber optic connectivity on the ranges (USARAK 2009-1). Power for scoring may be provided by generators or power lines, and communications may be transmitted by microwave or fiber optic cable.

No impact to water, sewer or natural gas or transmission lines are anticipated. Although primary access arteries would not be adversely impacted, and rail access would see a net positive impact, transportation access would continue to remain an issue within the DTA and TFTA.

3.2.11.3.2 Alternative B

Under Alternative B, impacts discussed are identical to those presented under Alternative A with the exception that the proposed 20-year vision for USARAK calls for improved access into TFTA (USARAK 2009-1).

3.2.11.3.3 No Action Alternative

No changes to existing infrastructure or transportation system conditions would occur under the No Action Alternative, and no additional impacts would occur.

3.2.11.4 Mitigations

This resource area is not impacted by this proposed action. No mitigations are identified for this resource.

3.2.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.2.12.1 Affected Environment

The proposed area for RLOD is in between TFTA and DTA along the northeastern-most corner of Denali Borough. The training area also covers a small portion of the northwestern border of Southeast Fairbanks Census Area and a small portion of the southern border of the FNSB. Therefore, the ROI for the Realistic Live Ordnance Training Proposed Alternative includes the portions of these two boroughs and one census area underneath the airspace as well as the surrounding communities.

POPULATION

The nearest cities to the proposed action are the city of Delta Junction and Big Delta CDP. Both locations are approximately 15 NM to the east; the city of Anderson and Healy CDP, more than 30 NM to the west; and the city of North Pole and Fairbanks, more than 30 NM to the north. The population in the ROI totaled 106,436 in 2010. The FNSB had the largest population of the three regions, 97,581 persons, while the Denali Borough had the smallest, 1,826 persons. Data developed through the use of GIS indicates that there are approximately 2 persons in the Denali Borough under Alternative A and Alternative B, within the extent of the defined census block under the restricted airspace; however, as stated in Section 3.2.10.3.1, Land Use and Recreation, there are no private parcels directly under the airspace and no continually occupied homesteads.

ECONOMIC ACTIVITY

In 2009 (the most recent data available), the Fairbanks North Star Borough had the largest total employment in the ROI, 58,761 jobs, while the Denali Borough had the smallest, 2,099 jobs. The Southeast Fairbanks Census Area had a total employment of 3,777, but had the fastest rate of employment of the three areas between 2001 and 2009.

The largest source of employment reported in the Denali Borough during 2009 was the Accommodation and Food Services industry (44 percent), followed by the government and government enterprises industry (18.4 percent) and the transportation and warehousing industry (6.1 percent). The largest source of employment in the Southeast Fairbanks Census Area was the government and government enterprises industry, which includes Federal, military, State, and local government. That industry accounts for approximately 23 percent of total employment. In the Fairbanks North Star Borough, during the same year, the largest source of employment reported was also the government and government enterprises industry (35.5 percent), followed by retail trade (10 percent) and the health care and social assistance industry (9 percent) (BEA 2011-1, 2011-2).

In 2009, the Southeast Fairbanks Census Area and the Fairbanks North Star Borough had a lower per capita income than the state of Alaska. The Denali Borough had a larger per capita income than the other

areas in the ROI and the state. Per capita income in the Southeast Fairbanks Census Area increased at a faster rate than that of the state and other areas in the ROI; the average annual increase was 7 percent between 2001 and 2009.

KEY INDUSTRIES

Recreation and Tourism

The Denali Borough, FNSB, and Southeast Fairbanks Census Area are part of the Interior Region of Alaska. This region also includes the Yukon-Koyukuk Census Area. The economic impacts of Alaska's visitor industry in the region during the 2008–2009 season was estimated to support 6,200 jobs and $205 million in labor income. The visitor-related jobs in the region accounted for about 9 percent of regional employment and 6 percent of regional labor income. Visitors spent approximately $519 million in the region. The Southcentral Region was the most popular region for visitors, followed by the Southeast Region and, third, by the Interior Alaska Region.

Air travel was the most important form of travel to the Interior Alaska Region. Traveling by air impacts the state's economy in the form of landing fees, fuel purchases, airline employee wages, and other purchases in support of airline operations. In a report by the State of Alaska, Department of Commerce, Community and Economic Development, visitor spending on air travel to enter/exit Interior Alaska totaled $36.3 million during the period October 2008 to September 2009 (McDowell Group Inc. 2010).

Civilian Aviation

Civilian aviation contributes significantly to the local economy and is heavily relied upon for travel, safety, firefighting, recreation, hunting, mining, oil and gas development and supplies. For more-detailed information on civilian aviation in the ROI, see Section 3.2.1.1, Airspace Management and Use.

3.2.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.2.12.3 Environmental Consequences

3.2.12.3.1 Alternative A

During the public scoping period, concerns were expressed that expansion of the training areas and the use of live ordnance were not compatible with residential use. The proposed military training schedule for the RLOD would limit access for any commercial or personal purposes for up to 150 days per year for a maximum of 5 hours per day. The Air Force would have to verify that nonparticipating individuals were clear of the SDZ and the restricted airspace prior to commencement of training activities. Major commercial and residential uses in the area include: mining operations, recreation, subsistence, and aviation. Any access restrictions that would interrupt participation in these activities could result in additional costs from delays or rerouting, which, based on concerns expressed during the public scoping period, are anticipated to be significant. Implementation of mitigation measures, such as notifying the public of the time and dates of ground access restrictions in advance and restricting military training during the most popular months (e.g., September) for recreation and subsistence harvesting, could lessen the likelihood of potential economic impacts.

To mitigate potential impacts on mining interests in the proposal area, the Air Force has defined two avoidance areas within the proposed R-2202 expansion area overlying the mining area on the south and

north side of the airspace extension. Incorporation of these into the 11th AF Handbook would exclude these areas from surface danger zones and allow existing uses and activities to carry on without interruption.

3.2.12.3.2 Alternative B

Similar to Alternative A, potential economic impacts would be anticipated from a restriction in commercial and private access under Alternative B. The degree of economic impacts depend on many factors that are difficult to quantify due to a lack of available data. Based on public scoping comments, there is concern that expanding training areas and the use of live ordnance would not be compatible with residential uses and would result in socioeconomic impacts. Under Alternative B, the restricted area would be larger and thus, are anticipated to result in greater impacts than under Alternative A. Advanced notification of when ground access would be restricted and not activating the RLOD airspace and range in the month of September, the busiest month for recreation and subsistence harvests, could potentially lessen the likelihood of impacts on these uses and associated economic impacts.

3.2.12.3.3 No Action Alternative

Under the No Action Alternative, there would be no expansion of the footprint, associated WDZ, and hazard areas for ordnance delivery, and no use of such ordnance as to require an expanded footprint. Therefore, no changes or additional impacts to existing socioeconomic resource conditions would occur under this alternative.

3.2.12.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse impacts. The following preliminary mitigation is proposed to reduce socioeconomic impacts.

- **State Land/Leasehold Avoidance.** Comply with ADNR comments to avoid leasehold properties in the north and south corners of the proposed restricted area by adjusting the borders of the Alternative A airspace.

3.2.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.2.13.1 Affected Environment

The ROI for RLOD considered from the subsistence perspective includes those communities or areas in the vicinity of the expanded weapons safety footprint and the expanded restricted area. Portions of the proposed restricted area are located in Federal and State nonsubsistence areas.

In accordance with State regulations, the Joint Board of Fisheries and Game has identified areas in which dependence on subsistence is not a principal characteristic of the economy, culture, or way of life. These areas, defined in Alaska Statute 16.05.258 (c), have been determined on the basis of the costs of goods and services, availability of cash and resources, economic stability, and employment characteristics (ADFG 2011-10). The proposed location of the RLOD is partially within the State-identified Fairbanks Nonsubsistence Area (see Figure 3-23). As is the case with all State and private lands, this nonsubsistence area is not subject to the subsistence priority. Commercial and recreational hunting and fishing may be permitted, as discussed in detail in Section 3.2.10, Land Use.

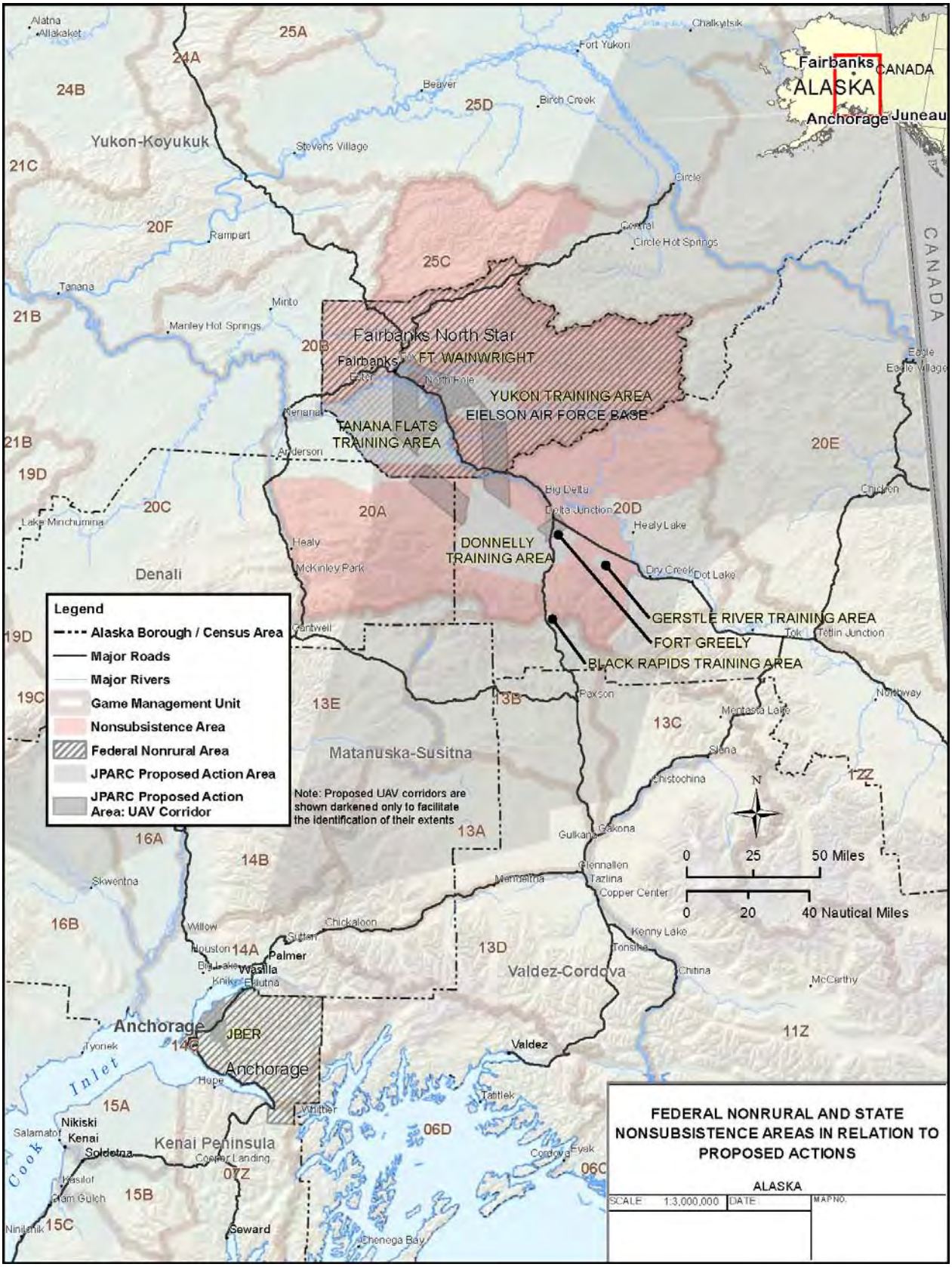


Figure 3-23. Federal Nonrural and State Nonsubsistence Areas in Relation to Proposed Actions
Source: ADFG 2010-2, ADFG 2011-1

Under Federal regulations, subsistence harvest is still permitted on Federal public lands. Subsistence-oriented communities nearest the proposed RLOD location are Big Delta and Delta Junction in the Southeast Fairbanks Census Area. Healy Lake, Dry Creek, and Dot Lake are also in the vicinity, and residents of these communities do have a history of harvesting subsistence resources on Federal public land in DTA and other areas in the vicinity of the proposed action (USARAK 2008-2). General subsistence characteristics of these communities are provided in Appendix B, *Definition of the Resources and Regulatory Settings*, in Table B-20.

Figure 3-23 also shows the game management units in relation to the proposed actions. Information on subsistence harvests on Federal public land near these communities is not available.

3.2.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2.

3.2.13.3 Environmental Consequences

For this proposed action, the communities of Healy Lake and Dot Lake are ranked as high in dependence on subsistence resources due to having a large percentage of the population participating in subsistence harvests, and due to the high percentage of Alaska Natives in the communities. Information on the percentage of participation in subsistence from the Dry Creek community was not available. However, as a conservative estimate, and because of Dry Creek's proximity to Dot Lake, it is assumed that the Dry Creek community is also high in dependence on subsistence resources. Based on the methodology provided in Section 3.1.13.2, Big Delta and Delta Junction are ranked as low in dependence on subsistence resources due to the proximity of those communities to the FNSB as an additional source of necessities and economics activity and due to the small share of Alaska Natives in the population with cultural requirements for subsistence resources. Information on the percentage of the population in Big Delta and Delta Junction participating in subsistence harvests was not available.

3.2.13.3.1 Alternative A

The RLOD proposed action would restrict ground access to areas currently available for subsistence harvesting by rural Alaska residents under Federal regulations. More details on these restrictions are provided in Section 2.1.1.3. For the communities of Healy Lake, Dot Lake, and Dry Creek, the amount of restricted ground access could be perceived as an impact on the harvesting of subsistence resources. To lessen the potential impact, the proposed new portion of R-2202 would not be scheduled in the month of September, one of the busiest months for subsistence hunting. Advanced notification of when the ground access would be restricted in order for individuals dependent on subsistence resources to plan for these closures may ameliorate the impact. Additionally, the Air Force would have to verify that nonparticipating individuals were clear of the SDZ and the restricted airspace prior to commencement of training activities. Additional discussion is provided in Sections 3.2.2.3.3, 3.2.7, and 3.2.10.

Impacts on civil aviation and airports in the vicinity of the proposed RLOD are discussed in detail in Sections 3.2.1 and 3.2.12, and impacts on wildlife and vegetation species in Section 3.2.8. When the proposed restricted airspace was active, civil aircraft would not be permitted to transit through the active airspace under either VFR or IFR. Civilian pilots would have to reroute around the active restricted airspace or wait until the airspace was no longer active. The delay in aircraft access may also result in a delay in access to subsistence resources. Therefore, persons requiring aircraft to access traditional subsistence areas may perceive such a delay as an impact. However, neither the potential impact from restricted ground access or restricted airspace would be a significant impact to subsistence resources as defined by ANILCA.

3.2.13.3.2 Alternative B

Impacts on subsistence resources would be more extensive under Alternative B than under Alternative A because ground access would be restricted over a larger area, and mandatory evacuations of nonparticipating individuals. However, with the measures described under Alternative A to minimize the impact, the potential impact from restricted ground access or restricted airspace would not be a significant impact to subsistence resources as defined by ANILCA.

3.2.13.3.3 No Action Alternative

Under the No Action Alternative, no additional airspace or expansion of SDZs is proposed. Individuals participating in subsistence in the nearby communities of Healy Lake, Dot Lake, and Dry Creek would be able to access the areas in order to harvest subsistence resources as it is currently practiced.

3.2.13.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse impacts. No mitigations are identified for this resource; however, mitigations that would have complimentary benefits for subsistence resources are presented in Section 3.2.10.4 (Land Use).

3.2.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.14.

3.2.14.1 Affected Environment

The affected environment for the RLOD proposal includes two boroughs and one census area in which some portion of the proposal footprint is located. Table 3-39 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children for areas comprising the proposal area. Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect.

The average percent minority in the proposal area ranges from 11.6 percent in Denali Borough to 25.9 percent in FNSB, which is lower than the 35.9 percent average for the State of Alaska. The average percent low-income ranges from 6.1 percent in Denali Borough to 11.6 percent in Southeast Fairbanks Census Area, compared to 9.6 percent for the State of Alaska. The average percent Alaska Native ranges from 3.6 percent in Denali Borough to 11.5 percent in Southeast Fairbanks Census Area, less than the 14.8 percent average for the State. The average percent children ranges from 22.5 percent in Denali Borough to 26.3 percent in Southeast Fairbanks Census Area, similar to the 26.4 percent average for the State.

Table 3-39. Minority Population, Low-Income Population and Children by Area

Realistic Live Ordnance Delivery					
Area	**Total Population**	**Percent Low-Income**	**Percent Minority**	**Percent Alaska Native**	**Percent Children**
Fairbanks North Star Borough	97,581	8.0	25.9	7.0	25.6
Denali Borough	1,826	6.1	11.6	3.6	22.5
Southeast Fairbanks Census Area	7,029	11.6	21.3	11.5	26.3
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005-2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.
Source: USCB 2010-1, 2010-2.

3.2.14.2 Impact Assessment Methodology

General methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2.

3.2.14.3 Environmental Consequences

For RLOD Alternatives A and B, resources with potential for unavoidable significant adverse impacts that are evaluated below for environmental justice include land use (Section 3.2.10.3) and socioeconomics (Section 3.2.12.3).

3.2.14.3.1 Alternative A

This alternative would expand R-2202 to the west, utilize targets in the Oklahoma Impact Area in DTA, and establish two new target areas in DTA, although the locations of the target areas have not been established yet.

Land Use (Section 3.2.10.3). Significant adverse land use impacts that may be unavoidable include reduction in surface access to two recreational trails under expanded R-2202 and exclusion of the public from popular public lands and hunting areas including a prime moose hunting area. These recreation-related land use impacts would be borne by the general public and not primarily borne by minority or low-income persons. There would be no disproportionately high and adverse health or environmental effects on minority or low-income persons or children.

Socioeconomics (Section 3.2.12.3). The proposed military training schedule for the RLOD would limit access for any commercial or personal purposes for up to 150 days per year for a maximum of 5 hours per day. Nonparticipating individuals would have to be clear of the SDZ and the restricted airspace prior to commencement of training activities. Commercial interests and uses in the area include mining claims, recreation, subsistence, and civil aviation. Any access restrictions and delays on these activities could result in economic impacts. The economic impacts of a user being delayed or required to use an area outside the proposed SDZ when active cannot be quantified due to the many factors to be considered in estimating such impacts and the lack of available data. However, the range of uses and locations affected would avoid impacts being primarily borne by minority and low-income populations. No disproportionately high and adverse environmental or health effects on minority and low-income populations or children would occur.

3.2.14.3.2 Alternative B

This alternative would establish a new restricted area linking two existing restricted areas, use the Blair Lakes Impact Area in DTA, and establish two new target areas in DTA as in Alternative A.

Land Use. Alternative B has more potential to affect private property owners, mostly south of the proposal footprint, because the new restricted airspace would require persons to fly from Fairbanks around the restricted airspace. The State also has more disposal land in that area that could become private. Otherwise Alternative B is similar to A and likewise, significant land use impacts would not create disproportionately high and adverse environmental or health effects on minority and low-income populations or children.

Socioeconomics. Under Alternative B, the restricted area would be larger and thus is anticipated to result in greater economic impacts than under Alternative A, but similar to Alternative A, no disproportionately high and adverse environmental or health effects on minority and low-income populations or children would result from these socioeconomic impacts.

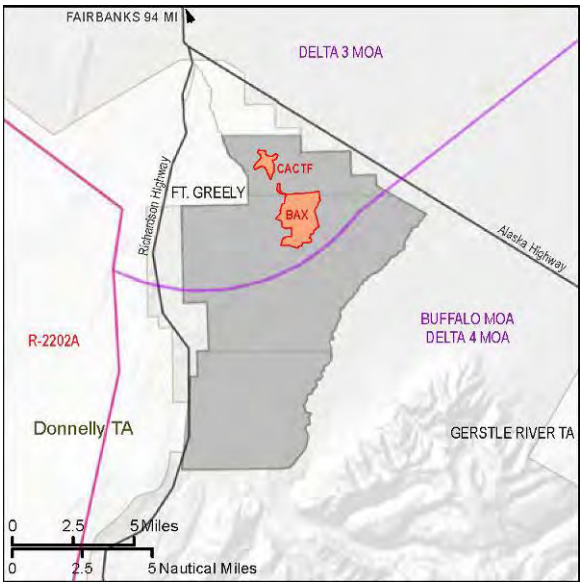
3.2.14.3.3 No Action Alternative

There would be no additional disproportionately high and adverse environmental and health effects on minority and low-income populations or children from the No Action Alternative, because restricted airspace would remain as currently configured and no additional airspace or expansion of SDZs or other hazard zones is proposed.

3.2.14.4 Mitigations

No mitigations are identified for this resource.

3.3 BATTLE AREA COMPLEX (BAX) RESTRICTED AREA (DEFINITIVE)



This proposal would build on existing facilities and would add a restricted area over the BAX and Combined Arms Collective Training Facility (CACTF) to allow participation by multiple functions—ground and air forces working together. Existing use of the BAX is currently very constrained in terms of the types, levels, and intensity of training that can be undertaken. The footprint for the BAX proposal overlies land that is withdrawn and managed for military use. (Refer to the gray-shaded area in the map to the right.) This action involves changes to military airspace and utilizes underlying land to support Army and joint training associated with weapons training exercises using primarily inert munitions. Because this action does not directly affect non-military land and involves no ground-disturbing construction, impacts on physical, water, cultural, and socioeconomic resources are expected to be low. In response to future mission change and force structure modernization, it is likely that the Army and other Services currently training in Alaska will be required to adapt their training and testing on JPARC lands and ranges. The Army will evaluate any additional modernization and enhancement of JPARC capabilities based on future service requirements in accordance with NEPA.

Following the impact assessment for each resource, the final mitigations are listed that have been selected by the Army and Air Force to avoid, reduce, or implement management actions for potential significant adverse impacts from implementing the proposed action. These are included to provide the public and other agencies with necessary information on the final mitigations proposed by the Army and Air Force.

3.3.1 Airspace Management and Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.1.

3.3.1.1 Affected Environment

The following describes the representative baseline use of all military and civil airspace within the region encompassed by the restricted areas proposed for Alternatives A and B shown in Figure 3-24 and Figure 3-25, respectively. These figures show this proposed airspace relative to the aeronautical features depicted on the Fairbanks and Anchorage Sectional Charts and the Alaska IFR Enroute High Altitude (H-1) Chart for the areas potentially affected by this proposal.

MILITARY AIRSPACE USE

Restricted Areas

The airspace proposed for the BAX restricted area encompasses most of the existing BAX Controlled Firing Area (CFA) shown in Figure 3-24. Helicopter training is conducted in the CFA in support of ground activities, however, this training does not include aerial gunnery, rockets, bombing, tactical live fire, or other hazardous activities since FAA regulations only permit the conduct of such activities in a restricted area. Therefore, most USARAK helicopter hazardous operations are conducted in Yukon Training Area (YTA), TFTA, and DTA on target areas contained within restricted airspace. Helicopters typically use direct corridors between Ladd Army Airfield (AAF), Fort Wainwright and these three training areas. The corridors connecting Ladd AAF and Eielson AFB with both TFTA and YTA intersect the Glenn and Richardson Highway VFR corridors.

DTA consists of DTA-East and DTA-West, with most of DTA-West lying within R-2202 A and B. Data reflected in the *EIS for Stationing and Training of Increased Aviation Assets Within Alaska* (USARAK 2009-1) indicate an annual average of approximately 923 fixed- and rotary-wing aircraft sorties originating from Allen AAF conducted close air support (CAS), aerial gunnery, rockets, bombing, tactical live fire, demolitions, and lasers within R-2202 A, B, C, and D (Fort Greely 2012). An annual average of 3,775 fixed- and rotary-wing aircraft sorties originate from Ladd AAF to conduct similar mission activities in R-2205 at YTA located within R-2205 (USARAK 2009-1).

The ROD for this EIS and subsequent aircraft relocation actions has increased the number of helicopters based at Ladd AAF from 40 to 72. It is estimated that the number of operations will double both at the airfield and within the R-2202 and R-2205 training areas. With the proposed establishment of the BAX restricted area, it is estimated that approximately 70 percent of the helicopter live-fire sorties would be over the BAX with the remainder along the Delta River and DTA-West (R-2202) training areas utilizing the impact areas for dud-producing munitions. A small percentage (less than 5 percent) of these operations would be CAS provided by Air Force aircraft. Both the north and south subdivisions of the proposed BAX restricted area would be activated together to provide a backdrop for live-fire operations in DTA-East. Otherwise, that southern portion would not be activated and, therefore, available for other aviation uses. Approximately 60 percent of the BAX operations would occur below 6,000 feet AGL thus minimizing the need to activate the mid and upper altitude layers shown in Figure 3-24 (USARAK 2009-1; Houpt 2011).

Other Military Airspace Uses

Other military airspace uses includes both the SUA in the region and the Allen AAF Class D airspace which overlaps the northern portion of the existing CFA and would do so with the northern portion of the proposed BAX Restricted Area. This Class D airspace extends from the surface to 3,800 feet MSL within a 6.3 mile radius of the Allen AAF, excluding those portions within R-2202A and R-2202C and below 700 feet AGL within defined boundaries around the Delta Junction Airport. Local procedures outline the coordination requirements for conducting operations at Allen AAF and within the Class D airspace relative to those flight activities planned and scheduled at the BAX/CACTF within the BAX CFA. Other military airspace uses described in Section 3.3.1 would not be affected by this proposal and are not discussed further in this proposal analysis.

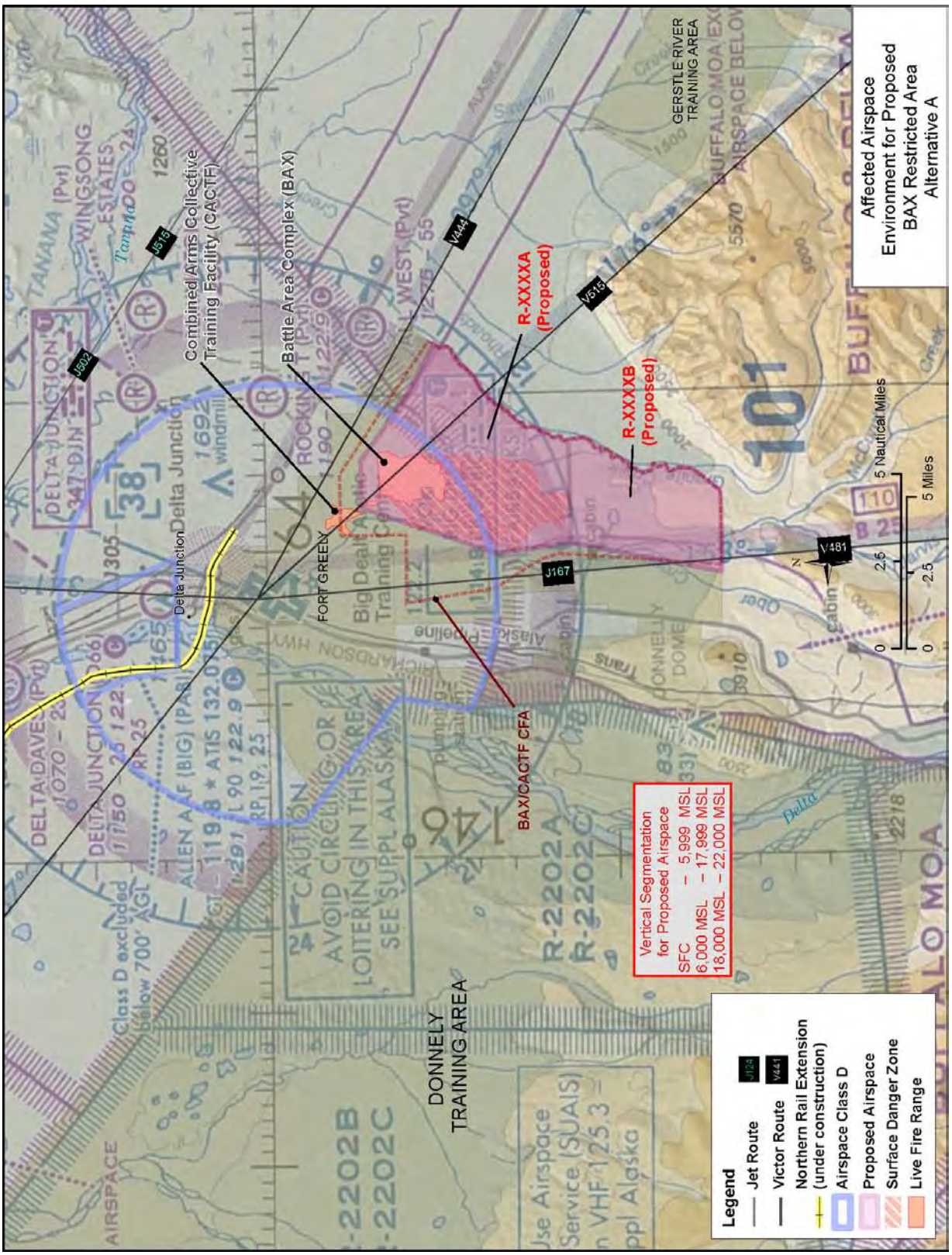


Figure 3-24. Affected Airspace Environment for Proposed Battle Area Complex Restricted Areas – Alternative A

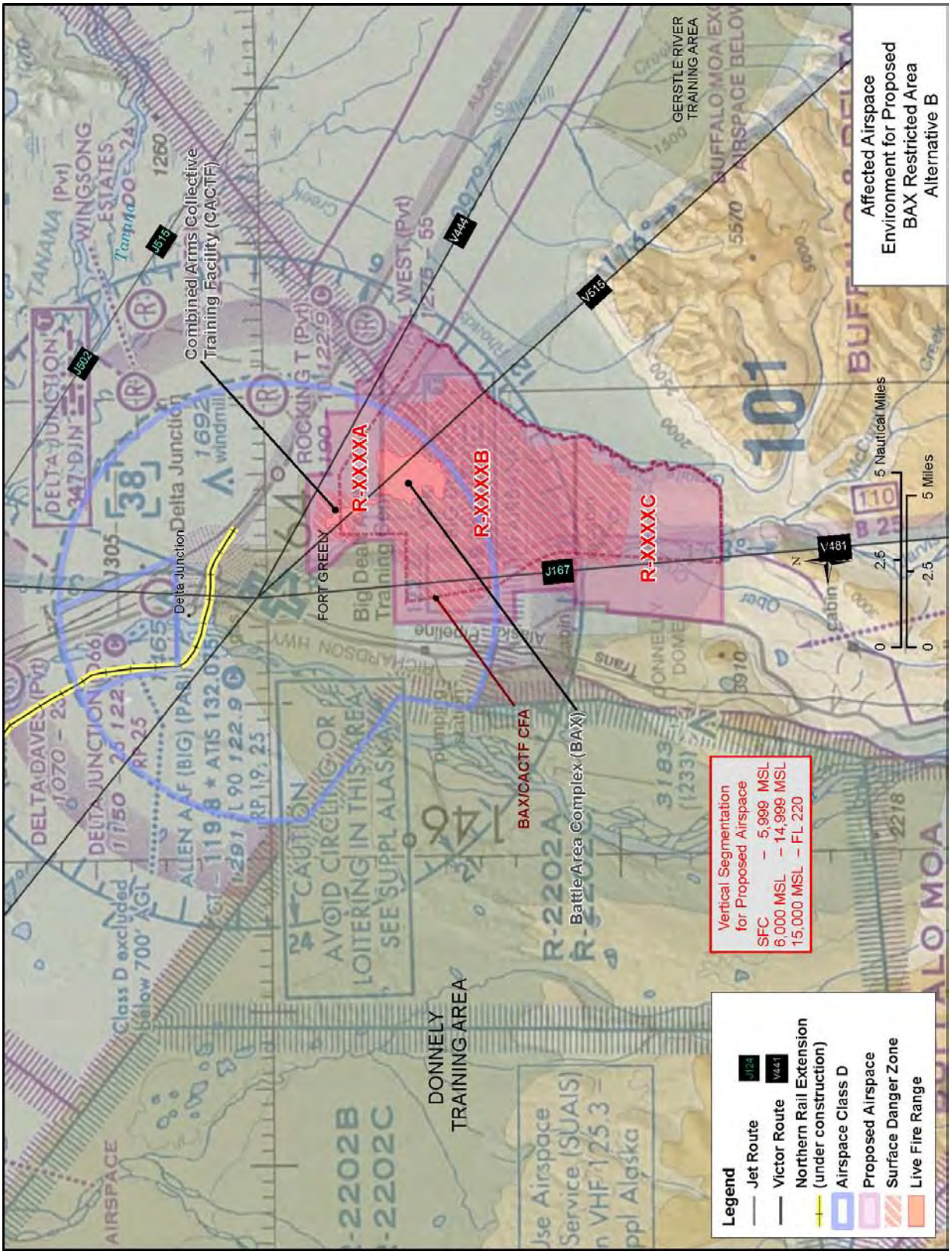


Figure 3-25. Affected Airspace Environment for Proposed Battle Area Complex Restricted Areas – Alternative B

CIVIL AVIATION AIRSPACE USE

As discussed below, those general aviation activities discussed in Section 3.3.1 occur within the areas encompassed by this airspace proposal.

Federal Airways

Those Federal airways transiting near or within the airspace proposed for the BAX Restricted Area include V481/T226/B25, V515, V444/T232, and A2-15. The current CFA use has minimal effects on the FAA's reported low average usage of these routes, as reflected in Table 3-40.

Table 3-40. Air Traffic Route Use Within Battle Area Complex Affected Environment

Route	Typical Minimum Altitude Assigned by Air Traffic Control (feet mean sea level)	Average Daily Use
V444/T232 A2/A15	8,000	2
V481/T226/B25	6,000	3
V515	12,000	0
J-167	Climbing/descending phase of flight to FL380	3

Jet and RNAV Routes

Jet route J167 crosses the west boundary of the existing CFA and within the proposed restricted area as shown in Figure 3-24 and Figure 3-25. Current CFA use has little effect on the few daily, high-altitude flights that operate along this route.

VFR Air Traffic

The VFR air traffic activities discussed in Section 3.1.1.1 are also a factor in this proposed airspace environment. The area proposed for the BAX restricted area is adjacent to the Alaska Highway flyway. USARAK helicopters typically transit between the airfields and training areas at 500 feet AGL, and above and across the Glenn and Richardson Highway VFR corridors at points where they may interact with VFR aircraft.

USARAK provides scheduled and real-time information on their operations through coordination with local civilian aviation interests and the Air Force to reduce potential conflicts with other military and civil air traffic. This information is available through the Fairbanks FSS, NOTAMs, the SUAIS, and ERC. USARAK also participates in the ACMAC meetings and invites the FAA, Air Force, and general aviation representatives to the quarterly Aviation Safety Standard Council meetings as means of informing the civil and military aviation communities of exercises and other training activities that may have increased operations in the affected environment (USARAK 2009-1).

Public Airports and Charted Private Airfields

The airfields in close proximity to the proposed BAX restricted area include the Delta Junction public airport and the private Rocking T and All West airfields. No operations data are available for these airfields, however, their relatively low use is not currently affected by military operations in the BAX CFA.

3.3.1.2 Impact Assessment Methodology

The methodology described in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.1, was considered, as appropriate, to assess potential impacts of this proposed action on other airspace uses in the affected region.

3.3.1.3 Environmental Consequences

3.3.1.3.1 Alternative A

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The proposed restricted area would cover much of the same airspace currently established as the BAX CFA. This restricted airspace would be subdivided into north and south sectors and stratified into three layers (surface up to but not including 6,000 feet MSL, 6,000 feet MSL up to but not including FL180, and FL180–220). Only those sectors/altitudes would be activated as required to support the type of mission activities to be conducted. It is estimated that the low sector alone would be used approximately 60 percent of the time, with inclusion of the mid and higher altitudes the other 40 percent. The north sector would be activated the majority of the time since most attack profiles on the BAX/CACTF would be conducted within this northern sector. Since a company-level live-fire event will always maneuver from north to the south, the south sector would be activated when needed to provide additional protective airspace for those mission activities and maneuvers that could extend beyond the northern sector.

Aviation activities would increase slightly in the BAX restricted area above current levels, as it is estimated that approximately 70 percent of the USARAK helicopter operations currently conducted in R-2202 would be performed in the BAX restricted area. Air Force aircraft conduct a limited number of CAS missions throughout the year for Army ground-based activities in the BAX CFA and it is anticipated that such operations would occur in the future with establishment of a restricted area.

Daily use of the proposed BAX restricted area for Joint Combined Arms Live Fire (JCALF) activities would normally occur up to 12 hours per training day from 7:00 a.m. to 7:00 p.m. local time, Monday through Friday, unless stipulated by NOTAM for other times of use. Information provided in Chapter 2.0 for this proposal indicates the projected annual days of use for the different types of training and capabilities noted. It is estimated that this annual range utilization would be approximately 238 days, which is not cumulative since different training activities may be scheduled and conducted within this airspace on the same day. The scheduled and real-time use of this restricted area would be available via the SUAIS and other aforementioned advisory services.

CIVIL AVIATION AIRSPACE USE

This airspace proposal has the potential to have adverse effects on the different civil aviation uses in the affected environment as discussed below.

Federal Airways

Federal airways V481 and V515 transit through portions of the proposed BAX restricted area while the V444 and A2-15 airway widths would overlap the northeast boundary of R-XXXXA as shown in Figure 3-24. The FAA's reported average use of these airways is listed in Table 3-40. There may be minimal to moderate impacts on these airways during those time periods when the mid (6,000 feet MSL – FL180) altitude sector is in use. This may cause flight delays or require the FAA to route IFR air traffic

around this active airspace. The extent of these potential impacts and consideration of mitigation measures will be examined by the FAA in the aeronautical study of the preferred alternative to ensure airway traffic and Fairbanks arriving/departing aircraft are not adversely affected.

Jet/RNAV Routes

Air traffic operating along J167 above the higher altitude sector (FL180–220) of this proposed restricted area should not be affected by this proposal. There may be minimal impacts on this route traffic if necessary for Anchorage ARTCC to alter the course of flight for any route traffic that is climbing or descending through those altitudes when the high sector is in use.

VFR Air Traffic

This proposal to establish restricted airspace in an area that currently permits VFR air traffic access through the CFA may have moderate to significant impacts on this aviation community. The proposed BAX restricted area would encompass much of the current CFA airspace which borders portions of the Richardson and Alaska Highway VFR flyways. Currently, live-fire activities are suspended when weather, terrain, or other conditions may require a nonparticipating aircraft operating along these flyways to alter its course to fly through the CFA. While any frequent need to transit the CFA in this manner can be an inconvenience for all concerned, this does provide a viable option for VFR air traffic to consider as flight conditions may dictate. Therefore, this restricted area would limit such options when this airspace is in use. The extent of any impacts on VFR flights through this area would depend on the daily time frames the individual north/south sectors and different altitude layers are activated. This scheduled use would be publicized through the SUAIS and other advisory services for pilot consideration when planning any flights through this region. Concerns raised by the VFR aviation community over the potential impacts of this proposal would be included among those examined by the FAA, USARAK, and the affected stakeholders to determine how such impacts could be minimized. Existing mitigations would continue to be relevant in addressing potential impacts of this airspace proposal. USARAK would also examine communications coverage within the affected areas to expand situational awareness of the restricted area uses for other nonparticipating air traffic operating within this region.

Public Airports and Private Airfields

The Delta Junction public airport and the All West, Rocking T, Remington, and Wingsong Estates private airfields are located within 10-15 miles of the proposed restricted area. There would be no direct impacts on these airfields except for the restrictions discussed above for VFR air traffic operating between these locations and destinations south and east of this restricted airspace.

3.3.1.3.2 Alternative B

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The proposed restricted area would include and extend beyond the northern and western boundaries of the existing BAX CFA to more fully encompass the protective airspace needed for all hazardous air and ground activities planned for future use of this complex. To more effectively and selectively schedule on the required use of this proposed restricted area, it would be subdivided differently than Alternative A to include R-XXXXA (north), R-XXXXB (central), and R-XXXXC (south) with the altitudes stratified from the surface up to but not including 6,000 feet MSL; 6,000 feet MSL up to but not including 15,000 feet MSL; and 15,000 feet MSL to FL220. Only those sectors/altitudes would be activated as required to support mission activities within the individual range target areas. As discussed for Alternative A, it is

estimated that only the low altitudes (below 6,000 feet MSL) would be needed approximately 60 percent of the time with all three layers being used the other 40 percent. The A/B restricted area subdivisions would be used the majority of the time for live-fire maneuvering in a southerly direction within those two areas. R-XXXXC would be scheduled as needed to provide additional protective airspace. No firing takes place in that that southern area.

Aviation activities would be the same as described for Alternative A with a large portion of the USARAK helicopter operations currently performed in R-2202 being relocated to the BAX restricted area in the future if this proposal is adopted. Daily use would be up to 12 hours per day between 7:00 a.m. and 7:00 p.m. local time, Monday through Friday, with other times as stipulated by NOTAM as required for JCALF activities. As described for Alternative A, it is estimated that the annual range utilization within these restricted areas would be approximately 238 days.

CIVIL AVIATION AIRSPACE USE

As discussed below, those general aviation activities discussed in Section 3.3.1 occur within the areas encompassed by this airspace proposal.

Federal Airways

This Alternative would more fully encompass those Federal airways shown in Figure 3-24 and discussed in Alternative A as potentially affected by creation of a restricted area over the BAX. As noted for that alternative, the relatively few daily average flights currently flown along these airways should not be affected when only the low-altitude sector (below 6,000 feet MSL) is in use. However, there could be moderate impacts on these routes when not available for use during the periods that all restricted area sectors/altitudes are active. The significance of any impacts would depend on IFR air traffic needs for those routes and the extent to which the FAA would have to delay or reroute this traffic to avoid this active airspace. Such impacts and mitigations would be examined and discussed with USARAK in more depth in the FAA's study of the preferred alternative for establishing a BAX restricted area.

Jet and RNAV Routes

Jet/RNAV Route J167 crosses the west boundary of the proposed R-XXXXB and R-XXXXC. As noted for Alternative A, air traffic operating along this route above FL220 would not be affected by the restricted area use unless it is otherwise climbing or descending through the lower altitudes during the times this airspace is active. In such cases, any potential effects on this traffic could likely be minimized through ATC avoidance of this restricted airspace. The potential effects that any BAX restricted area proposal may have on this IFR air traffic would be also be examined in the FAA study of the preferred alternative for this airspace action.

VFR Air Traffic

The VFR air traffic flight activities discussed in Section 3.1.1.1 and Alternative A as being potentially affected by establishment of a BAX restricted area in this environment may be of somewhat greater concern under the Alternative B proposal. The proposed BAX restricted area for this alternative would extend slightly within the Alaska and Richardson Highway VFR corridor boundaries. While these VFR corridors provide sufficient lateral airspace for flying through flyways, this proposed action may limit VFR pilots' options for altering their flight paths within these corridors if weather conditions or other factors may dictate when this restricted area is active. During those periods when only the low sector is active, VFR aircraft would also have the option of overflying this airspace above 6,000 feet MSL. The extent to which the concerns expressed in the scoping comments for this proposal may be problematic for VFR air traffic through this region would be examined by USARAK and the FAA during the FAA's

aeronautical study of the preferred alternative. As noted for Alternative A, existing mitigations would continue to be relevant in addressing the potential impacts of this alternative while USARAK would also examine means of enhancing situational awareness of their airspace uses for other nonparticipating aircraft operating within this area.

USARAK provides scheduled and real-time information on their operations through coordination with local civilian aviation interests and the Air Force to reduce potential conflicts with other military and civil air traffic. This information is available through the Fairbanks FSS, NOTAMs, the SUAIS, and ERC. USARAK also participates in the ACMAC meetings and invites the FAA, Air Force, and general aviation representatives to the quarterly Aviation Safety Standard Council meetings as a means of informing the civil and military aviation communities of exercises and other training activities that may have increased operations in the affected environment (USARAK 2009-1). Such interactions with all aviation concerns would continue to play a key role in discussing and resolving issues of mutual interest affecting military and civilian airspace uses for the existing and proposed new SUA.

Public Airports and Charted Private Airfields

The airfields in proximity to the proposed BAX restricted area include the Delta Junction public airport and the private Rocking T and All West airfields. No operations data are available for these airfields; however, their relatively low use is not currently affected by military operations in the BAX CFA.

The standing flight safety procedures addressed in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.3.3.1, for current flight training activities within this airspace would continue, as appropriate, to serve as the standard for minimizing impacts on other military and civil aviation airspace uses in the affected environment. Any specific impacts or limitations the preferred airspace proposal may have on IFR and VFR air traffic would be examined in the FAA aeronautical study with subsequent consultations with USARAK and civil aviation concerns on those operational mitigations that may be needed to help minimize impacts.

3.3.1.3.3 No Action Alternative

The BAX CFA would continue to be used for current USARAK activities while allowing nonparticipating aircraft access through this active CFA, and no additional airspace impacts would occur.

3.3.1.4 Mitigations

The preceding analysis of effects has identified potential adverse impacts on airspace management. The following mitigations are proposed to reduce these impacts.

- Pending the FAA's study of the preferred airspace proposal alternatives to determine specific impacts and mitigation measures to be taken to minimize any impacts on VFR and IFR air traffic, other existing mitigations would continue to be relevant in addressing potential impacts of the airspace proposals.
- Pursue manning and funding for any enhancements required to expand situational awareness for air traffic in and around training areas for general and military aviation. Complete an internal study to identify coverage gaps in new SUAs and restricted airspace. One possible alternative is the establishment of a U.S. Army Airspace Information Center.

3.3.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.2.

3.3.2.1 Affected Environment

Representative baseline conditions at the BAX include training of two Stryker Brigade Combat Teams (SBCT). Under baseline conditions, Stryker vehicles fire approximately 3,200 rounds of inert 105-mm ammunition annually, and approximately 20 percent of this ammunition is fired after 10:00 p.m. Time-averaged and peak noise levels reflecting baseline munitions training do not exceed 62 dB CDNL and 115 dB PK 15(met), respectively, in areas outside of range boundaries as shown in Figure 3-26 and Figure 3-27 (BAX is the range in the northeastern quadrant of the range). The BAX is designated as a nondudded range, and no dud-producing munitions are permitted. Munitions training noise is generated by the firing of rounds, but the rounds do not detonate on impact. Small-arms training is also conducted at the BAX. Noise generated during small-arms training is substantially less intense than heavy- weapons noise in the same area and was not modeled quantitatively as part of this analysis. Small-arms noise attenuates to levels not generally considered to be problematic prior to reaching the nearest range boundary, which is approximately 2 miles from the BAX.

Ground and air vehicles are another source of noise in the BAX. CAS training is conducted by manned fixed- and rotary-wing aircraft as well as small unmanned aerial vehicles (UAVs). However, aviation assets are not currently permitted to deliver munitions on the BAX, and flying operations are not conducted at a frequency sufficient to result in time-averaged noise levels exceeding 65 dB DNL (USARAK 2006-1). Ground vehicles used in the BAX generate elevated noise levels in the immediate vicinity of the vehicle. However, ground vehicle noise levels are less intense than noise levels generated by aircraft and munitions usage in the same areas and are not considered in detail in this analysis (see Appendix E, *Noise*, Figure E-1, Table E-2, and Table E-4).

3.3.2.2 Impact Assessment Methodology

Noise from large weapons and munitions was assessed by the same methods used to assess such noise for the RLOD (see Section 3.2.2). At the BAX, heavy-weapons training noise overshadows noise generated by small arms, and, therefore, small-arms noise was not analyzed quantitatively in this EIS. Small arms are defined as munitions of .50 caliber and smaller. Impacts of munitions and aviation noise are assessed using the same methods described for RLOD and the Fox 3 MOA Expansion/Paxon MOA actions. Noise impacts would be considered significant if noise levels exceeding 130 dB PK 15(met) or 62 dB CDNL were to impact areas not owned by the DoD and that were not already affected by these noise levels under baseline conditions.

3.3.2.3 Environmental Consequences

3.3.2.3.1 Alternative A

Under Alternative A, the new restricted area airspace established at the BAX would permit indirect fire and CAS training that cannot be accomplished safely under baseline conditions. The BAX is a nondudded range; therefore, no dud-producing munitions would be used. The number of rounds of each type of munition fired under baseline conditions and the proposed action are listed in Appendix E, *Noise*, in Table E-9 and Table E-10. Time-averaged and peak noise levels generated by munitions firing are shown in Figure 3-26 and Figure 3-27. Noise levels exceeding 62 dB CDNL or 130 dB PK 15(met) would not extend beyond range boundaries. Aircraft operations in the BAX area may increase relative to baseline operations tempo, but time averaged noise levels would not be expected to exceed 65 dB L_{dnmr}. Supersonic flying operations would not be permitted in the BAX Restricted Area airspace. Noise impacts would not exceed the significance thresholds established for this action.

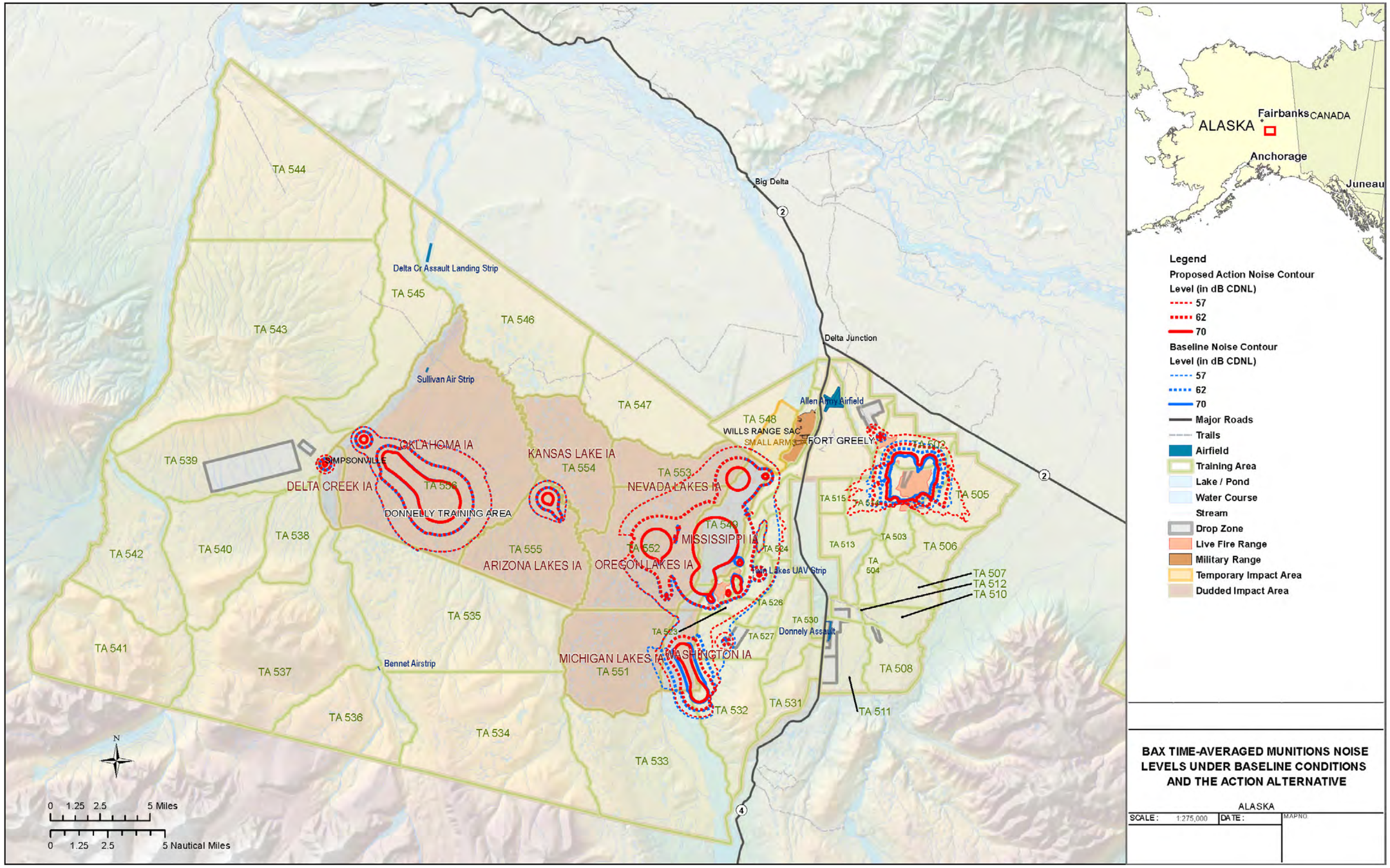


Figure 3-26. Battle Area Complex Time-Averaged Munitions Noise Levels Under Baseline Conditions and the Action Alternative

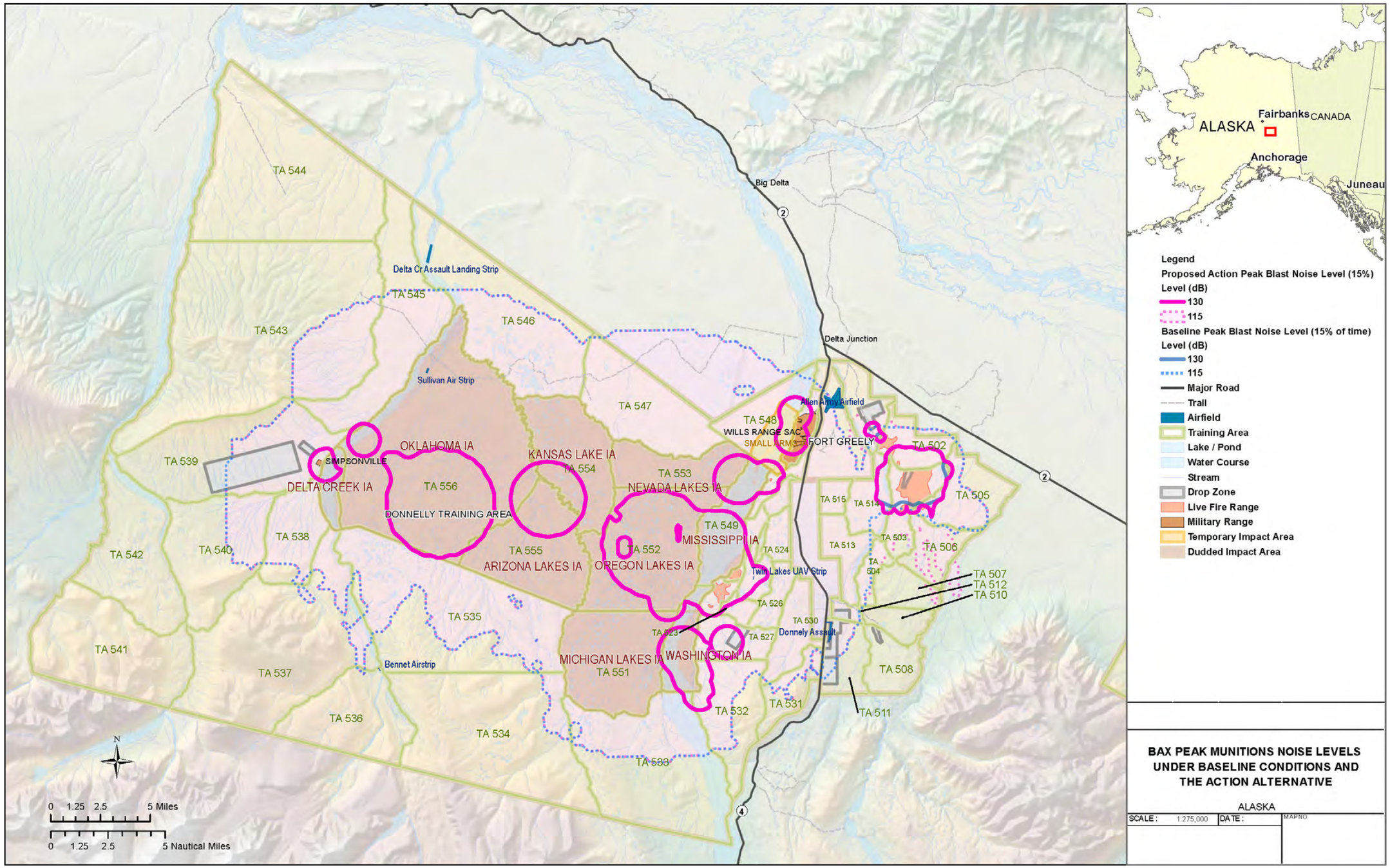


Figure 3-27. Battle Area Complex Peak Munitions Noise Levels Under Baseline Conditions and the Action Alternative

3.3.2.3.2 Alternative B

Under Alternative B, a restricted area would be created that would be larger than the restricted area created under Alternative A. The additional restricted area airspace would permit additional weapons employment flexibility. Munitions noise levels would be the same under Alternative B as they would be under Alternative A as the same munitions types, numbers of rounds fired, firing locations, and target locations would be used. The additional restricted area airspace would also provide a slightly larger area in which aircraft could conduct close-air-support and other training activities. Aircraft operations would be expected to be the same as under Alternative A, and noise levels in the proposed Restricted Area airspace would not be expected to exceed 65 dB L_{dnmr}. Supersonic flying operations would not be permitted in the BAX Restricted Area airspace. Noise impacts do not exceed the significance thresholds established for this action.

3.3.2.3.3 No Action Alternative

Under the No Action Alternative, no changes to munitions usage or aircraft activity would occur. Noise levels would remain as they are under current existing conditions.

3.3.2.4 Mitigations

The preceding analysis of effects has identified potential changes to the noise environment. These impacts are not considered significant, and no mitigations are proposed. USARAK would continue to follow existing mitigation practices under all proposed actions. These measures include implementation of USARAK Range Regulation 350-2, public notification of late night firing, and operation of a 24-hour feedback line to collect comments or complaints regarding noise (USARAK 2011).

3.3.3 Safety

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.3.

3.3.3.1 Affected Environment

FLIGHT SAFETY

Flight safety risks involving aircraft mishaps and near-miss/midair collisions are somewhat lower for rotary wing aircraft than previously discussed for fixed-wing aircraft due to their slower speeds and the more confined airspace in which they train. On the other hand, the potential for bird/wildlife-aircraft strikes can be greater than fixed-wing aircraft since the lower altitudes typically flown by helicopters and related noise effects can unexpectedly cause birds to flush out of their nesting places. The USARAK Safety Office indicates that the greater risk for rotary wing aircraft bird strikes is with black ravens during the winter months. This Office also indicated that there have been no Class A mishaps in Alaska over the past 3 fiscal years and no reported bird strikes in either the airfield or training environment during the past 6 to 8 years (Calhoun 2012). As deployed USARAK aircraft return from overseas, increased flight activities in Alaska could increase the potential for bird strikes and other safety risks.

USARAK has established programs and procedures to help ensure their flight operations do not conflict with civil or other military airspace uses. Specific initiatives include (1) providing information via NOTAMs and the SUAIS to alert civil and other military users of scheduled airspace and exercise activities; (2) attending ACMAC meetings and conducting Aviation Safety Standard Council meetings to discuss areas of mutual interest with FAA, military, and civil aviation representatives; and (3) enforcing USARAK policies/doctrines governing aviation and range safety. Bird strike hazards are also well-

managed as part of the Army's flight safety procedures and as a BASH program for increasing pilot awareness of bird/wildlife activities in the areas where helicopter operations are normally conducted.

USARAK Regulation 95-1 (USARAK 2004-2) and Army SOPs stipulate those safety practices aircrews must follow when planning and conducting flight missions. They include altitude restrictions for avoiding noise-sensitive areas, populated areas, livestock, dwellings, and other sensitive areas. The minimum altitude for flights off the military reservation is 500 feet above the highest obstacle (weather permitting), unless a daytime aerial reconnaissance flight has been completed for the intended route to note any noise-sensitive areas or hazards to be avoided. USARAK procedures and the coordination effected with Air Force and civil aviation interests, as necessary, help reduce any potential conflicts within the airspace commonly used by both military and civil aviation aircraft.

GROUND SAFETY

The ROI for ground safety is DTA-East. For this alternative, the environment affected by activities involved in range safety and control, UXO and munitions safety, public access control, and fire and emergency response would not differ from that previously described for RLOD Alternative A in Section 3.2.3.1.

3.3.3.2 Impact Assessment Methodology

FLIGHT SAFETY

The impact assessment methodology discussed in Section 3.1.3.2 was used to address the potential impacts of this proposal.

GROUND SAFETY

The impact assessment methodology for this proposal is the same as that described in Section 3.2.3.2.

3.3.3.3 Environmental Consequences

3.3.3.3.1 Alternative A

FLIGHT SAFETY

The majority of the flight activities to be conducted in this airspace would be USARAK helicopters operating to/from and within this proposed restricted area. The potential for aircraft mishaps, near misses/midair collisions, bird-aircraft strikes, and other flight safety risks would be minimal. The potential for any near miss/midair collision within the restricted area would be negligible since nonparticipating aircraft would not be permitted in this restricted airspace when active. Those measures currently used by USARAK to maintain safe operating distances from ground obstacles and other military and civil aircraft would continue to be used as a standard for ensuring flight safety is maintained for all concerned. The active status of this restricted area would be available through the SUAIS and other available advisory services. USARAK would also maintain bird awareness programs to address potential bird and wildlife strike hazards that may exist within the affected areas.

GROUND SAFETY

Range Safety and Control – There are no environmental impacts associated with range safety and control for this alternative not previously discussed under Section 3.2.3.3.2. Consequently, significant impacts are not expected to occur.

Unexploded Ordnance and Munitions Safety – There are no environmental impacts associated with UXO and munitions safety for this alternative not previously discussed under Section 3.2.3.3.2. Consequently, significant impacts are not expected to occur.

Public Access Control – There are no environmental impacts associated with public access control for this alternative not previously discussed under Section 3.2.3.3.2. Consequently, significant impacts are not expected to occur.

Fire and Emergency Response – There are no environmental impacts associated with fire and emergency response for this alternative not previously discussed under Section 3.2.3.3.2. Consequently, significant impacts are not expected to occur.

3.3.3.3.2 Alternative B

FLIGHT SAFETY

Flight safety risks within the more extended restricted area proposed for this alternative would be generally the same as discussed for Alternative A. The majority of the flight activities would be USARAK helicopters operating to/from and within this proposed restricted area in which aircraft mishaps, near misses/mid-air collisions, bird-aircraft strikes, and other flight safety risks would be minimal. Those measures discussed in Section 3.3.3.1 would continued to be used and expanded as needed to promote flight safety for all concerned.

GROUND SAFETY

Under Alternative B, the proposed restricted area extends beyond the boundaries proposed for Alternative A. Existing procedures for Range Safety and Control, Unexploded Ordnance and Munitions Safety, Public Access Control, and Fire and Emergency Response would be employed in operations within the BAX and CACTF CFA boundaries. Consequently, significant impacts are not expected to occur.

3.3.3.3.3 No Action Alternative

FLIGHT SAFETY

The No Action Alternative would not result in any changes or additional impacts to the existing CFA airspace environment, flight conditions, and safety programs currently associated with this airspace use.

GROUND SAFETY

No change in ground operations would occur under the No Action Alternative and therefore, no additional impacts on public health and safety would occur.

3.3.3.4 Mitigations

FLIGHT SAFETY

The standing USARAK measures noted in Section 3.3.1.4 would also serve, as appropriate for this restricted area proposal, to mitigate potential flight safety risks associated with future operations in the airspace. As noted for the Airspace Management mitigations (Section 3.3.1.4), the need for specific measures to minimize any impacts on flight safety would be examined in the FAA study of the preferred alternative and addressed with USARAK and the affected aviation interests.

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The following mitigation is proposed to reduce flight safety impacts.

- Maintain respective bird awareness programs to address potential bird and wildlife hazards that may exist.

GROUND SAFETY

The standing USARAK measures discussed in Section 3.2.3.3.1 would serve to mitigate potential ground safety risks.

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The following mitigations are proposed to reduce ground safety impacts.

- The Army will expand enforcement to control trespass in DTA-East for the expanded operations.
- Continue fire management mitigations in accordance with current Army and USARAK regulations on the BAX.

3.3.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.4.

3.3.4.1 Affected Environment

The proposed BAX restricted area is within Southeast Fairbanks Census Area, Alaska, which is in attainment of all the NAAQS. Table B-12 in Appendix B, Section B.4.3, provides a summary of the estimated 2008 annual emissions for Southeast Fairbanks Census Area.

3.3.4.2 Impact Assessment Methodology

The air quality analysis followed the methodology described in Appendix B, Section B.4.5. The proposed action would not result in major changes in aircraft operations in the area or to the amount of ordnance delivered from baseline levels.

PSD CLASS I AREA IMPACT ANALYSIS

The closest PSD Class I area to the proposed action area is Denali National Park, which is approximately 90 miles from the proposed BAX area. Potential impacts that would occur due to the BAX action are discussed below.

3.3.4.3 Environmental Consequences

3.3.4.3.1 Alternative A

CONSTRUCTION

There would be no construction activities associated with the BAX airspace action alternatives.

OPERATIONS

The new airspace proposed in both action Alternatives A and B, would allow sorties and munitions expenditures that are currently taking place in the DTA to take place in the BAX. The DTA is located in the Denali Borough and the Southeast Fairbanks Census Area, which are both in attainment of all NAAQS. The area proposed for the addition of the BAX airspace is adjacent to the DTA in Southeast Fairbanks Census Area and which is in attainment of all NAAQS. Thus, the relocation of the sorties would not create a net increase in criteria pollutant or HAP emissions, or chaff use, and operation of the

BAX under the proposed action would result in less-than-significant air quality impacts. The BAX is located slightly further from Denali National Park than the DTA; thus, the proposed action alternatives would not have any negative impacts on air quality or visibility in nearby Denali National Park.

3.3.4.3.2 Alternative B

Impacts would be the same as those described for Alternative A.

3.3.4.3.3 No Action Alternative

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations at R-2202. Therefore, the No Action Alternative would not result in any additional air quality impacts.

3.3.4.4 Mitigations

Since the impacts from the BAX are expected to be insignificant, no actions to reduce air quality impacts are being proposed.

3.3.5 Physical Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.5. The proposed action involves the addition of a new restricted area over the existing BAX. Other than new firing points in the northwestern portion of the restricted area, the proposed action does not require any additional land, the loss of which would potentially affect physical resources. Given that the proposed action involves minimal to no disturbance of no new or additional land surface, no beneficial or adverse impacts on physical resources within the study area of this proposed action are expected to occur.

3.3.6 Water Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.6.

3.3.6.1 Affected Environment

The BAX is east of Jarvis Creek on the glacial outwash fan that formed where Jarvis Creek flows out of the end moraines of the Delta glaciations. The outwash fan is a broad, gently sloping platform. Jarvis Creek is subject to overbank flooding mainly due to aufeis-caused overflows. There are numerous shallow lakes and ponds within the BAX. The surface water quality of Jarvis Creek meets all State water quality standards (USARAK 2006-1).

3.3.6.2 Impact Assessment Methodology

The general methodology for evaluating water resources is described in Section 3.2.6.2.

3.3.6.3 Environmental Consequences

3.3.6.3.1 Alternative A

The proposed action adds additional restricted area airspace designations to accommodate different types of ordnance use and provide for the safety of civilian air traffic. The ground-disturbing impacts of munitions usage at the existing target arrays and areas of vehicle ground maneuvering were permitted and subject to NEPA analysis in the 2006 *Final Environmental Impact Statement for the Construction and*

Operation of a Battle Area Complex and a Combined Arms Collective Training Facility within U.S. Army Training Lands in Alaska (USARAK 2006-1). In addition, four firing points and thirteen target points would be added within the restricted area (Figure 2-7). Inert ordnance, without high explosives, would be used at the training areas. Therefore explosive residues would not create impacts at the target points. However, the use of munitions would leave low levels of propellant residues at the firing points. Trace amounts (parts per million levels) of propellant components such as 2,4 dinitrotoulene (2,4-DNT) and nitroglycerine would be deposited at the four additional firing points. Nitroglycerine degrades readily and is not persistent. The compound 2,4-DNT degrades more slowly but is not very mobile. Sampling at similar firing points within the DTA has detected low parts per million concentrations of 2,4-DNT (median value of 0.5 parts per million [ppm]) in the soil but not in the surface or groundwater. However, the compound 2,4-DNT is a carcinogenic compound and potentially can contaminate groundwater. The State of Alaska clean up levels are 0.005 ppm for 2,4-DNT to protect groundwater (USACE 2004). Therefore, over time 2,4-DNT concentrations could accumulate at the firing points and concentrations could potential exceed soil clean-up levels. Therefore, there is a potential for adverse impacts to groundwater quality. With mitigation and management actions identified in Section 3.3.6.4, the adverse impacts would be reduced to not significant.

3.3.6.3.2 Alternative B

The proposed restricted area over the BAX and CACTF in DTA-East under this alternative would extend beyond the boundaries proposed for Alternative A in order to encompass the BAX and CACTF boundaries. The impacts from the additional firing points and targets are the same as described in Alternative A.

3.3.6.3.3 No Action Alternative

Under the No Action Alternative the munitions usage at the existing target arrays and vehicle maneuvering would be the same as existing condition as described in the NEPA analysis in 2006 (USARAK 2006-1) and no additional impacts would occur.

3.3.6.4 Mitigations

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. The following mitigation is proposed to reduce these impacts.

- The Army may augment the effort for their existing program to identify possible munitions contamination at training areas on DTA-East. This program initiates the collection of baseline data to determine the location, extent, and potential migration of munitions contamination in soils, surface water, and groundwater. Based on these preliminary results, a long-term monitoring program could be developed to assess cumulative impacts to the withdrawal lands from ongoing military activities. These results could identify areas needing restoration, activities that pose the greatest environmental threat, and the potential mitigation measures to be implemented. Extensive and expedient investigations may be conducted in those areas considered to be exposure pathways, such as streams.

3.3.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.7.

3.3.7.1 Affected Environment

The proposed action involves the addition of a new restricted area over the existing BAX. Other than new firing points in the northwestern portion of the restricted area, the proposed action does not require any additional land that would potentially be subject to releases of hazardous materials and waste. The proposed training and exercises in this restricted area would use existing impact areas for the discharge of ordnance from aircraft and mobile artillery, while being controlled from the existing BAX.

MUNITIONS RELATED RESIDUE

USARAK currently conducts a number of training activities at the BAX that generate munitions-related residue or range residue. The expenditure of live ammunition or detonations has the potential to release hazardous chemicals or other elements, such as heavy metals, into the environment. However, because the proposed training and exercises in this restricted area would use existing impact areas, munitions related baseline information is not relevant to the NEPA analysis.

CONTAMINATED SITES

There are no Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Superfund sites listed on the National Priorities List in the BAX ROI (EPA 2011-1), nor are there any sites listed on the ADEC Contaminated Sites Database within the area proposed for the BAX (ADEC 2011). The Army Environmental Sites restoration database lists no contaminated sites in the BAX ROI (USAEC 2010).

3.3.7.2 Impact Assessment Methodology

The general methodology for evaluating hazardous materials and waste is described in Sections 3.1.7.2 and 3.2.7.2.

3.3.7.3 Environmental Consequences

3.3.7.3.1 Alternative A

Alternative A adds additional restricted area airspace designations to accommodate different types of ordnance use and provide for safety of civilian air traffic. This alternative also adds an additional restricted area for firing from ground-based artillery, located in the northwestern portion of the restricted area. The ground-disturbing impacts of munitions usage at the existing target arrays and areas of vehicle ground maneuvering were permitted and subject to NEPA analysis in 2006, in the *Final Environmental Impact Statement for the Construction and Operation of a Battle Area Complex and a Combined Arms Collective Training Facility within U.S. Army Training Lands in Alaska* (USARAK 2006-1). Therefore, no beneficial or adverse impacts would occur related to hazardous materials and waste. Mitigations would continue current monitoring and management (see Section 3.3.7.4) to identify actions, as needed, to mitigate any future environmental threats from munitions contamination.

3.3.7.3.2 Alternative B

Impacts would be the same as those described for Alternative A.

3.3.7.3.3 No Action Alternative

Under the No Action Alternative, there would be no expansion of the restricted area over the BAX in DTA-East. Therefore, no additional hazardous material-related impacts would occur.

3.3.7.4 Mitigations

The preceding analysis of effects has identified potential pathways for adverse impacts from munitions usage. The following mitigation is proposed to avoid future impacts.

- The Army may augment the effort for their existing program to identify possible munitions contamination at training areas on DTA-East. This program initiates the collection of baseline data to determine the location, extent, and potential migration of munitions contamination in soils, surface water, and groundwater. Based on these preliminary results, a long-term monitoring program could be developed to assess cumulative impacts to the withdrawal lands from ongoing military activities. These results could identify areas needing restoration, activities that pose the greatest environmental threat, and the potential mitigation measures to be implemented. Extensive and expedient investigations may be conducted in those areas considered to be exposure pathways, such as streams.

3.3.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8.

3.3.8.1 Affected Environment

The proposed project area for BAX occurs in DTA-East within the Tanana-Kuskokwim Lowlands ecoregion (please see Figure B-11 in Appendix B, Section B.8). This ecoregion is characterized by gentle topography, patches of impermeable permafrost, and poor soil drainage. Bogs and fens and boreal, broadleaf, and coniferous forests dominate the landscape. Patterns of vegetation are determined by a variety of natural influences, including climate, topography (slope, aspect, and elevation), glaciation, flooding, depth to water table, and most important, permafrost and fire (USARAK 2006-2).

VEGETATION

An ecological survey of DTA reported vegetation cover as forest (29.0 percent), scrub lands (58.1 percent), tundra (4.4 percent), barren/partially vegetated lands (3.6 percent), human-disturbed lands (0.6 percent), and water (4.3 percent) (USARAK 2006-2). Forest cover in DTA is diverse and includes pure stands of spruce, hardwoods, and spruce/hardwood mixtures. The dominant types include white spruce, paper birch, quaking aspen, balsam poplar, black spruce, and spruce/hardwood. Scrub communities (typically composed of alder, willow, and dwarf birch) occur at high mountain elevations, in small stream-valley bottoms, and as pioneer vegetation on disturbed sites. Dense thickets of scrub communities exist along floodplains or disturbed sites such as gravel pits, road shoulders, rights-of-way, and military trails (USARAK 2006-2). The project area for the BAX Restricted Area Alternative includes the following vegetation communities: spruce woodlands/shrub, open spruce forest/shrub/bog mosaic, spruce and broadleaf forest, open and closed spruce forest, open spruce and closed mixed forest mosaic, and areas mapped as gravel bars that had burned in 1990.

Approximate acreages of these vegetation types that occur within the BAX project APE are presented in Table 3-41.

Table 3-41. Land Types Associated with the Battle Area Complex Project

Spruce and Broadleaf Forest	Open and Closed Spruce Forest	Spruce Woodland/Shrub	Open Spruce and Closed Mixed Forest Mosaic	Open Spruce Forest/ Shrub/Bog Mosaic	Gravel Bars
Acres (hectares)					
3,662 (1,482)	2,801 (1,133)	624 (252)	4,267 (1,727)	15,338 (6,207)	2,155 (872)

Source: USGS 1991

Details on forest and wetland land types that occur in DTA are presented below.

Forest

The open and closed forests of DTA range from pure stands of spruce or hardwoods to spruce/hardwood (or broadleaf) mixtures. Predominate hardwoods are birch, quaking aspen, and balsam poplar. Bottomland forest of white spruce/balsam poplar occurs on level floodplains, low river terraces, and south-facing slopes. Stands of black spruce occur where drainage is poor, such as flat valley bottoms, lakesides, and muskegs. Lowland forest of black spruce/hardwood is the most common type in interior Alaska (USARAK 2006-2).

Wetland

Wetlands occur in a variety of forms, but in DTA most are shrub-dominated wetlands. Shrub wetlands, also known as bogs or low brush, are associated with slightly higher relief of marsh edges and poorly drained basins and depressions with cold, waterlogged soils. The surface primarily consists of a thick layer of peat over a mottled gray silt or silt loam. If not exposed, the water table is found only a few inches beneath the surface and during periods of heavy precipitation may form temporary lakes. Depth to ice-rich permafrost is often less than 30 inches. Ground cover is characterized by a dense accumulation of mosses, lichens, sedges, rushes, liverworts, mushrooms, and other fungi. Stunted black spruce occasionally occurs. Along the margins of bogs and in drier areas, grasses, small shrubs, and smaller trees, such as willow and dwarf arctic birch, proliferate (USARAK 2006-2).

WILDLIFE

The ADFG is responsible for managing game populations on Alaska's military lands and establishing population and habitat management goals (USARAK 2006-2). The ADFG subdivides the state into GMUs; the BAX ROI occurs within GMU 20D. More information on GMUs and hunting activities is included under the Sections 3.3.10.1 of Land Use (Recreation subsection), and 3.3.13, Subsistence. The USFWS is primarily responsible for managing nongame fish and wildlife, including special status and migratory bird species. DoD environmental services work with both agencies to promote habitat management (including habitat improvement) on Army lands under various agreements, including INRMPs, the most recent being from 2006 (USARAK 2006-2).

Typical wildlife that use the BAX project area vicinity include moose, black bear, wolves, lynx, beavers, small mammals, and numerous waterfowl. Grizzly bear occur along the Delta River, with densities averaging about 10 to 12 bears per 1,000 square miles (USARAK 2006-2). Major migration routes for waterfowl have been mapped to the west and north of the project area associated with the Tanana and Delta River corridors (see Figure B-15 in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8).

An estimated 2 million waterfowl migrate through and near DTA each spring, and 9 million return during fall, the path roughly paralleling the Alaska Highway (USARAK 2006-2). A variety of waterfowl (ducks, geese, swans) uses the wetlands and floodplains of Jarvis Creek and the Delta River as stopover/resting habitat. One third of the world's sandhill crane population passes through DTA on an annual basis and as many as 40,000 cranes per day pass through DTA during fall migration. Sandhill crane stopover habitat occurs primarily to the west of the BAX project area, cranes roost on the Delta River at night south and east of the BAX project area, and cranes feed on private agricultural fields north and west of the BAX project area. In addition, the International Union for Conservation of Nature has designated the upper Tanana River (including DTA-East and portions of DTA-West) as an area of global importance because of the high trumpeter swan and sandhill crane use. Raptors and passerines also migrate through the area along the Tanana River; estimates in the 1990s included 25,000 raptors passing through DTA during spring and 48,000 during fall (USARAK 2006-2). Migratory birds and their active nests are protected under the MBTA.

The Delta Caribou Herd, with some mixing from the Macomb Herd, uses approximately the southern quarter of the BAX project area as fall/winter habitat (see Figure B-13 in Appendix B, Section B.8). The more-limited caribou winter concentration areas occur in the foothills north of the Alaska Range on the other (western) side of the Delta River, and this herd calves primarily south and west of DTA. Moose are known to use the entire BAX project area at some time during the year and concentrate in the lower third of the BAX in winter (see Figure B-16 in Appendix B, Section B.8). Winter habitat can be critical to survival, as the animals are recovering from the hunting/breeding seasons, females are likely gestating, and all are enduring stresses from the harsh Alaskan weather and increased difficulties of traveling through snow. Therefore, areas identified as winter habitat are crucial to provide food sources that may be scarce or absent in other portions of wildlife species' range in winter.

The project area occurs in the vicinity of a herd of introduced plains bison (*Bison bison*) that was established in the late 1920s. This herd, known as the Delta Bison Herd, is one of the few remaining free-ranging bison herds in the United States. This herd primarily calves along the Delta River east of the BAX project area and then migrates in late April through July to higher ground across the BAX project area to the Delta Junction Bison Range (Figure B-13). A 1980 cooperative agreement designated areas in DTA-East used as important bison late-summer and early-winter range as Special Interest Management Areas (USARAK 2006-2). Existing restrictions under the USAG-FWA Special Interest Management Area category include limits on disturbance to bison habitat areas from mid-February to early September when bison are present (USARAK 2007-2). Responsibility for Special Interest Management Areas falls under USAG-FWA Environmental Division, with access provided by Range Control.

Approximate acreages of known wildlife habitat of importance within the BAX project area are presented in Table 3-42.

3.3.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

Table 3-42. Wildlife Habitats Associated with the Battle Area Complex Project

Moose Winter Habitat	Waterfowl General Habitat
Acres (hectares)	
8,149 (3,298)	13,264 (5,368)

Source: RDI 2005-3. 2005-4, 2005-6

3.3.8.3 Environmental Consequences

3.3.8.3.1 Alternative A

The BAX and CACTF currently provides a tactical collective live-fire training facility that can be used mounted (by vehicle) or dismounted (on foot) with stationary and moving targets in both open and "urban" terrains. Munitions currently in use in the BAX project area primarily include small arms and air-to-ground munitions. Establishment of the BAX and the CACTF, and use for live firing and maneuvering, are addressed in the final EIS for the establishment and operation of the BAX and CACTF (USARAK 2006-1).

Establishment of the proposed restricted area would accommodate use of air-to-ground ordnance, including Hellfire missile carry trainers, practice rockets, aircraft-mounted cannon and machine guns, as well as laser designators, pointers, and rangefinders. These would be used by Army helicopters stationed at Fort Wainwright, Alaska, UAVs, and other aircraft in combination with existing ground-based training and ordnance use. Ground-based ordnance use would include artillery, mortars, machine guns, 105-mm howitzers from Stryker vehicles, and illumination rounds from 155-mm howitzers. All weapons used within the BAX and CACTF, including air-to-ground weapons, would be non-dud-producing types that do not contain explosive substances, unless used in an existing live ordnance impact area (i.e., Oklahoma Impact Area). The ground-based training and ordnance component is already permitted for use. It is assumed that the addition of the 105-mm firing capability in the BAX will not result in an increase in the maximum off-road travel by military vehicles that occurs in the BAX.

As described in Section 3.3.7.3.2, Affected Environment, a variety of vegetation types occur within the BAX project area. Under the proposed project, no new ground-disturbing activities that differ substantially from activities already occurring within the BAX are expected to occur. It is expected that evolving training needs will require identification of additional firing points and target areas for the inert ordnance, which would be located according to established siting and environmental protection measures and subsequent review under NEPA, discussed further in Chapter 2.0. Effects to vegetation communities would continue to be localized. The vegetation classes present in DTA-East project area are widespread across the project region and are not unique or considered sensitive communities, and are not associated with endangered or threatened species. Therefore, no significant adverse effects to vegetation communities are expected.

No new live-fire impact areas would be established, and no substantially different impact types would be introduced into the BAX area as a result of this project. It was assumed that the proposed activities, e.g., the addition of air-to-ground ordnance use, would not cause training to occur at different seasons or locations than current training activities. Impacts on wildlife would be greater if a change in season of human activity would occur that may adversely affect sensitive activities such as calving, nesting, breeding, migration, or critical winter range use. Because a variety of training already occurs within the BAX project area and a variety of wildlife species occur there, the resident and migratory species are exposed to, and likely habituated to, the types of disturbances that result from these types of activities. Wildlife habitats present within the project area are not associated with sensitive, endangered, or threatened species and are generally widely available within the project region.

Because the Army in Alaska has worked to foster healthy, stable, ecosystems while completing its military mission, localized effects to biological resources are not expected to cause harm to populations or biodiversity.

Overall impacts to biological resources from the expansion of restricted airspace over the BAX in DTA-East and from changes in the ordnance and aircraft use in the BAX project area under Alternative A are expected to be adverse but not significant. Impacts would be further reduced given implementation of

proposed and ongoing mitigation, such as Special Interest Management Areas, maintaining dialogue with BLM and ADNR to adjust restrictions, and impact avoidance measures (see Section 3.3.8.4).

3.3.8.3.2 Alternative B

This alternative includes a substantially larger proposed restricted airspace than under Alternative A, plus an enlarged SDZ to more fully encompass ongoing activities in the BAX. As described for Alternative A, these activities will continue to include the use of only inert (nonexplosive), nondudded munitions. Alternative B also includes establishment of temporary impact areas for inert mortar rounds that are proposed for in and near the current BAX live-fire range (refer to Figure 2-7). Sizes and exact locations of these areas are unknown at this time, but target establishment may result in adverse biological impacts. Biological surveys have been conducted for wetlands and raptor nests, and no raptor nests were recorded in areas where targets may be situated. If adjustments for final siting of targets are made, they would be according to established procedures used by USARAK and the USAG-FWA Environmental Division, to select suitable locations while also considering a range of environmental, operational, and land use constraints that would minimize impacts on wildlife and vegetation. Overall impacts to biological resources from the expansion of restricted airspace over the BAX in DTA-East under Alternative B are expected to be adverse but not significant and would be further reduced given implementation of proposed and ongoing mitigation and impact avoidance measures summarized below (Section 3.3.8.4).

3.3.8.3.3 No Action Alternative

The current amount of ground disturbance (from training, vehicles and live fire) would be expected to continue, and wildlife using the area would be expected to remain active in occupied habitats. Localized vegetation impacts from training would continue as under current existing conditions.

3.3.8.4 Mitigations

The preceding analysis has identified adverse impacts to biological resources. The following mitigations are proposed to reduce these impacts.

- Maintain consultation with USFWS with regard to compliance with Bald and Golden Eagle Protection Act and MBTA. As required, conduct bald and golden eagle nest surveys in other areas where airspace modification would occur over previously unsurveyed areas. Coordinate the results with USFWS.
- Continue to monitor effects of military training including overflights on select wildlife species (especially herd animals, waterfowl, and raptors) and fisheries during critical seasons such as breeding, young-rearing, and migration. Use knowledge to develop and implement strategies to minimize disturbance to priority wildlife in existing and new SUAs and restricted airspace. This would help natural resources and range managers to coordinate training schedules that minimize impacts on wildlife populations.
- Continue pilot and soldier education awareness of sensitive wildlife species habitats and seasonal behaviors utilizing GIS mapping and discuss procedures to reduce disturbances and to increase safety by reducing potential for aircraft strikes.
- Continue effort to conduct a detailed study to assess the impacts and effects of noise on wildlife, particularly key species such as caribou and bison, during critical life cycle seasons. Use information to include protection requirements within a noise management plan.
- The Army may augment the effort for their existing program to identify possible munitions contamination at training areas on DTA-East. This program initiates the collection of baseline

data to determine the location, extent, and potential migration of munitions contamination in soils, surface water, and groundwater. Based on these preliminary results, a long-term monitoring program could be developed to assess cumulative impacts to the withdrawal lands from ongoing military activities. These results could identify areas needing restoration, activities that pose the greatest environmental threat, and the potential mitigation measures to be implemented. Extensive and expedient investigations may be conducted in those areas considered to be exposure pathways, such as streams.

- The military will maintain an open dialogue with ADNR, BLM, ADFG and USFWS to assess current conditions and needed adjustments in locations or temporal restrictions to avoidances and procedures put in place by the ROD for this EIS.

3.3.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.3.9.1 Affected Environment

The ROI for the BAX Restricted Area action consists of that portion of DTA and the land beneath the existing Buffalo, Delta 3, and Delta 4 MOAs where the new restricted area would be located (Figure 2-6 and Figure 2-7).

There are 153 known archaeological sites located under the entire restricted airspace (USAG-FWA 2012). One hundred twenty-four sites that are eligible or may be eligible for listing in the National Register are located within the original boundaries of the BAX SDZ. An additional 14 sites are known from the expanded portions of the BAX footprint (see Table H-2 in Appendix H, *Cultural Resources*) in the northwest corner and southern end (Figure 2-6 and Figure 2-7). To comprehensively identify all archaeological sites in the expanded footprint of the BAX SDZ, an additional 1,182 acres need to be surveyed. Archaeological sites under training airspace include native burial grounds, village and settlement sites, and historic mining sites (Air Force 2006-1). Architectural resources under the proposed BAX Restricted Area within the existing MOAs include structures relating to gold mining, trapping, or the railroad (Air Force 2006-1). Locations of Federally recognized Alaska Native tribes under or near the airspace discussed below are illustrated in Figure 3-10.

NATIONAL REGISTER–LISTED PROPERTIES

Rapids Roadhouse, also known as Black Rapids Roadhouse, in the Delta vicinity, underlies Buffalo MOA and is the only National Register–listed cultural resource under the existing Buffalo and Delta 4 MOAs (NRIS 2011). Rapids Roadhouse is south of the proposed restricted area. The Sullivan Roadhouse, Big Delta Historic District, and the Rika's Landing Roadhouse National Register–listed properties are all under the Delta 3 MOA, outside the ROI for both alternatives of the BAX Restricted Area proposal.

TRADITIONAL CULTURAL PROPERTIES AND ALASKA NATIVE CONCERNS

No Federally recognized Alaska Native tribes are under the Buffalo and Delta 4 MOAs (Figure 3-10). Although no traditional cultural properties have been specifically identified underneath the airspace, this does not mean that none are present. In compliance with the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed new restricted area.

3.3.9.2 Impact Assessment Methodology

The methodology used for the analysis of potential impacts on cultural resources for the proposed BAX action is the same as the methodology used for the analysis for the RLOD action (Section 3.2.9.2).

3.3.9.3 Environmental Consequences

3.3.9.3.1 Alternative A

Alternative A proposes to convert and modify the airspace structure currently established as the BAX CFA to a restricted area (Figure 2-6) and use it for training as described in Table 2-10 and Table 2-11. Alternative A includes the expansion of the BAX SDZ, which is the downrange safety buffer zone that covers the maximum distance stray rounds may travel.

Although 153 archaeological sites are located under the training airspace, no significant impacts are anticipated to cultural resources from the airspace reclassification and its training use. Flying operations are not conducted at a frequency sufficient to result in time-averaged noise levels exceeding 65 dB DNL. As described in Section 3.3.2, noise levels generated by munitions firing exceeding 62 dB CDNL would not extend beyond range boundaries (see Appendix E, *Noise*).

However, adverse effects are likely for the 14 known archaeological sites within the expanded footprint of the BAX, as well as any sites found during surveys of the previously unsurveyed areas bounded by the expanded BAX SDZ footprint. In compliance with Section 106 of the NHPA, the Army has completed consultation with the Alaska SHPO and executed an *Amended Programmatic Agreement [PA] between the United States Department of the Army and the Alaska State Historic Preservation Officer regarding Monitoring and Treatment Plan of Archaeological Sites located within the Surface Danger Zone of the Battle Area Complex Training Facility at Fort Wainwright, Donnelly Training Area* (see Appendix L). The SHPO has concurred with the finding of no adverse effect, provided that a monitoring and data recovery program is implemented. Under the terms of the PA, consultation with potentially affected Alaska Native tribes, ANCSA corporations, and Tribal government entities will continue for the duration of the PA. Further mitigations for this action are described in Section 3.3.8.4, and include possible amending of the existing PA and the completion of all compliance requirements for consultation with Alaska SHPO with implementation of mitigations or management identified in this process to minimize impacts on cultural resources.

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed new restricted area. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources, or Indian land under the proposed new restricted area and expanded BAX SDZ footprint (see Section 1.6.5).

3.3.9.3.2 Alternative B

Under this alternative, the proposed restricted area over the BAX and CACTF in DTA-East would extend beyond the boundaries proposed for Alternative A to encompass the BAX and CACTF boundaries (Figure 2-7).

Under Alternative B, impacts would be similar to Alternative A, with no significant impacts anticipated to cultural resources from the airspace reclassification and expansion and its training use. Adverse effects to

cultural resources in the expanded BAX SDZ footprint have been resolved through the NHPA Section 106 consultation process as outlined in the discussion of Alternative A.

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed new restricted area. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM, on behalf of the Army, has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian Land under the proposed new restricted area and expanded BAX SDZ footprint (see Section 1.6.5).

3.3.9.3.3 No Action Alternative

Under the No Action Alternative there would be no expansion of the restricted area over the BAX in DTA-East and no expansion of the BAX SDZ footprint. Existing use of the restricted areas would continue under this alternative and resources would continue to be managed in compliance with Federal law and DoD policy and regulations.

3.3.9.4 Mitigations

The preceding analysis of effects on this resource has identified adverse and potentially significant impacts. Potential adverse effects to archaeological sites in the expanded BAX SDZ footprint will be mitigated by adherence to the terms, conditions, and stipulations in the Amended PA executed through NHPA Section 106 consultation pursuant to 36 CFR 800 (see Appendix L, *Agency and Government Correspondence*). The following mitigation is proposed to protect cultural resources.

- Mitigations for impacts to cultural resources are established through NHPA Section 106 consultation pursuant to 36 CFR 800. In compliance with Section 106 of the NHPA, the Army and ALCOM have completed all compliance requirements for consultation with the Alaska SHPO and potentially affected Alaska Native tribes, ANCSA corporations, and Tribal government entities to identify historic properties that may be affected, including traditional cultural properties, and to develop management actions and mitigation measures to resolve any adverse effects.
    - Mitigation measures under consideration could include amending the existing BAX Surface Danger Zone PA to include the known and as yet undiscovered archaeological sites in the expanded BAX surface danger zone footprint.
    - For ground-disturbing actions that impact archaeological sites, historically mitigations have included retrieval of information through excavation of sites determined eligible for inclusion in the National Register and impacted by range activities. For National Register-eligible sites destroyed by range activities, past mitigations have included excavation of another eligible site, comparable in size, age, composition and setting to the site to be destroyed. Other measures historically applied also have included development of public education materials to provide selected archaeological information retrieved from mitigation investigations of National Register-eligible sites.
    - In accordance with AFI 32-7065, all NHPA Section 106 consultation has been completed. The management actions and/or mitigation measures developed through consultation has been completed prior to implementation of the proposed action. In the event that previously unrecorded or unevaluated cultural resources are encountered, the Army would manage these resources in accordance with the NHPA and other Federal and state laws, Air

Force, and DoD regulations and instructions, and DoD American Indian and Alaska Native Policy (DoD 1998).

3.3.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.10.

3.3.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

Land Status

All land within the proposed BAX Restricted Area proposal is under military management within DTA-East. Land ownership in and around the BAX proposal area is shown in Figure 3-28. Adjacent land includes Fort Greely and Delta Junction to the north and private land along the Alaska Highway, DTA-West on the west side of the Delta River, and predominantly State land on the south and eastern border. Between DTA-West and DTA-East along the Richardson Highway is an area referred to as the "key hole" (about 7,290 acres), composed of BLM-managed land (1,895 acres), military-managed land (about 1,520), State-managed land (about about 180 acres) and private land (about 3,690 acres).

Land Management and Use

All the land directly underlying the proposed restricted airspace within DTA-East is under military management and is not used by the public for productive uses. The USARAK INRMP provides the management framework for the lands within DTA, with the goal of conserving its various natural values while maximizing military, and as possible, public access uses (USARAK 2006-2). To the west, R-2202 overlies DTA-West, the Oklahoma/Delta Creek Impact Area, the Mississippi Impact Area, and the Washington Impact Area. These military training lands are not within the proposal area but support the use and training activities on DTA-East. The Army also has a network of supporting infrastructure (such as roads, communications lines, utilities), some above and some below ground. Some of these restrict what activities can occur on the surface (that would not cause damage to the assets). Several existing rights-of way, leases, and permits are also in effect for regional and national infrastructures, such as communications lines and towers, transmission lines, and energy pipelines. A major consideration for surface activities is the Trans-Alaska Pipeline which traverses DTA-East. Off-road vehicle and other weight-bearing activities and ground disturbance are not allowed to interfere with the maintenance work pad that parallels the pipeline.

Public use of DTA-East is essentially limited to hunting, fishing, and trapping for recreational, personal, and subsistence purposes. There are no agricultural or commercial extractive activities, although limited timber harvesting is permitted. DTA-East is predominantly categorized as Open Use (available year-round for all forms of recreation), with the exception of some isolated wetland areas and the Jarvis Creek channel, which are considered Limited Use (accessible year-round only to nonmotorized forms of recreation) areas.

Fort Greely, immediately adjacent to the BAX/CACTF, has a full spectrum of cantonment uses, industrial and mission-focused, as well as community uses such as housing and a school.

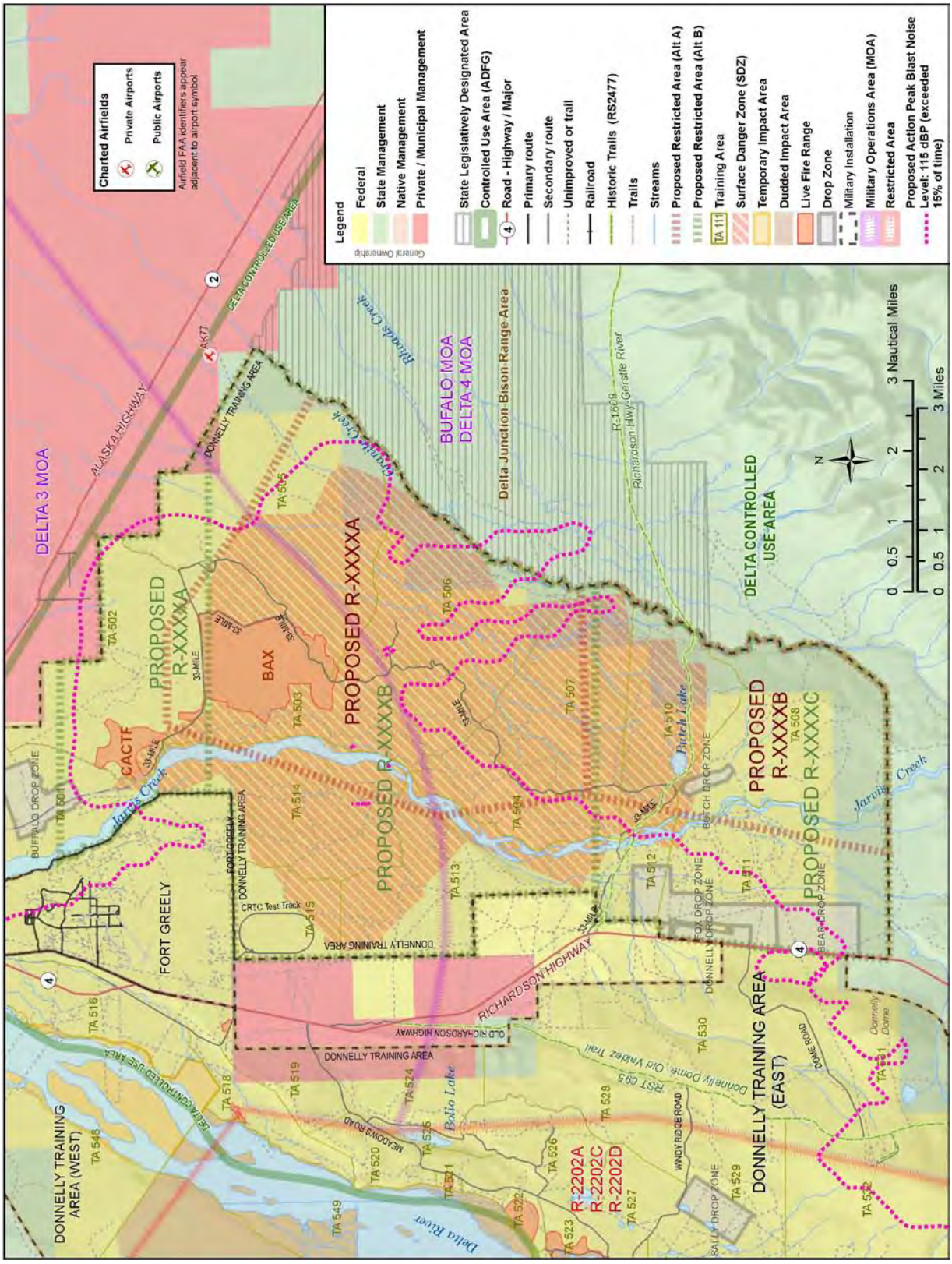


Figure 3-28. Land Status and Special Use Areas Around the Battle Area Complex Restricted Airspace Proposal Area

Delta Junction, directly north of Fort Greely at the junction of the Richardson and Alaska Highways, does not have a comprehensive plan for land use, but has established municipal ordinances governing land use and subdivision layout and approvals. The City Planning Commission serves as both an advisory body (prepares plans) and enforcing body of city ordinances. The Commission approves all plat plans, variances, and conditional use requests. The "key hole" area is essentially undeveloped and wooded, with one or two existing residences. There is an existing Memorandum of Agreement (USARAK-MOA-029), signed 16 May 2006, between USARAK and the City of Delta Junction. The agreement lays out specific operational actions and restrictions that apply to the use and management of the existing BAX and CACTF in DTA-East (USARAK 2006-3). Mitigations as outlined in the BAX and CACTF Final EIS (dated June 2006) and ROD (signed 19 July 2006) remain in effect and will not be superseded unless a better-practice, enhanced, stringent mitigation is implemented as part of this EIS.

The State land surrounding DTA-East is within the East Tanana planning area. This plan is currently under development. Most of the State land is managed for its habitat values. There is only one State legislatively designated area near the BAX proposal area: the Delta Junction Bison Range. Figure 3-28 shows the location of this area (see Appendix I, *Land Use, Public Access, and Recreation*, for a description of this area). BLM land in the key hole area is managed by the Central Yukon Field Office. A portion of the Delta CUA (about 5 percent) overlaps with DTA-East. The CUA is managed by ADFG with seasonal limitations on the use of motorized vehicles for hunting.

Communities in the surrounding area that have residential use and subsistence ties to the proposal area include Delta Junction, Big Delta, Healy Lake Village, Village of Dot Lake, Native Village of Tanacross, Native Village of Tetlin, Northway Village, Deltana (a CDP), and Dry Creek (a nonnative community 45 miles south-southeast of Delta Junction). These towns are considered rural areas. Subsistence use is described in Section 3.3.12.3.1. The Trans-Alaska pipeline is within the Richardson Highway alignment in the vicinity of the proposal area.

Figure 3-28 shows that areas currently exposed to peak noise levels of 115 dB PK 15(met) outside the installation boundary to the north of DTA-West is mostly forested with valuable moose habitat and good hunting opportunities. Within the existing 115 dB PK 15(met) noise exposure footprint is the "key hole" area between DTA-East and DTA-West. This area (7,290 acres) is composed primarily of private and BLM land. The area is also forested with one or two homes. A small area of private land immediately north of DTA-East (south of the Alaska Highway along Tumey Road) has residences that are also currently exposed to noise levels of 115 dB PK 15(met). Some persons using this area may be annoyed by peak levels above 115 dB PK 15(met).

PUBLIC ACCESS

Ground Access

One RS-2477–designated route, the Richardson Highway-Gerstle River trail (RST 1609), traverses the BAX Restricted Area proposal area. DTA-East is readily accessible to the public, containing over 150 miles of existing trails, some of which are overgrown and not drivable. Access roads, including 33-Mile Loop Road, Meadows Road, Dome Road, Old Richardson Highway, and Fleet Street, connect directly to either the Richardson or Alaska Highway. Additional access was historically available through the Fort Greely cantonment area, but is no longer available for recreation or general access. In addition to vehicle access via roads, much of DTA-East is available for ORRV and aerial access. ORRV and winter trails exist across DTA-East.

The 33-Mile Loop is one of the more-popular trail systems in DTA-East and is the primary access artery to training areas within DTA-East, but it is severely degraded in certain locations and may be impassable in some areas when wet (except in winter). A series of other trails run north–south and east–west and connect into 33-Mile Loop Road. Other access west of Richardson Highway includes Windy Ridge Road and Meadows Loop, which are popular recreation trails. Meadows Road intersects the Richardson

Highway and heads west and south to intersect with Windy Ridge Road, which heads east to intersect with the Old Richardson Highway.

Aerial Access

A list of the charted public and private airports and airstrips in the ROI of this proposed action is provided in Table 3-43 and shown on Figure 3-28. This table indicates communities and special areas served by charted airports and airfields in the BAX proposal area. No private or public airports are directly within the proposal airspace.

Navigable and Public Waters

Jarvis Creek and a number of small lakes are within the proposal area. These water bodies are not identified by ADNR as navigable or public waters (ADNR 2011).

Table 3-43. Charted Airports Serving the Battle Area Complex Proposal Area

Charted Airport	Areas Underlying or Within 20-mile Service Radius	
	Community	Special Use Area
Rocking T Ranch Airport	Delta Junction, Big Delta Junction, Deltana CDP, Big Delta CDP, Fort Greely CDP, Delta Junction City, Whitestone CDP, Healy Lake CDP	Delta Junction Bison Range Area, Tanana Valley SFR, Clearwater SRS, Big Delta SHP, Quartz Lake SRA, Delta SRS
All West Airport	Delta Junction, Big Delta, Fort Greely CDP, Whitestone CDP, Healy Lake CDP, Delta Junction City, Deltana CDP, Big Delta CDP	Delta Junction Bison Range Area, Tanana Valley SFR, Delta SRS, Clearwater SRS, Big Delta SHP.
Delta Junction Airport	Big Delta, Delta Junction, Big Delta CDP, Fort Greely CDP, Whitestone CDP, Deltana CDP, Delta Junction City	Delta Junction Bison Range Area, Tanana Valley SFR, Clearwater SRS, Delta SRS, Quartz Lake SRA, Big Delta SHP.
Windsong Estates Airport	Big Delta, Delta Junction, Deltana CDP, Fort Greely CDP, Healy Lake CDP, Whitestone CDP, Big Delta CDP, Delta Junction City,	Delta Junction Bison Range Area, Tanana Valley SFR, Clearwater SRS, Big Delta SHP, Quartz Lake SRA, Delta SRS
Remington Field Airport	Big Delta, Delta Junction, Delta Junction City, Fort Greely CDP, Deltana CDP, Whitestone CDP, Healy Lake CDP, Big Delta CDP	Tanana Valley SFR, Delta Junction Bison Range Area, Big Delta SHP, Quartz Lake SRA, Delta SRS, Clearwater SRS
Arctic Angel Airport	Delta Junction, Big Delta, Harding-Birch Lakes CDP, Deltana CDP, Whitestone CDP, Fort Greely CDP, Big Delta CDP, Delta Junction City	Delta Junction Bison Range Area, Tanana Valley SFR, Clearwater SRS, Big Delta SHP, Delta SRS, Quartz Lake SRA
Delta Daves Airport	Delta Junction, Big Delta, Big Delta CDP, Delta Junction City, Deltana CDP, Fort Greely CDP, Harding-Birch Lakes CDP, Whitestone CDP	Delta Junction Bison Range Area, Tanana Valley SFR, Quartz Lake SRA, Delta SRS, Big Delta SHP, Clearwater SRS.
Black Rapids Airport	Fort Greely CDP, Deltana CDP	Delta National Wild Scenic and Recreational River, Donnelly Creek SRS

Note: Bold text indicates that the airport is under the proposed airspace for this proposal.
Key: CDP=Census Designated Place; CHA=Critical Habitat Area; PUA=Public Use Area; RMA=Resource Management Area; SFR=State Forest; SGR=State Game Refuge; SHP=State Historic Park; SRA=State Recreation Area; SRS=State Recreation Site.
Source: FAA 2011-6; AirNav 2011.

RECREATION

The proposal area only includes military lands in DTA-East/Fort Greely East. DTA-East is a popular recreational destination for Alaska residents, particularly for those in the Fairbanks-Delta Junction area. The *Final Environmental Impact Statement for Transformation of U.S. Army Alaska, Vol. 2, Appendix E* (USARAK 2004-1) provides historic recreational use numbers for DTA and these are summarized in Table 3-44.

Hunting

Moose hunting is popular in DTA-East, occurring mainly along the east side of the 33-Mile Loop Road. This area is a nonpermit area, but it does have antler restrictions for moose. The open views from ridgelines provide excellent vantage points for hunters. Training Areas 8, 9, 10, 11, 16, 17, 19, and the Gerstle River are the only areas in DTA-East within GMU 20D that are open for nonpermit moose hunts in September.

Table 3-44. Recreational Use in the Donnelly Training Area East

Recreational Category	Approximate Average Annual Number Users
Donnelly Training Area	
Hunting	1,150
Trapping	50
Fishing	1,500
Off-Road Recreational Vehicle Use	400
Hiking	200
Other	1,700

Source: USARAK 2004-1.

The ADFG's Delta Junction Management Area (DJMA) encompasses most of DTA-East. ADFG hunting restrictions within DJMA apply only to moose. To hunt moose in this area, one must apply for a permit through the ADFG drawing process. Only 20 permits have been issued through this lottery per year. Texas Range, Washington Range, and the Washington Impact Area lie within DJMA. USAG-FWA restricts recreational access to these areas. State of Alaska regulations allow black bear hunting year-round in GMU 20D, with a harvest limit of three per regulatory year. Black bears may also be taken over a State-registered bait stand from approximately April 15 to June 30. Black bear baiting is allowed in DTA after registration of the stand with the State of Alaska and USAG-FWA. As with all recreational activities, some areas may be temporarily closed to bear baiting due to training.

Grizzly (brown) bear hunting is open from approximately August 10 to June 30, with a harvest limit of one per regulatory year. The caribou hunt (bulls) in DTA-East is open to residents only through a registration hunt. This season occurs approximately August 15 to August 25. Bison hunts are allowed through the ADFG drawing process. The number of permits issued is based on that year's population estimates and composition. There is insufficient habitat for Dall sheep in DTA-East; thus, no sheep hunting occurs. Access through DTA-East for Dall sheep hunting in other areas off-post does occur, as the Granite Mountains (to the east of DTA-East) are part of an ADFG drawing permit sheep hunting area.

The 90,000-acre Delta Junction Bison Range surrounds DTA-East and is popular. This special use area is popular for hunting, cross-country skiing, agricultural research, dog sledding, trapping, wildlife viewing, fishing, and other activities. There are also timber sales on the range. About 40 hunting parties travel to the range to hunt bison each year. Bison can be viewed from the Richardson Highway during the spring and summer months, and throughout the range during the summer (ADFG 2012).

Trapping

Popular furbearer species for trapping include lynx, beaver, pine marten, fox, and wolves. Trapping on DTA-East requires registration of traplines with the USAG-FWA Environmental Division, a Recreational Access Permit, and a daily phone call to the USARTRAK system.

Fishing

Fishing is a popular recreational activity in DTA-East. However, there are no lakes located in DTA-East within the BAX project area. Jarvis Creek is located within the project area and contains grayling. On the west side of Richardson Highway, several lakes are stocked by ADFG on DTA-West, training areas 524, 526, 528, 529, and 531.

Trail Use

Hiking opportunities exist within DTA-East. The most popular hiking area is the Donnelly Dome Hike. Other popular hiking routes include 33-Mile Loop, Windy Ridge Road, and Meadows Road. Public access for trail use is allowed with a valid Recreational Access Permit, but is subject to closures and to safety military security restrictions. A call to the USARTRAK system is also required before entering the area. Many recreational activities are seasonal and occur in brief bursts each year.

ORRV

ORRVs are primarily used to access hunting, fishing, and trapping areas, and for recreational riding in DTA-East.

3.3.10.2 Impact Assessment Methodology

The general methodology for evaluating land use, public access, and recreation is described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The following are the primary impacts of this proposal on land use, including public access and recreation:

- Effects of military overflights on underlying uses and activities (primarily from aircraft noise), as described in Section 3.1.10.2
- Effects of countermeasures deployment on land uses and recreation, as described in Section 3.1.10.2
- Effects of weapons and munitions use on land uses and recreation areas, as described in Sections 3.2.2.2 and 3.1.10.2
- Effects of ground-based military operations (such as vehicle and convoy operations on range roads, ground maneuver training both on range and cross-country roads, pedestrian activities, and bivouacking) described below

Ground-based military activities generally require exclusive use of training areas and ranges when in use. This makes them unavailable for other uses (either public use or range management). The assessment considers the reduction in time available for approved and permitted non-military uses based on average current availability for these activities. The relative importance of reduced access considers which specific locations and non-military uses are affected, the relative size of affected areas, and whether other locations in the local area can provide for similar uses and activities, and are substitutable.

In some cases, if the proposed military operations are in proximity to ongoing occupied facilities and uses on adjacent non-military land, the analysis reviews effects of noise, dust, traffic, or potential safety hazards on these uses. Impact is measured by degree of displacement or reduced suitability of affected areas for existing or planned use. The evaluation considers the importance of affected roads and trails and

whether these provide through-access to areas that remain open (outside of the hazardous zone) and therefore available for use.

For recreation, the assessment evaluates the impact of reduced time available for permitted recreational activities on military land. It considers the types of recreation affected, potential for military operations to change the habitats and features that are intrinsic to affected recreational opportunities, and the scarcity or prevalence of alternative similar recreational opportunities in the area.

3.3.10.3 Environmental Consequences

The analysis of the BAX restricted airspace proposal assumes that military training and test missions at the BAX with new restricted airspace would preempt non-military use and range management functions. Proposed operations at the BAX with new restricted airspace would result in restrictions on public use and in closure of roads and trails on military land underneath the proposed restricted airspace between 50 and 98 percent of the time. With the exception of the existing CACTF, these areas are mostly available for public access currently.

3.3.10.3.1 Alternative A

Land Status, Management, and Use. The primary land use on DTA-East is military, and this would not change under the BAX proposal. Public uses taking place on DTA-East including: recreation, personal use and subsistence, hunting, gathering, and trapping would continue, but available time for access would become very limited. With the exception of access for personal-use timber harvesting, there are no other public uses (for example, agriculture or mining), occurring in the BAX proposal area, therefore no impact would result. Hazardous activities would take place on about 3 to 5 days each week and would reduce time available for range management tasks, including restorative projects, research, monitoring and surveys. Coordinated scheduling could minimize conflicts in arranging adequate time on range for management functions.

The USARAK IRO and USAG-FWA would review final selected sites for new firing points and targets to ensure the location does not conflict with key infrastructure (both surface and underground). This would include checking that new sites do not coincide with land restrictions in effect for existing leases, permits, and rights-of-way, including the Trans-Alaska Pipeline. This review would stipulate commitments to maintaining access for maintenance and operations associated with these real property interests. The primary source of noise for the proposed BAX operations is from firing of larger caliber weapons. Noise levels associated with the proposed restricted airspace and operations on DTA-East are presented in Section 3.3.2.3. Noise contours (exhibited in Figure 3-26) show a slight increase in sound exposure and slight expansion of the area exposed to 62 dB CDNL and above. Noise exposure on areas outside the installation would remain well below 62 dB L_{dnmr}. No areas would experience incompatible averaged impulsive noise levels.

Table 3-45 shows the ownership status of land affected by peak noise levels under the BAX proposal. The table reveals that current firing on both DTA-West and -East already affects about 21,850 acres outside the installation boundaries. With the proposed BAX operations for this alternative, peak levels above 115 dB PK 15(met) would expand and affect about 550 acres of State land to the east of DTA-East. This land is within the Delta Junction Bison Range Area, which is specially managed as a habitat, hunting, and recreational resource (shown in Figure 3-28). These elevated noise levels could annoy some persons, particularly because they would occur regularly, and enjoyment of this area includes its qualities of naturalness. A minor adverse impact on outdoor users and management priorities would result. Other locations around DTA-East and West (predominantly State land) would not experience any appreciable change in peak noise levels, but they would occur more frequently. Affected areas have very few permanent residents, although they may support camping in summer months. No appreciable change to

peak noise levels would occur in other locations outside the military land. An additional 7,480 acres of military land would experience peak noise levels of 115 dB PK 15(met). Most of this occurs in the south part of DTA-East, but these levels would expand slightly to the north of the CACTF area in TAs 501 and 502, and the eastern part of Fort Greely. They would not extend outside the military boundary into Delta Junction. Residents in Delta Junction may be aware of more frequent firing, but the levels would be less than 115 dB PK 15(met). The sound of these noise levels have been described as similar to the clap of distant thunder.

Public Access. Civilian ground and air access is currently permitted within the proposal area with the exception of the BAX/CACTF, an off-limits area, and Jarvis Creek channel, which is considered Limited Use (all non-motorized forms of recreation year-round) subject to closures due primarily to military training exercise and during freeze-up or break-up. Under this proposal, civilian ground and air access would not be permitted within the project area when the BAX and restricted area are active.

Table 3-45. Peak Noise Exposure Associated with the Proposed Battle Area Complex Restricted Airspace Proposal

Location	Current 115 dB PK 15(met) Exposure (acres)	Proposed 115 dB PK 15(met) Exposure (acres)	Change (acres)
Military Land	328,130	335,600	7,480
Non-military Land			
State	14,350	14,900	550
Private/Municipal	4,070	4,070	0
Bureau of Land Management	1,900	1,900	0
Military-managed	1,530	1,530	0
Total Non-military	21,850	22,400	550
Total (all lands)	**349,970**	**358,000**	**8,030**

Key: dB=decibels.
Source: ADNR 2011-2.

Ground Access. RS-2477 trails, including Richardson Highway-Gerstle River trail and 33-Mile Loop Road, and the 12-Mile Crossing, would no longer be accessible on 3 to 5 days each week when the BAX and restricted airspace are active. This would result in an adverse impact on the accessibility of trails and roads mentioned above and to the use of areas served by those routes.

The current automated access system allows users to manage the access process themselves. Managing and enforcing public access restrictions is a safety concern, not only because of intentional trespass, but also inadvertent access. Restricting public access to areas that have historically allowed public access would require additional monitoring and enforcement; this would require additional labor, and could exceed current staffing capacity. USAG-FWA proposes mitigations to expand enforcement to control access to unsafe areas. Working with ADNR and BLM, USAG-FWA will adjust restrictions as needed and disseminate information and maps to the public in order to reduce the risks of inadvertent incompatible public use.

Air Access. No charted airports are located within the proposed restricted area; therefore, no direct impacts on air access would occur. As reported in Section 3.3.1.3, little impact is anticipated on local airports. The indirect impact of local communities and enterprise would therefore be minimal.

Navigable and Public Waters. No navigable and public waters are located within the project site or vicinity. Therefore, no direct or indirect impacts on navigable and public waters would occur.

Recreation

Recreational activities including hunting within the proposal area would be prohibited under this alternative when the BAX and restricted area are active with military training and exercises taking place. Several locations within the project area traditionally used by the public during moose hunting season would no longer be available under this alternative. Hunters typically set up a camp and remain in the field for a weekend (or more) at a time. New restrictions would adversely affect hunters who traditionally camp and hunt within the DTA-East project area. A moderate amount of nonhunting recreation occurs in the proposal area and would also be impacted by restricted access (see Table 3-44).

Figure 3-28 shows that land surrounding the proposal area includes some superior opportunities for hunting and recreation including the Delta Junction Bison Range. Reduced availability of this area for public recreation would have a moderate impact on a small but locally active constituency of hunters.

This proposal would also prevent use of portions of the Richardson Highway-Gerstle River Trail, the 33-Mile Loop Road, and the 12-Mile Crossing. Elimination of these access points would reduce the amount of recreation area available to the public within DTA-East. Interrupted access from 33-Mile Loop Road could also limit access to Delta Junction Bison Range area and Granite Mountains, which are used by the public for sheep, caribou, and small game hunting, and other activities. The 12-Mile Crossing may be the easiest access into the Granite Mountains; however, alternative access trails to the Granite Mountains exist off military lands. Noise effects (exceeding 115 dB PK 15[met]) from new munitions usage would affect about 550 acres in the Delta Junction Bison Range with potential minor adverse effects on recreational use of this range.

Overall, both noise and access impacts of this proposal would have an adverse but less than significant impact on local recreation opportunities in the Delta Junction area. This impact is somewhat moderated considering a relatively small portion of local recreational activity uses, this area and other areas provide similar recreational hunting and fishing opportunities. This limitation is inconsistent with current management objectives and mitigations/commitments outlined in the *BAX EIS* (USARAK 2006-1). All recreational activities on DTA outside of the project area would continue, in accordance with USAG-FWA management policies.

3.3.10.3.2 Alternative B

Land Status, Management, and Use. Impacts on land management and use would be similar to those described for Alternative A. This alternative includes a larger area of military land, and essentially all of DTA-East. This area would be scheduled for 3 to 5 days each week and during that time, public use of all training areas would be unavailable. This would primarily affect recreational use, hunting, and subsistence activities that use resources on DTA-East.

Noise from weapons firing would be similar to Alternative A. Although there would be new firing and target points for several types of inert mortar rounds, inert rounds produce relatively little noise, and noise levels and the location of effects would be similar to Alternative A. The potential effects on surrounding land uses would be similar to those described above. Military activities is the planned purpose and use for the underlying land.

Public Access. Under Alternative B, access to training areas for public uses would be closed on about 3 to 5 days each week. Impacts would be similar to those described for Alternative A. This alternative would affect a larger portion of DTA-East, including TAs 501, 502, 503, 504, 505, 506, 507, 508, 510, 511, 512, 513, 514, and 515. The Richardson-Gerstle and 33-Mile Loop trails would be affected, as well as the trail network in TAs 512, 508, and 511.

USAG-FWA proposes mitigations to expand enforcement to control access to unsafe areas. Working with ADNR and BLM, USAG-FWA will adjust restrictions as needed and disseminate information and maps to the public in order to reduce the risks of inadvertent, incompatible public use.

Recreation. Impacts on recreation would be similar to Alternative A with additional areas with reduced access in the eastern half of DTA-East.

3.3.10.3.3 No Action Alternative

There would be no changes to the current project area under the No Action Alternative. Therefore, no additional impacts on land use, public access, or recreation would occur.

3.3.10.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse but not significant impacts. The following mitigations are proposed to reduce these impacts.

- Land Use – Management
  - The military will maintain an open dialogue with ADNR and BLM to assess current conditions and needed adjustments in locations or temporal restrictions to avoidances and procedures put in place by the ROD for this EIS.
  - The Army will expand enforcement to control trespass in DTA-East for the expanded operations.
- Land Use – Access
  - The Army will update information and maps available to the public on the USARTRAK website to identify changes in public access restrictions for the expanded Army training activities within USAG-FWA training areas.

3.3.11 Infrastructure and Transportation (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.11, for a general discussion of infrastructure and transportation. The ROI for the BAX does not intersect with ground-based transportation and utilities resources. As a result, no impacts on this resource area are expected and it is not further analyzed for this proposal.

3.3.12 Socioeconomics

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.12.

3.3.12.1 Affected Environment

The proposed area for the BAX would include areas under the new restricted airspace and nearby communities. The proposed action area is south of Delta Junction in the Southeast Fairbanks Census Area. Therefore, the ROI for the BAX Proposed Action Alternative includes the portion of Southeast Fairbanks Census Area underneath the airspace as well as the surrounding communities.

POPULATION

The Southeast Fairbanks Census Area is located in the Interior Region of Alaska. There are 18 communities in the census area. The majority of the population lives in the communities of Deltana,

Tok, Delta Junction, and Big Delta (ALARI 2011-3). The nearest cities to the proposed action are the city of Delta Junction, less than 5 NM to the northwest; the Army Community of Fort Greely, approximately 1 NM to the west-northwest; and Healy Lake Village, approximately 15 NM to the east. The population of the Southeast Fairbanks Census Area totaled 7,029 persons in 2010. In 2009, the population of Delta Junction was 1,128 persons; of Fort Greely, 413; and of Healy Lake, 10 (ALARI 2011-3). GIS-derived data on the number and percentage of the population under the combined airspace are listed in Table 3-46.

Table 3-46. Population Under the Proposed Restricted Airspace, 2010

Region	Total Population[1]	Alternative A		Alternative B	
		Number	Percent	Number	Percent
Southeast Fairbanks Census Area	7,029	167	2.38	255	3.63

[1] GIS-derived calculations.
Source: USCB 2010-1.

HOUSING

The Southeast Fairbanks Census Area had 3,915 total housing units in 2010, representing an average annual increase of 1.96 percent from 2000 levels. The 5-year estimated median housing price in the Southeast Fairbanks Census Area was approximately $160,000 (see Table 3-47).

Table 3-47. Housing Characteristics in the Region of Influence, 2010

Region	Total Housing Units	Percent Occupied	Median Housing Price (dollars)
Southeast Fairbanks Census Area	3,915	66	159,300

Source: USCB 2010-1, 2011-3.

ECONOMIC ACTIVITY

In 2009 (the most recent data available), the Southeast Fairbanks Census Area had a total employment of 3,777 jobs. Between 2001 and 2009, employment in that area increased at an average annual rate of 5.4 percent. The largest source of employment in the census area was the government and government enterprises industry, which includes Federal, military, State, and local government. The government and government enterprises industry accounts for approximately 23 percent of total employment. Other major industries in the ROI include retail trade (8.7 percent), and administrative and waste services (8.7 percent) (BEA 2011-1).

In 2009, the Southeast Fairbanks Census Area had a lower per capita income than the State of Alaska. However, per capita income in the census area increased at a faster rate, with an average annual increase of 7 percent between 2001 and 2009.

The top employers in the census area and nearby cities, as reported by the Alaska Department of Labor and Workforce Development, are listed in Table 3-48.

KEY INDUSTRIES

Key industries in the Southeast Fairbanks Census Area that include mining, recreation and tourism, and civilian aviation.

Mining

The Pogo Mine, one of the largest mines in Alaska, is approximately 37 miles northeast of Delta Junction in the Southeast Fairbanks Census Area. The mine was constructed in 2006 and began commercial production in 2007. Based on current reserves, the mine is expected to have a 10-year life (ADNR 2011-14). Approximately 2,500 tons of ore are processed per day. Access to the mine is via a 49-mile all-season road from Richardson Highway. In 2011, the workforce totaled 320 persons (ADNR 2011-14).

Table 3-48. Major Employers in the Region of Influence, 2009

Delta Junction	Fort Greely	Southeast Fairbanks Census Area
Delta/Greely School District	Kaya Associates, Inc.	Delta/Greely School District
Chugach/Alutiiq, JV	Chugach/Alutiiq, JV	Chugach/Alutiiq, JV
Boeing Service Company	Delta/Greely School District	State of Alaska (excludes University of Alaska)
First Student Management, LLC	Northrop Grumman Space/Mission System Company	Alaska Gateway Schools
Norcon, Inc.	ITT Corporation	Family Medical Center
Family Medical Center	Winn Management Group, LLC	Boeing Service Company
IGA Food Cache, LLC	McDonnell Douglas Corporation	Kaya Associates, Inc.
State of Alaska (excludes University of Alaska)	Family Medical Center	Fast Eddy's Pizza
McDonnell Douglas Corporation	Doyon Security Services, LLC	Norcon, Inc.
Bechtel Construction Company	Computer Sciences Corporation	IGA Food Cache, LLC

Notes: Does not include military jobs associated with bases, and major employers for Healy Lake in 2009 were not available.
Source: ALARI 2011-3.

Recreation and Tourism

There are many recreation and tourism areas in the Southeast Fairbanks Census Area. The recreational areas closest to the proposed action include the Delta Junction Bison Range Area, the Tanana Valley State Forest, the Delta River and the Tanana River. The Delta Junction Bison Range Area is a 90,000-acre State bison range established in 1979 by the Alaska Legislature. The bison herd and the Delta Junction State Bison Range are important contributors to the Delta Junction economy. Approximately 40 hunting parties travel to the range each year to hunt bison, and, with each group spending approximately $300 in the community, the annual economic benefit to the area from hunters totals $12,000 (ADFG 2012-2). Other uses of the bison range include timber sales, cross-country skiing, agricultural research, dog sledding, trapping, wildlife viewing, and fishing (ADFG 2012-2).

The Tanana Valley State Forest is a 1.81-million-acre forest that lies mostly within the Tanana River Basin. The forest is open to many types of commercial activity and recreational opportunities, such as mining, gravel extraction, oil and gas leasing, timber production, grazing, hunting, fishing, trapping, and other activities (ADNR 2011-3).

Also located in the Southeast Fairbanks Census Area is the city of Delta Junction. Delta Junction, located at the intersection of the Alaska and Richardson Highways, offers many amenities for highway travelers and is thus a boon to the area's tourism industry. For more detailed information on recreation in the ROI, see Section 3.3.10.1, Recreation subsection.

Civilian Aviation

Several public and private airports are located within 10 NM of the proposed airspace. Civilian aviation contributes significantly to the local economy and is heavily relied upon for travel, safety, firefighting, recreation, hunting, mining, oil and gas development and supplies. For more-detailed information on civilian aviation in the ROI, see Section 3.3.1.1 of Airspace Management and Use.

3.3.12.2 Impact Assessment Methodology

The general methodology for evaluating socioeconomics is described in Section 3.1.12.2.

3.3.12.3 Environmental Consequences

3.3.12.3.1 Alternative A

Under Alternative A, changes to military airspace and underlying land to support hazardous zones associated with live weapons delivery would not directly affect non-military land and would not involve any ground-disturbing construction or changes to personnel. The airspace structure for the Proposed Action is to convert the area currently established as the BAX CFA to a restricted area. Although there is no available data on the number of civilian general aviation flights that traverse the current BAX CFA, it is expected that the number of civilian flights traversing the area is low since there are no population centers in the BAX CFA. Therefore, potential impacts on civil aviation are not expected to adversely impact socioeconomic resources. However, as previously stated in Section 3.3.1.4, any specific impacts or limitations this proposal may have on IFR and VFR air traffic would be examined in an FAA aeronautical study with subsequent consultation with USARAK and civil aviation concerns on those operational mitigations that may be needed to help minimize impacts. Mitigations to minimize impacts to civil aviation could subsequently minimize adverse impacts to socioeconomic resources associated with this proposal. USAG-FWA will pursue manning and funding to study enhancements required to expand situational awareness for general aviation (see Section 3.3.12.4). Any subsequent improvements would benefit civilian air traffic engaged in commercial business.

As previously stated in Section 3.3.2.2, noise impacts would be considered significant if noise levels exceeding 130 dB PK 15(met) or 62 dB CDNL were to impact areas not owned by the DoD and that were not already affected by these noise levels under baseline conditions. Approximately 167 persons within the Southeast Fairbanks Census Area were identified under the proposed airspace. However, noise levels exceeding 62 dB CDNL or 130 dB would not extend beyond range boundaries into residential areas. Additionally, the area is currently exposed to low-level overflights and noise associated with military aircraft. Therefore, these activities are not expected to adversely impact populations or socioeconomic resources.

The increase in military activities at the BAX may decrease the amount of time public access is permitted. As described in Chapter 2.0, the BAX and the proposed restricted airspace would be active for a maximum of 238 days at all times of the year. A restriction in recreational and public access could result in economic impacts. The economic impacts of a delay or restriction in access when the BAX is active cannot be quantified due to the many factors to be considered in estimating such impacts. However, based on a review of environmental consequences for other resources, potential for high or significant adverse impacts would be mitigated based on SOPs, BMPs, and continuation and expansion of existing mitigation measures. Therefore, the potential for significant impacts on socioeconomic resources is anticipated to be low.

3.3.12.3.2 Alternative B

Under Alternative B, the proposed restricted area extends beyond the boundaries proposed for Alternative A. Although, there is a greater percent of the Southeast Fairbanks Census Areas under the proposed airspace under Alternative B, as shown in Table 3-54, noise is not expected to exceed 62 dB CDNL or 130 dB beyond range boundaries into residential areas. Similar to Alternative A, and previously stated in Section 3.3.1.4, any specific impacts or limitations this proposal may have on IFR and VFR air traffic would be examined in an FAA aeronautical study with subsequent consultation with USARAK and civil aviation concerns on those operational mitigations that may be needed to help minimize impacts. Since civil aviation contributes significantly to the local economy, mitigations identified in the study that would minimize adverse impacts to civilian aviation could subsequently minimize adverse impacts to socioeconomic resources. USAG-FWA will pursue manning and funding to study enhancements required to expand situational awareness for general aviation (see Section 3.3.12.4). Any subsequent improvements would benefit civilian air traffic engaged in commercial business.

3.3.12.3.3 No Action Alternative

Under the No Action Alternative, socioeconomic resources would remain as described under current existing conditions and no additional impacts would occur.

3.3.12.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse impacts. The following mitigation is under consideration to reduce these impacts.

- Pursue manning and funding for any enhancements required to expand situational awareness for air traffic in and around training areas for general and military aviation. Complete an internal study to identify coverage gaps in new SUAs and restricted airspace. One possible alternative is the establishment of a U.S. Army Airspace Information Center.

3.3.13 Subsistence

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.13.

3.3.13.1 Affected Environment

The ROI for the BAX proposed action would be the same as that for RLOD. The proposed action would be located in a State nonsubsistence area; under State regulations, subsistence activities would not be permitted. The Federal subsistence area would be the same as that described for RLOD; thus, the game management and subsistence fishing areas would be the same. Information on subsistence harvests on Federal public land near these communities is not available. More-detailed information on species and habitats in the ROI is provided in Section 3.3.8, Biological Resources.

3.3.13.2 Impact Assessment Methodology

The general methodology for evaluating subsistence is described in Section 3.1.13.2.

3.3.13.3 Environmental Consequences

As described under the RLOD proposed action, the communities of Healy Lake, Dot Lake, and Dry Creek are ranked as high in dependence on subsistence resources. The communities of Big Delta and Junction are ranked as low in dependence on subsistence resources.

3.3.13.3.1 Alternative A

The area beneath the proposed restricted airspace is in the vicinity of two major highways and access to subsistence activities would not be heavily dependent on aircraft access. Therefore, potential impacts on civil aviation are not expected to adversely impact access to subsistence resources (see Section 3.3.1). Additionally, the area is currently exposed to low-level overflights and noise associated with military aircraft. Therefore, these activities are not expected to adversely impact wildlife populations or the availability of the subsistence species (see Section 3.3.8).

The increase in military activities at the BAX may decrease the amount of time public access is permitted. As described in Chapter 2.0, the BAX and the proposed restricted airspace would be active for a maximum of 238 days at all times of the year. For rural Alaska residents that regularly harvest subsistence resources within the public access areas of DTA (in which BAX is located), an increase in restrictions to public access could be an adverse impact. However, the nearby vicinity has large tracts of Federal land in which subsistence activities are permitted and do not have the same access restrictions as a military installation. Therefore, no significant impacts to subsistence activities are expected as defined by ANILCA.

3.3.13.3.2 Alternative B

Potential impacts to subsistence resources and activities would be similar to those described under Alternative A. The area beneath the airspace is in the vicinity of major highways and subsistence resources could be accessed by means other than civil aircraft. The area is currently exposed to noise from military activities; therefore, the expansion of the airspace under this alternative is not expected to adversely impact wildlife. The amount of public access to the affected area may decrease, but there are other subsistence resources and areas in nearby Federal and State lands. Therefore, no significant impacts to subsistence activities are expected as defined by ANILCA.

3.3.13.3.3 No Action Alternative

Under the No Action Alternative, no restricted airspace would be established. Existing military activities would continue. Subsistence activities would remain as they are currently practiced.

3.3.13.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse but not significant impacts. The following mitigation is proposed to reduce these impacts.

- Continue consultation efforts with subsistence parties to determine current subsistence use levels and areas on USAG-FWA lands as input into scheduling. Continue Tribal consultation efforts with subsistence users about hunting and fishing programs on USAG-FWA land. Continue to use a newsletter to provide information to subsistence users about existing and new military activities and the changes in access for subsistence users. Continue research and cooperative studies with Tribes to address possible effects of Air Force and Army activities on subsistence resources both directly within USAG-FWA installation boundaries and those outlying resources that may also be affected by military activities on DTA-West, DTA-East, YTA, and TFTA.

3.3.14 Environmental Justice

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.14.

3.3.14.1 Affected Environment

The affected environment for the BAX proposal includes the Southeast Fairbanks Census Area. Table 3-49 presents total population, percent minority, percent low-income, percent Alaska Native, and percent children. Note that the table characterizes existing population groups in the affected environment at a general level of detail and does not indicate whether the proposal would create an environmental justice effect.

3.3.14.2 Impact Assessment Methodology

General methodology pertaining to evaluating Environmental Justice is described in Section 3.1.14.2.

Table 3-49. Minority Population, Low-Income Population and Children by Area

Battle Area Complex (BAX)					
Area	**Total Population**	**Percent Low-Income**	**Percent Minority**	**Percent Alaska Native**	**Percent Children**
Southeast Fairbanks Census Area	7,029	11.6	21.3	11.5	26.3
State of Alaska	710,231	9.6	35.9	14.8	26.4

Note: Except for the low-income data, which are based on the 2005-2009 American Community Survey conducted by the Census, numbers represent 2010 decennial Census data.
Source: USCB 2010-1, 2010-2.

3.3.14.3 Environmental Consequences

3.3.14.3.1 Alternative A

For the BAX Alternative A, the proposed restricted area would extend over the BAX and CACTF. Impacts such as airspace management, noise, land use, and socioeconomics would be less than significant or mitigated to this level. For example, recreation impacts are mitigable with seasonal adjustments in training schedules. Impacts from BAX Alternative A would not create disproportionately high and adverse environmental or health effects on minority or low-income populations or children.

3.3.14.3.2 Alternative B

For BAX Alternative B, the proposed restricted area would extend over the BAX and CACTF as well as the CFA. Impacts for the Alternative B would be similar to Alternative A on military lands, though there would be less impact for land use, recreation and access on non-military land than Alternative A. There would be greater impacts on VFR air traffic because the restricted area is larger than proposed for Alternative A. Significant impacts could be reduced or mitigated. Impacts from BAX Alternative B would not create disproportionately high and adverse environmental or health effects on minority or low-income populations or children.

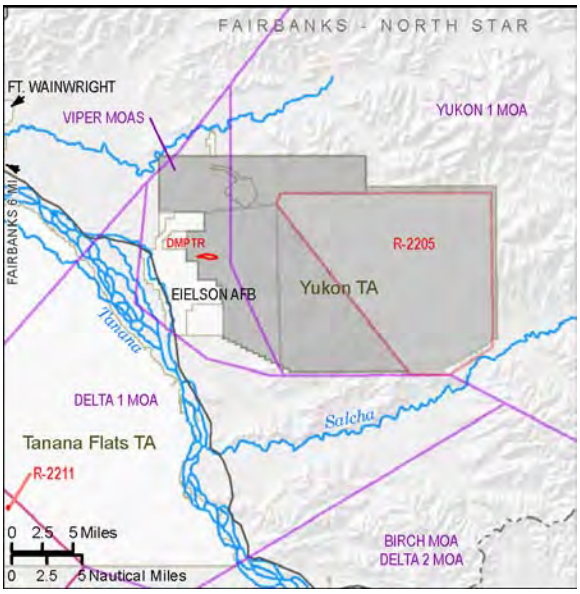
3.3.14.3.3 No Action Alternative

For the No Action Alternative, no restricted airspace and new target areas would be established and military activities would continue. There would be no additional disproportionately high and adverse environmental or health effects on minority and low-income populations or children.

3.3.14.4 Mitigations

No mitigations are identified for this resource.

3.4 EXPAND RESTRICTED AREA R-2205, INCLUDING THE DIGITAL MULTI-PURPOSE TRAINING RANGE (DEFINITIVE)



This proposal would build on existing facilities and expand the restricted area in YTA to allow participation by multiple functions—ground and air forces working together. Existing use of the DMPTR area in R-2205 is currently very constrained in terms of the types, levels, and intensity of training that can be undertaken. The footprint for the Expand Restricted Area R-2205 proposal overlies an area of 251,100 acres (392 square miles), which is all military-owned. (Refer to the gray-shaded area in the map to the right.) This action involves changes to military airspace and utilizes underlying DoD land to support joint training associated with weapons training exercises using primarily inert munitions. Because this action primarily affects military land, involves no ground-disturbing construction, and no personnel changes, impacts on physical resources, water, and cultural resources are expected to be low. In response to future mission change and force structure modernization, it is likely that the Army and other services currently training in Alaska will be required to adapt their training and testing on JPARC lands and ranges. The Army will evaluate any additional modernization and enhancement of JPARC capabilities based on future service requirements in accordance with NEPA.

Following the impact assessment for each resource, the final mitigations are listed that have been selected by the Army and Air Force to avoid, reduce, or implement management actions for potential significant adverse impacts from implementing the proposed action. These are included to provide the public and other agencies with necessary information on the final mitigations proposed by the Army and Air Force.

3.4.1 Airspace Management and Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.

3.4.1.1 Affected Environment

The following sections describe representative baseline uses of all military and civil airspace within the region encompassing the proposed expansion of R-2205 over YTA and the Stuart Creek Impact Area, as shown in Figure 3-29, to accommodate DMPTR mission activities. This figure shows this airspace proposal relative to the aeronautical features depicted on the Fairbanks Sectional Chart and the Alaska IFR Enroute High Altitude (H-1) Chart that may be potentially affected by this proposal (FAA 2011-1, 2011-2, 2011-3).

MILITARY AIRSPACE USE

Existing SUA in the area to be encompassed by the proposed R-2205 expansion includes R-2205 and the Yukon 1 MOA/ATCAA, as shown in Figure 3-29. A large portion of the airspace to be encompassed by this proposal includes the Combined Arms Live-Fire Exercises (CALFEX) north and south CFAs, which border the western boundary of the existing R-2205 and overlie the YTA from the surface up to FL210. These CFAs are used for small arms firing, artillery, ground-launched antitank guided missiles, and mortars.

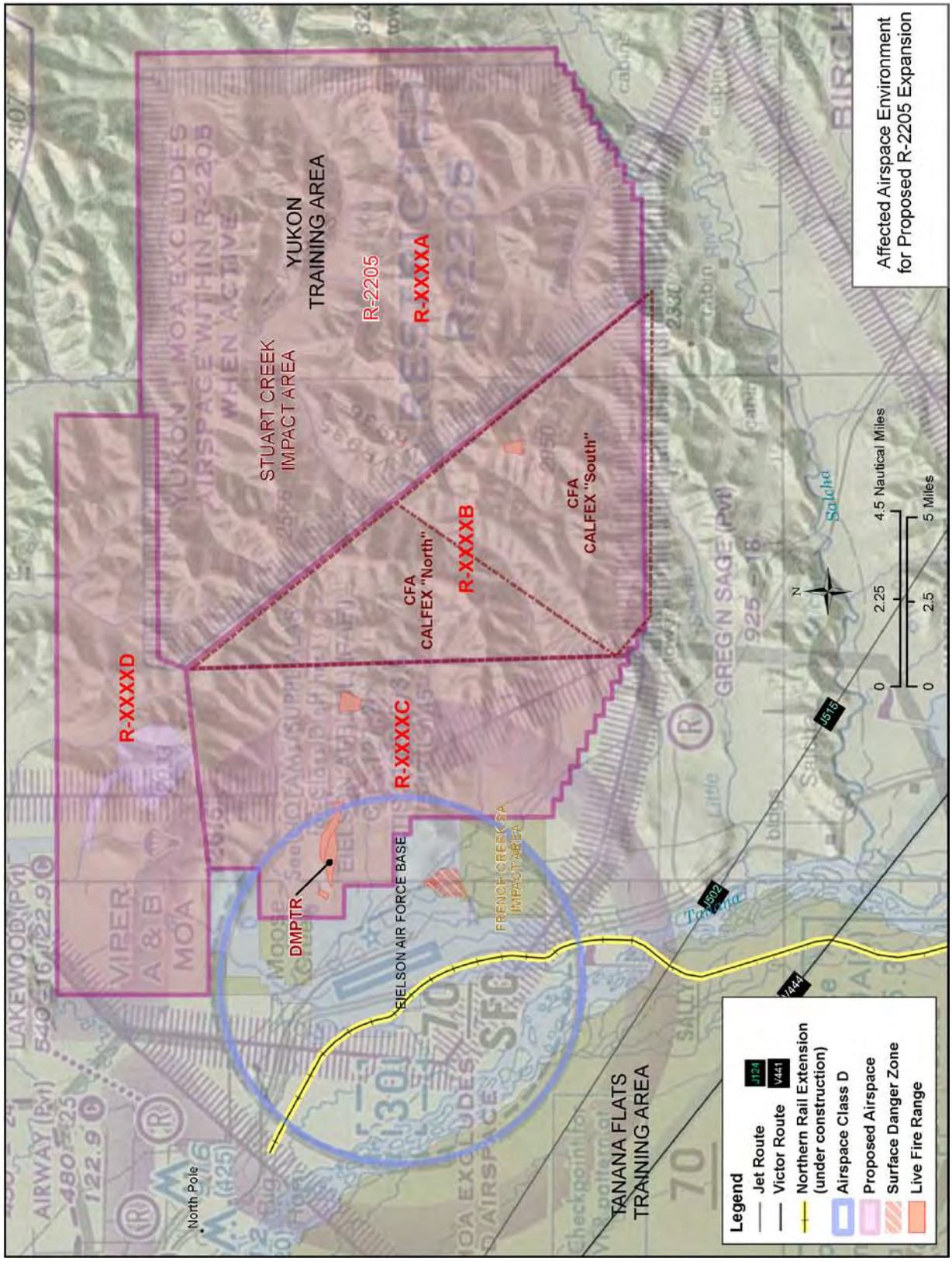


Figure 3-29. Affected Airspace Environment for Proposed R-2205 Expansion

The representative number of operations conducted in R-2205 and the Yukon MOA is noted in Chapter 2.0 and Appendix D, *Airspace Management*. R-2205 covers a portion of the larger YTA in the area and contains numerous target arrays throughout this restricted area as well as the Army's Stuart Creek Impact Area. The majority of Army helicopter operations in Alaska originate from Fort Wainwright with about a third of those conducted in YTA. A majority of those operations occur between 50 and 1,000 feet AGL. Expansion of R-2205 would provide additional protected airspace for weapons footprints and varied flight maneuvers while conducting hazardous operations in the DMPTR. It is not anticipated that USARAK helicopter operations at this range would change significantly above currently levels performed by these based rotary wing aircraft. The restricted area C and D subdivisions would be activated as needed for launching UAV flights from the Husky and Firebird airfields to Stuart Creek. All subdivisions would include hazardous activities when active. The average number of UAV flights occurring in these subareas would be generally the same as noted in Chapter 2.0 for the proposed UAV corridors.

R-2205 and the Yukon 1 MOA are scheduled for separate use but may be scheduled together, as needed, to accommodate R-2205 mission activities. The Yukon 1 MOA is one of the highest used MOAs within the JPARC airspace complex for both routine and MFE flight activities due to its proximity to Eielson AFB and both the R-2202 and R-2205 ranges. The vast majority of these operations and greater use of these two restricted areas and the ranges contained within are by Eielson AFB-based aircraft (Air Force 1997-1).

CIVIL AVIATION AIRSPACE USE

The western portion of the R-2205 expansion would overlap portions of the Eielson AFB Class D airspace and the Fairbanks Terminal Radar Service Area in which the Control Tower manages air traffic operations to/from this airfield. The Fairbanks TRACON is responsible for controlling air traffic within this terminal airspace from 6:00 a.m. to 11:00 p.m. daily with the Anchorage ARTCC assuming control of this airspace during those hours when the TRACON is not normally staffed. Both Eielson AFB and Fort Wainwright AAF have operating control towers that manage airfield operations during the hours those airfields are open. The following sections address the different IFR and VFR air traffic uses in this region

Federal Airways

No Federal airways transit through the existing R-2205 or through that airspace proposed for the R-2205 expansion. The closest airway to this restricted area, V444/T232, is located approximately 8-10 NM from the proposed southwest boundary. FAA data indicate this airway has two average daily flights which are typically transiting at 8,000 feet MSL and above. This airway and others within this general region, as well as those routes used by ATC to transition aircraft to/from Fairbanks International, and other airfields in the immediate area are sufficiently distant from R-2205 so as not to be affected by R-2205 flight activities. Prior planning and coordination between the FAA and using military agencies have helped minimize any impacts during those MFE and other high-use periods that could be problematic for management of military and civil air traffic operations in this area.

Jet and RNAV Routes

The only high altitude route (FL280 and above) that transits within the existing/proposed R-2205 airspace boundaries is Northern Control Area (NCA) Route 22 which has a reported six average daily flights. The closest jet route to this existing/proposed airspace is J502-515 which is approximately 8-10 NM from the proposed southwest boundary and reported to have 6-12 average daily flights. Mission activities in R-2205 have had little effect on NCA 22 and J502-515 use and transition routes to/from Fairbanks International due to standard ATC procedural and coordination efforts that ensure separation of these activities from this IFR air traffic.

VFR Air Traffic

Most of the civil aviation aircraft operations discussed in Section 3.1.1 for this general region operate from Fairbanks International with the majority of this airport traffic (approximately 68 percent) being general aviation VFR air traffic. The Alaska Highway and Birch VFR corridors west/south of the existing and proposed R-2205 airspace are commonly used by VFR aircraft flying between Fairbanks and various destinations throughout this area. The extent of VFR air traffic operating in the specific area of the proposed R-2205 expansion is unknown; however, limited access to YTA and the few scoping comments on this proposal suggest this is not a high-use area for these aircraft. Airport operations for Fairbanks and Bradley Sky Ranch provide some indication of the level of air traffic that typically operates between these airports and other public and private airfields outside the areas of the proposed airspace.

Public Airports and Charted Private Airfields

The public airports and charted private airfields within the vicinity of the existing and proposed expanded R-2205 are among those listed in Appendix D, *Airspace Management*, to include Fairbanks and Bradley Sky Ranch. Current military operations in the existing airspace have little impact on these airports and other public and private airfields in this region. The potential future aviation growth of public airports in this region is discussed in Section 3.1.1.

3.4.1.2 Impact Assessment Methodology

The methodology described in Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.1.1 was considered, as appropriate, to assess potential impacts of this proposed action on other airspace uses in the affected region.

3.4.1.3 Environmental Consequences

3.4.1.3.1 Proposed Action

MILITARY AIRSPACE USE

Proposed Restricted Area Use

The proposed use of the expanded R-2205 restricted area, as described in Section 2.1.4, would provide increased restricted protective airspace for YTA helicopter mission activities and those activities currently conducted in the CALFEX CFAs. This would also provide restricted airspace for UAV flights within the YTA. This expanded area would also provide additional restricted airspace for Air Force aircraft maneuvering in conjunction with flight missions currently conducted in the existing R-2205. Information provided in Chapter 2.0 for this proposal indicates the projected annual days of use for the different types of training and capabilities. Multiple training activities may be scheduled and conducted within the different subareas on the same day, normally Monday – Friday, for an estimated total 300 days annually. The airspace may be scheduled up to 24 hours on any particular training day.

Helicopter operations in the expanded airspace and YTA would not change significantly from current levels. The R-2205 expansion would provide a larger area and greater flexibility for use of this more general airspace by both USARAK and Air Force flight requirements.

Use of this airspace for transitioning UAVs between the Husky and Firebird DZs and the DMPTR site and the Stuart Impact Area would be generally the same as indicated for the proposed UAV corridors. Only those specific subdivisions would be activated as needed for each launch location.

It is not anticipated that the overall number of USARAK helicopter operations or Air Force sortie missions would increase significantly above current representative levels with the creation of this restricted airspace. The separate subdivisions of this proposed expansion would be activated only as needed to support the specific missions to be conducted. The scheduled and real-time use of this restricted area would be available via the SUAIS and other aforementioned advisory services.

CIVIL AVIATION AIRSPACE USE

The following discusses how this restricted airspace proposal may affect the different civil aviation airspace uses in the affected area, to include the Class D airspace surrounding Eielson AFB and Fairbanks International.

Federal Airways

Several airways are located within this region with V444/T232 being in closest proximity but sufficiently clear of this proposed airspace so as not to be impacted by this expansion. While this action would have little impact on the airway traffic, it may affect that airspace used by Fairbanks TRACON to route airway or other IFR traffic to/from the Fairbanks, Eielson AFB, or Fort Wainwright. The extent of any such impacts would depend on the planned and scheduled use of the different subdivisions. Military aircraft operations within the existing and proposed airspace would not increase significantly above current representative levels. Those procedures currently used by the FAA and responsible military agencies to coordinate use of the existing SUA would be further examined in the FAA aeronautical study to identify potential impacts and any further mitigation measures needed to minimize impacts on the ATC system.

Jet/RNAV Routes

J502-515 transits southwest of the proposed airspace and is sufficiently distant from the boundary so as not to be impacted by this proposal. The NCA 22 track crosses this airspace at FL280 and above, with the proposed altitude of this restricted area being FL310. En route aircraft operating above FL280 would not be impacted by this active airspace. Aircraft below this ceiling altitude may be impacted to the extent that ATC may have to assign a higher altitude or alter their course if necessary to maintain separation from the higher altitude R-2205 flight operations. As noted above, any potential impacts of this proposal on IFR air traffic using NCA-22 or the jet/RNAV routes in this region would be examined as part of the FAA aeronautical study.

VFR Air Traffic

The Birch, Alaska Highway, and other flyways commonly used by VFR air traffic are sufficiently distant from the proposed airspace areas so as not to have any impacts on this traffic when these subdivisions are active. The extent to which any VFR aircraft may occasionally operate within or near YTA for recreation, hunting, or other purposes is not known, however, the few scoping comments on this proposal suggest such flights are minimal and not affected by this active airspace. While USARAK may still require use of the YTA for training activities in September when this area is made available for moose hunting, MFEs are not permitted within during this time frame.

Public Airports and Private Airfields

No public airports or private charted airfields are within the area of the proposed R-2205 expansion although the Fairbanks and Bradley airports and several charted private airfields are within the general region of this proposed airspace.

As noted previously, this proposed airspace borders the Eielson Class D airspace with the R-XXXXC subdivision extending within this airspace to the DMPTR site. The FAA has indicated that the R-2205 expansion in the areas surrounding Eielson AFB would have some adverse effects on the published arrival and departure procedures used to separate Eielson aircraft from other air traffic in the area. It may also limit FAA options for routing VFR and IFR air traffic in the Fairbanks, North Pole, and Fort Wainwright areas. Therefore, procedures for planning and coordinating the use of the C subdivision would have to be formally defined in an agreement between Eielson AFB airfield management/ATC and the FAA Fairbanks Approach to ensure the scheduled activation of this restricted area and its interactions with the Class D airspace do not adversely affect air traffic operations within this terminal airspace. The manner in which this would be achieved and stipulated in such an agreement would be examined in the FAA aeronautical study of this proposal.

3.4.1.3.2 No Action Alternative

This alternative would maintain the existing R-2205 without any expanded airspace and would therefore have no additional impacts on the current military and civil aviation uses of this airspace.

3.4.1.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse impacts. The following mitigation is proposed to reduce these impacts.

- Pending the FAA's study of the preferred airspace proposal alternatives to determine specific impacts and mitigation measures to be taken to minimize any impacts on VFR and IFR air traffic, other existing mitigations would continue to be relevant in addressing potential impacts of the airspace proposals.

3.4.2 Noise

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.2.

3.4.2.1 Affected Environment

The area beneath the proposed expanded R-2205 is almost entirely over YTA, which comprises several active small- and large-caliber weapons ranges. The number of rounds of large-arms munitions fired annually in R-2205 under baseline conditions is listed in Appendix E, *Noise*, in Table E-10. Under baseline conditions, large-caliber weapons firing at DMPTR result in noise levels exceeding 62 dB CDNL in undeveloped portions of Eielson AFB (Figure 3-30). However, these noise levels do not extend beyond DoD land. As shown in Figure 3-31, peak noise levels exceed 115 dB in several areas of non-DoD-owned land along the northern edge of YTA. Topography in this area strongly affects noise propagation patterns.

Viper A/B MOA, Yukon 1 MOA, and R-2205 overlie the affected area and support combat training for several types of military aircraft. Noise levels generated during overflights by several aircraft that frequently use these airspace areas are listed in Appendix B, Table B-7. Time-averaged noise levels in areas beneath these airspace areas are listed in Table 3-56. Ground vehicles operating in YTA generate locally elevated noise levels. However, ground vehicle noise is less intense than aircraft noise levels and munitions usage noise levels which occur in the same areas, and is not considered in detail in this analysis (see Appendix E, *Noise*, Figure E-1, Table E-2, and Table E-4).

3.4.2.2 Impact Assessment Methodology

The methods used to assess noise impacts associated with proposed training in the BAX, which are described in Section 3.3.2.2, were also used to assess noise impacts associated with proposed training in the expanded R-2205. Noise impacts would be considered significant if noise levels exceeding 130 dB PK 15(met) or 62 dB CDNL were to impact areas not owned by the DoD and that were not already affected by these noise levels under baseline conditions.

3.4.2.3 Environmental Consequences

3.4.2.3.1 Proposed Action

The total number and types of munitions fired into the Stuart Creek Impact Area would not be expected to change. However, the expansion of R-2205 would allow a much larger range of weapons types to be used at DMPTR. DMPTR is a nondudded range and would continue to support training with inert munitions only under the proposed action. The number of rounds of large-arms munitions fired annually in R-2205 under the proposed action is listed in Appendix E, *Noise*, in Table E-10. Time-averaged munitions noise levels under baseline conditions and the action alternative are shown in Figure 3-30. Noise levels exceeding 62 dB CDNL do not extend beyond the boundaries of DoD-owned land. The area affected by peak noise levels (exceeding 115 dB PK 15(met)) would increase slightly under the proposed action (see Figure 3-31). However, the non-DoD land area exposed to this noise level would not change in extent under the proposed action. Noise impacts would not exceed the significance thresholds established for this action.

3.4.2.3.2 No Action Alternative

Under the No Action Alternative, R-2205 would not be expanded and no changes to training operations would occur. No additional noise impacts would occur under the No Action Alternative.

3.4.2.4 Mitigations

Users of DMPTR and R-2205 would continue to follow all noise mitigation procedures currently in effect. No new mitigations are proposed.

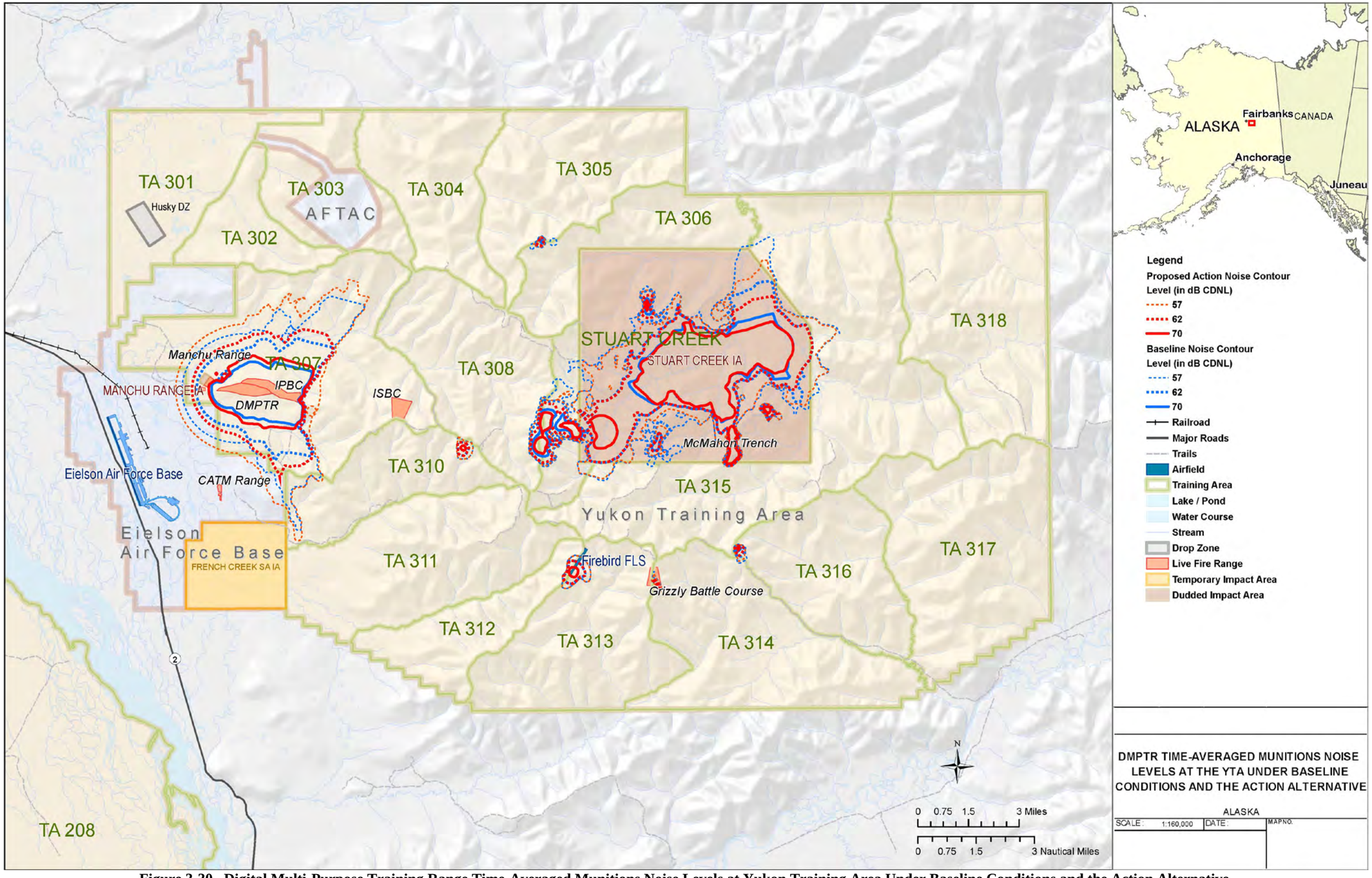


Figure 3-30. Digital Multi-Purpose Training Range Time-Averaged Munitions Noise Levels at Yukon Training Area Under Baseline Conditions and the Action Alternative

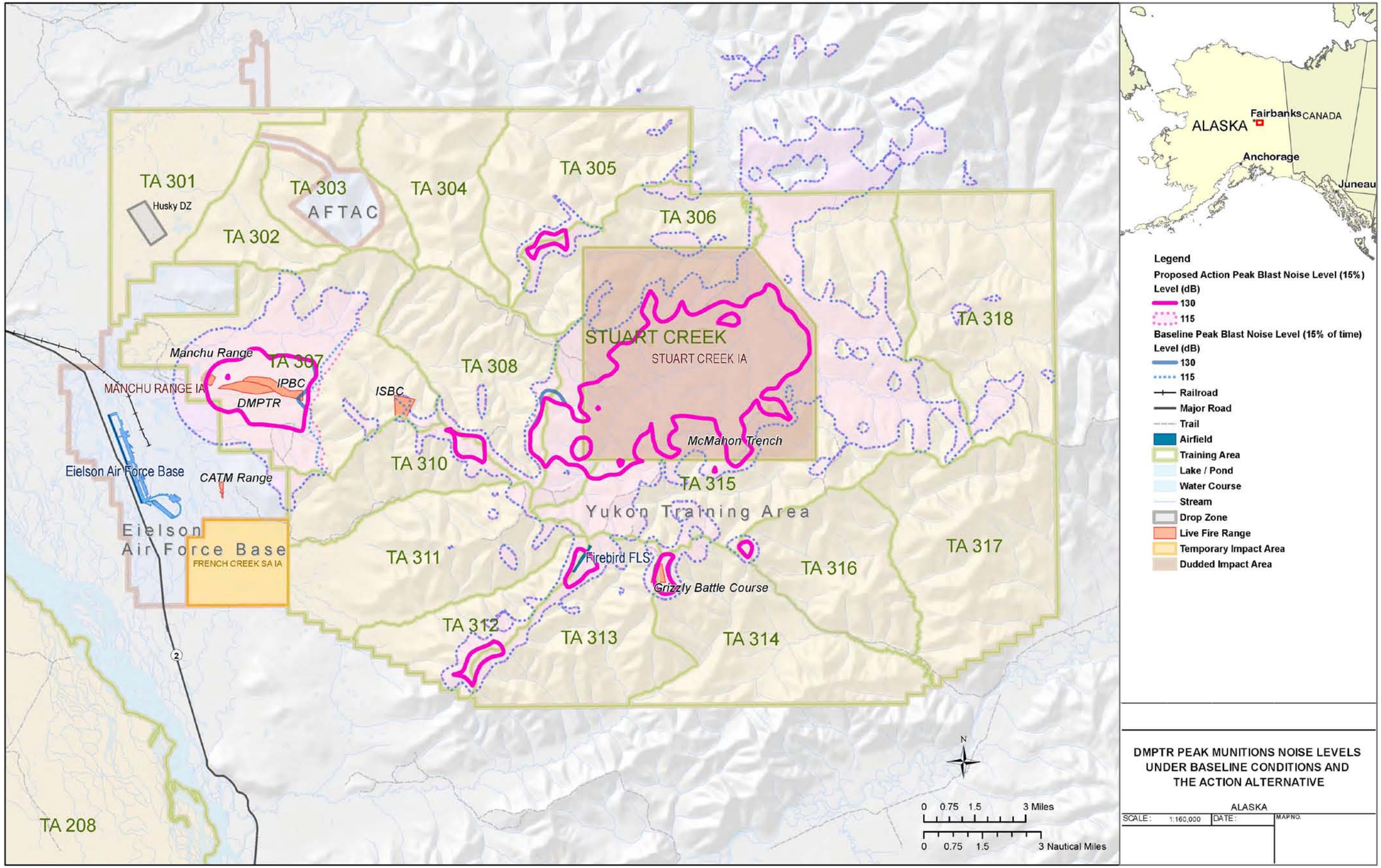


Figure 3-31. Digital Multi-Purpose Training Range Peak Munitions Noise Levels Under Baseline Conditions and the Action Alternative

3.4.3 Safety

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.3.

3.4.3.1 Affected Environment

FLIGHT SAFETY

The flight safety risks currently experienced in this affected environment are similar to what was discussed for the other existing airspace. Thus, the rates of aircraft mishaps and bird-aircraft strikes at the lower altitudes used by birds and military aircraft would be generally the same as experienced in the other airspace. The potential for interactions between military and civil aviation aircraft within this area is relatively low, since VFR aircraft more typically operate in the higher-use areas south and west of this airspace; therefore, the potential for near misses and midair collisions with nonparticipating aircraft is low. Those standing Air Force and USARAK programs dictating flight safety procedures and practices in all airspace uses help ensure a safe operating environment for all aircraft types/activities within YTA and R-2205 airspace.

GROUND SAFETY

The ROI for ground safety is YTA. For this alternative, the environment affected by activities involved in range safety and control, UXO and munitions safety, public access control, and fire and emergency response would not differ from that previously described for RLOD Alternative A in Section 3.2.3.1.

3.4.3.2 Impact Assessment Methodology

FLIGHT SAFETY

The impact assessment methodology discussed in Section 3.1.3.2 was used to address the potential impacts of this proposal.

GROUND SAFETY

Impact assessment methodology is the same as in Section 3.2.3.2.

3.4.3.3 Environmental Consequences

3.4.3.3.1 Proposed Action

FLIGHT SAFETY

The potential for aircraft Class A mishaps would be low to moderate since the projected operations and flying hours would not increase significantly from representative baseline levels. The area covered by the R-2205 western expansion has little or no populace, therefore, the potential for aircraft mishaps in this area is minimal.

The potential for a near miss/midair collision would be low to moderate for this proposed action since nonparticipating aircraft do not normally operate in this area and would be further restricted from entering this airspace when active. Those measures previously discussed for obtaining the active status of this restricted area would provide greater awareness of the presence of military aircraft operating within this airspace.

The potential for any bird/wildlife-aircraft strikes during low-altitude flights in this affected area would be low. The measures already in place for maintaining awareness of any heightened bird activities and flight safety risks are as discussed previously.

Standing aircraft mishap prevention programs and emergency response capabilities would address any potential flight safety risks associated with this proposed airspace.

GROUND SAFETY

Range Safety and Control – There are no environmental impacts associated with range safety and control for this alternative not previously discussed under Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences. Consequently, significant impacts are not expected to occur.

Unexploded Ordnance and Munitions Safety – There are no environmental impacts associated with UXO and munitions safety for this alternative not previously discussed under Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences. Consequently, significant impacts are not expected to occur.

Public Access Control – There are no environmental impacts associated with public access control for this alternative not previously discussed under RLOD, Alternative A, Environmental Consequences. Consequently, significant impacts are not expected to occur.

Fire and Emergency Response – There are no environmental impacts associated with fire and emergency response for this alternative not previously discussed under Realistic Live Ordnance Delivery, Alternative A, Environmental Consequences. Consequently, significant impacts are not expected to occur.

3.4.3.3.2 No Action Alternative

FLIGHT SAFETY

Flight safety risks and the continuing safety programs in effect to address these risks would remain the same as currently exists and no additional impacts would occur.

GROUND SAFETY

No change in ground operations would occur under the No Action Alternative and therefore, no additional impacts on public health and safety would occur.

3.4.3.4 Mitigations

FLIGHT SAFETY

Further mitigation measures to be considered for this action would be identified with completion of the FAA aeronautical study. The preceding analysis of effects on flight safety has identified potential adverse impacts. The following mitigation is are proposed to reduce these impacts.

- Continue efforts to comply with the respective Service formal flight safety programs, outlined in directives/regulations with supplements, that dictate the aircrew responsibilities and practices aimed at operating all manned and unmanned aircraft safely in existing modified and new SUAs.

GROUND SAFETY

The preceding analysis of effects on this resource has identified potential adverse impacts. The following mitigation is are proposed to reduce these impacts.

- The Army would expand enforcement to control trespass in YTA for the expanded R-2205 activities.

3.4.4 Air Quality

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.4.

3.4.4.1 Affected Environment

The proposed expansion of R-2205 over the DMPTR would be located in FNSB, Alaska. As shown in Figure B-4 in Appendix B, portions of FNSB (Cities of Fairbanks and North Pole) are designated as nonattainment areas for the NAAQS for $PM_{2.5}$ and as maintenance areas for the NAAQS for carbon monoxide. FNSB is in attainment for all other NAAQS. The proposed action would not impact the nonattainment or maintenance portions of the borough. Table B-12 in Appendix B, Section B.4.3 provides a summary of the estimated 2008 annual emissions for FNSB.

3.4.4.2 Impact Assessment Methodology

The general methodology for assessing air quality impacts is described in Appendix B, Section B.4.5. However, the proposed action would not result in an increase in aircraft operations or in the amount of ordnance delivered from baseline levels. The proposed action would expand the area that would be affected by potential emissions that could reduce overall ground level impacts.

PSD CLASS I AREA IMPACT ANALYSIS

The closest PSD Class I area to the proposed action area is Denali National Park, which is approximately 80 miles from the DMPTR expansion area. This EIS provides a qualitative analysis of the potential for proposed activities under Alternatives A and B to affect visibility within this area.

3.4.4.3 Environmental Consequences

3.4.4.3.1 Proposed Action

CONSTRUCTION

There would be no construction activities associated with the expansion of R-2205.

OPERATIONS

The area proposed for the expansion of the R-2205 airspace is in attainment of all NAAQS, and the proposed action would not increase aircraft operations or munitions usage. Thus, there was no need to quantify emissions that would occur as a result of the proposed expansion of R-2205. As there will be no net increase in criteria pollutant or HAP emissions, the operation of R-2205 under the proposed action would result in less-than-significant air quality impacts.

Since the R-2205 action would not result in an increase in emissions, it would not result in any impacts on Denali National Park.

3.4.4.3.2 No Action Alternative

Air quality impacts under the No Action Alternative would not differ from air quality impacts generated under existing operations at R-2205. Therefore, the No Action Alternative would not result in any additional air quality impacts.

3.4.4.4 Mitigations

Since the impacts are expected to be insignificant, no actions to reduce air quality impacts are being proposed.

3.4.5 Physical Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.5.

The proposed action aligns the outer restricted area boundary more precisely with the government-controlled YTA lands to provide the expanded protective airspace needed for encompassing YTA hazardous activities. The proposed action does not require any additional land the loss of which would potentially affect physical resources.

Given that the proposed action involves minimal to no disturbance of new or additional land surface, no beneficial or adverse impacts on physical resources within the study area of this proposed action are expected to occur, and no further analysis is required.

3.4.6 Water Resources (No Analysis Needed)

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.6.

The proposed action involves the new expansion of restricted area over R-2205 in YTA, including the existing DMPTR. The training would use existing impact areas for the discharge of ordnance from aircraft within the proposed restricted area, while being controlled from the existing DMPTR. The proposed action involves minimal increase in the disturbance of the land surface per existing baseline conditions through the use of ordnance; therefore, this action is expected to have minimal or negligible adverse impacts on water resources within the study area, and no further analysis is required.

3.4.7 Hazardous Materials and Waste

Reference also Appendix B, *Definition of the Resources and Regulatory Settings,* Section B.7.

3.4.7.1 Affected Environment

The proposed action aligns the outer restricted area boundary more precisely with the government-controlled YTA lands to provide the expanded protective airspace needed for encompassing YTA hazardous activities. The proposed action does not require any additional land that would potentially be subject to the creation of additional hazardous materials and waste. The training and exercises that would occur within the proposed restricted area would make use of existing impact areas for the discharge of ordnance from aircraft within the proposed restricted area, while being controlled from the existing DMPTR.

MUNITIONS RELATED RESIDUE

The expenditure of live ammunition or detonations has the potential to release hazardous chemicals or other elements, such as heavy metals, into the environment. However, because the proposed training and exercises in this restricted area would use existing impact areas, munitions related baseline information is not relevant to the NEPA analysis.

CONTAMINATED SITES

There are no CERCLA Superfund sites listed on the National Priorities List in the realigned boundary area. Similarly, there are no sites on the Contaminated Sites Program (CSP) list within the realigned boundary area (USAEC 2010).

3.4.7.2 Impact Assessment Methodology

The general methodology for evaluating hazardous materials and waste is described in Sections 3.1.7.2 and 3.2.7.2.

3.4.7.3 Environmental Consequences

3.4.7.3.1 Proposed Action

GENERAL HAZARDOUS MATERIALS AND WASTE

The proposed action aligns the outer restricted area boundary more precisely with the government-controlled YTA lands to provide the expanded protective airspace needed for encompassing YTA hazardous activities. The proposed action would utilize existing on-the-ground range structure and would involve no new construction in the realigned boundary area. In addition, other than surficial ground disturbance associated with ground maneuvers of vehicles, no excavations or ground disturbance would occur. There are no known contaminated sites located in the realigned boundary area. Therefore, no beneficial or adverse impacts would occur as a result of potentially encountering known or unknown contaminated soil.

As part of the proposed action, vehicles would be used on the ground during training. There is the potential for accidental chemical release from refueling or maintenance activities during training activities. Spills of petroleum products or hazardous waste could potentially penetrate into on-site soils resulting in soil and/or groundwater contamination, causing an adverse impact. The Army would manage hazardous materials/waste in accordance with AR 200-1, *Environmental Protection and Enhancement* (Army 2007), which provides guidance on oil and hazardous substance spills, hazardous materials management, and the Installation Restoration Program (IRP). This would include continuing to gather baseline data and monitor soils, surface water, and groundwater in and around target and impact areas for evidence of contamination and changes over time. In addition, AR 200-1 requires the development of a spill prevention, control, and countermeasures (SPCC) plan, which would provide protective and corrective measures for accidental releases of hazardous substances or petroleum products. Fort Wainwright personnel may apply regulations in addition to AR 200-1 that are not designed to supersede, but rather work as a complement to those policies and procedures. Range personnel would follow BMPs, which would, among other things, limit refueling activities and storage within 100 feet of any stream, lake or river crossing.

In addition to the relevant Army regulations, Fort Wainwright personnel would comply with Federal regulations that govern hazardous waste including the Resource Conservation and Recovery Act (RCRA), CERCLA, Toxic Substances Control Act, and the CWA, as well as State of Alaska regulations, including 18 AAC 62-Hazardous Waste, 18 AAC 75-Oil and Other Hazardous Substances Pollution Control, and

18 AAC 75.341-Soil Cleanup Levels. The risk of petrochemical spills is expected to increase under the proposed action due to the need to transport fuel and perform refueling operations in the field to support training requirements. However, due to the infrequency of such activities, combined with existing procedures and controls, the proposed action would result in the potential for adverse, but not significant impacts.

HAZARDOUS MATERIALS AND WASTE SPECIFIC TO MUNITIONS

There is the potential for munitions related hazardous materials impacts in association with this alternative. Munitions fragments and residues would be generated as a result of live-fire action. However, training would use existing impact areas for the discharge of ordnance from aircraft within the proposed restricted area, such that no adverse munitions-related chemical release impacts on the environment would occur. These impact areas would be managed in accordance with current Federal, State of Alaska, Air Force, and Army regulations for the management, safe handling, and disposal of hazardous waste and materials associated with live and inert ordnance and UXO, as the result of training exercises at R-2205. Mitigations would continue current monitoring and management (see Section 3.4.7.4) to identify actions, as needed, to mitigate any future environmental threats from munitions contamination.

3.4.7.3.2 No Action Alternative

Under the No Action Alternative, there would be no realignment of the outer restricted area boundary. Therefore, additional hazardous material–related impacts would not occur.

3.4.7.4 Mitigations

The preceding analysis of effects on this resource has identified potential adverse impacts. The following mitigation is proposed to reduce these impacts.

- The Army may augment the effort for their existing program to identify possible munitions contamination at impact areas on YTA. This program initiates the collection of baseline data to determine the location, extent, and potential migration of munitions contamination in soils, surface water, and groundwater. Based on these preliminary results, a long-term monitoring program could be developed to assess cumulative impacts to the withdrawal lands from ongoing military activities. These results could identify areas needing restoration, activities that pose the greatest environmental threat, and the potential mitigation measures to be implemented. Extensive and expedient investigations may be conducted in those areas considered to be exposure pathways, such as streams.

3.4.8 Biological Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.8.

3.4.8.1 Affected Environment

The proposed project area for DMPTR occurs in YTA within the Yukon-Tanana Uplands ecoregion (see Figure B-11 in Appendix B). This ecoregion includes broad, rounded mountains of moderate height supporting vegetation dominated by conifers and deciduous forests, and tussock and scrub bogs in valley bottoms. The proposed project area for this action occurs in airspace over YTA, for which general biological resources are described in detail below. YTA currently includes 2,386 acres of small-arms ranges, 25,854 acres of major weapons system ranges, and 229,035 acres of maneuver training areas (USARAK 2004-1).

Major land types that occur within the DMPTR project area are presented in Table 3-50.

Table 3-50. Land Types Associated with the Digital Multi-Purpose Training Range Project

Spruce and Broadleaf Forest	Open and Closed Spruce Forest	Spruce Woodland/ Shrub	Closed Spruce Forest	Open Spruce Forest/ Shrub/Bog Mosaic	Tall Shrub	Tall and Low Shrub
Acres (hectares)						
145,538 (58,897)	18,234 (7,379)	16,935 (6,853)	1,460 (591)	36,916 (14,939)	28,401 (11,493)	3,589 (1,452)

Source: USGS 1991

Important known wildlife habitats that are present in the DMPTR project area are presented in Table 3-51 and included in Figure B-13, Figure B-15, and Figure B-16 in Appendix B.

Table 3-51. Wildlife Habitats Associated with the Digital Multi-Purpose Training Range Project

Moose Winter, Rutting, Calving Habitat	Caribou Winter Habitat	Waterfowl General Habitat
Acres (hectares)		
82,330 (33,318)	26,440 (10,700)	5,200 (2,105)

Source: RDI 2005-2, 2005-3, 2005-4, 2005-6

YTA contains habitat for moose for important fall, winter, and spring life cycle activities that include breeding/rutting (fall), foraging (winter), and calving (spring). All three of these activities overlap on lands that occur in the eastern portion of the training area, likely following stream, bog, and/or wetland habitat. A portion in the northeastern corner of YTA is used by caribou in winter as well. Waterfowl generally use migratory and stopover habitat that occurs off YTA to the west along the Tanana River and to the south along the Salcha River, but some habitat overlaps with YTA. Anadromous fish in the vicinity are only known to occur in a small stream segment in the northern portion of YTA and in another segment just outside the eastern boundary.

3.4.8.2 Impact Assessment Methodology

The general methodology for evaluating biological resources is described in Section 3.1.8.2.

3.4.8.3 Environmental Consequences

3.4.8.3.1 Proposed Action

As proposed for BAX, the DMPTR expansion of the existing R-2205 would primarily differ from current activities by enabling additional air-to-ground ordnance use in the expansion areas. These activities may have localized effects to the vegetation and wildlife present within YTA, which is defined for this section as the ROI. It is assumed that allowable firing positions would change from within the existing R-2205 to within the expanded R-2205 at ranges specified in helicopter gunnery training regulations. However, no new impact areas would be created.

No new impact areas would be established and no substantially different impact types would be introduced into the DMPTR restricted areas as a result of this project. As for ongoing training, effects to biological resources would be localized and vegetation communities as a whole would not be expected to

be adversely affected. The vegetation classes present in YTA are not unique or considered sensitive communities, but are widespread across the project region.

As with vegetation classes, wildlife habitats present within the project area are not associated with sensitive, endangered, or threatened species, and are generally widely available within the project region. Wildlife species in the area are generally exposed to and may be habituated to military activities. Also, the majority of the proposed expanded restricted areas overlies western YTA, which does not contain important wildlife breeding, wintering, or nesting habitats (as shown in Figures B-11, B-13, and B-14, in Appendix B, *Definition of the Resources and Regulatory Settings*). With standard restrictions on wildlife disturbance in place from past NEPA projects, sensitive wildlife at critical seasons, including moose, should be adequately protected on Army lands. Therefore, no significant effects to vegetation communities or wildlife populations are expected from the expansion of DMPTR restricted areas within YTA.

Overall impacts to biological resources from expansion of R-2205 are expected to be adverse but not significant, and would be further reduced given implementation of mitigation and impact avoidance measures summarized below.

3.4.8.3.2 No Action Alternative

The current amount of localized ground disturbance (from training, vehicles, and live fire) would be expected to continue and wildlife using the area would be expected to remain active in occupied habitats. Localized vegetation impacts from training would continue as under current existing conditions.

3.4.8.4 Mitigations

The preceding analysis has identified adverse impacts to biological resources. The following mitigations are proposed to reduce these impacts.

- Continue to monitor effects of military training including overflights on select wildlife species (especially herd animals, waterfowl, and raptors) and fisheries during critical seasons such as breeding, young-rearing, and migration. Use knowledge to develop and implement strategies to minimize disturbance to priority wildlife in existing and new SUAs and restricted airspace. This would help natural resources and range managers to coordinate training schedules that minimize impacts on wildlife populations.
- Continue pilot and soldier education awareness of sensitive wildlife species habitats and seasonal behaviors utilizing mapping and discuss procedures to reduce disturbances and to increase safety by reducing potential for aircraft strikes.
- Continue effort to conduct a study to assess the impacts and effects on wildlife, particularly key species such as caribou and bison, during critical life cycle seasons. Use information to include protection requirements within a management plan.
- The Army may augment the effort for their existing program to identify possible munitions contamination at impact areas on YTA. This program initiates the collection of baseline data to determine the location, extent, and potential migration of munitions contamination in soils, surface water, and groundwater. Based on these preliminary results, a long-term monitoring program could be developed to assess cumulative impacts to the withdrawal lands from ongoing military activities. These results could identify areas needing restoration, activities that pose the greatest environmental threat, and the potential mitigation measures to be implemented. Extensive and expedient investigations may be conducted in those areas considered to be exposure pathways, such as streams.

- The military will maintain an open dialogue with ADNR, BLM, ADFG and USFWS to assess current conditions and needed adjustments in locations or temporal restrictions to avoidances and procedures put in place by the ROD for this EIS.

3.4.9 Cultural Resources

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.9.

3.4.9.1 Affected Environment

YTA, the ROI for this action, consists of 249,552 acres within the western portion of the Yukon-Tanana Uplands section of the Northern Plateau physiographic province of interior Alaska (USARAK 2010-4).

ARCHAEOLOGICAL RESOURCES

There are 20 known prehistoric archaeological sites in YTA, most of which were found by C.E. Holmes in 1979 and CEMML archaeologists between 2002 and 2005 (USARAK 2010-4). Ten of these sites are known to exist beneath the proposed restricted airspace (USAG-FWA 2012). Of the 20 recorded archaeological sites in YTA, 10 have been determined to be ineligible for inclusion in the National Register, and 10 have not been evaluated (USARAK 2005-3, USARAK 2010-4, USAG-FWA 2012).

TRADITIONAL CULTURAL PROPERTIES AND ALASKA NATIVE CONCERNS

No known traditional cultural properties are located in YTA, but the Army continues to work with Alaska Native tribes to indentify traditional cultural properties and other cultural sensitive sites. Several studies have indirectly addressed the possible presence of such properties, but no direct inventory on Army land exists (USARAK 2005-3). In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed new restricted area (see Section 1.6.5).

3.4.9.2 Impact Assessment Methodology

The methodology used for the analysis of potential impacts on cultural resources for the proposed expansion of R-2205 to include the DMPTR area is the same as the methodology applied to the analysis of the Fox 3 MOA Expansion/Paxon MOA action (Section 3.1.9.2).

3.4.9.3 Environmental Consequences

3.4.9.3.1 Proposed Action

The proposed action is to expand R-2205 in YTA to include the DMPTR as well as the airspace currently designated as the Combined Arms Live Fire Exercise (CALFEX) north and south CFAs which overlay the YTA (Figure 2-9). The proposed action would align the outer restricted area boundary more precisely with the government-controlled YTA lands to provide the expanded protective airspace needed for encompassing YTA hazardous activities. Projected use of the proposed R-2205 restricted area would be as described in Table 2-13.

No impacts are anticipated to cultural resources from the expansion of R-2205 and its training use. The annual average noise levels under the proposed airspace reclassification are not expected to noticeably change as a result of increased training activities, and would not be sufficient to damage any archaeological or historic architectural sites (see Appendix E, *Noise*). In compliance with Section 106 of

the NHPA, the Army has completed consultation with the Alaska SHPO, who concurred with the Army's determination of no adverse effect to historic properties. All compliance requirements for consultation with potentially affected Alaska Native tribes, ANCSA corporations, and Tribal government entities has been completed.

No significant impacts on traditional cultural resources or Alaska Native activities are anticipated to result from the proposed expansion of R-2205. In compliance with DoD Instruction 4710.02 (DoD 2006) and the DoD American Indian and Alaska Native Policy (DoD 1998), ALCOM has completed all compliance requirements for government-to-government consultation with potentially affected Federally recognized tribes, regarding their concerns about potential impacts on Tribal rights, Tribal resources or Indian land under the proposed expanded restricted area (see Section 1.6.5).

3.4.9.3.2 No Action Alternative

Under the No Action Alternative there would be no expansion of R-2205 to include the DMPTR or CALFEX in YTA. Existing use of the restricted area would continue under this alternative and resources would continue to be managed in compliance with Federal law and DoD policy and regulations.

3.4.9.4 Mitigations

Mitigations for impacts to cultural resources are established through NHPA Section 106 consultation pursuant to 36 CFR 800. In compliance with Section 106 of the NHPA, the Army has completed all compliance requirements for consultation with the Alaska SHPO and potentially affected Alaska Native tribes, ANCSA corporations, and Tribal government entities to identify historic properties that may be affected, including traditional cultural properties; and it has determined that no historic properties would be adversely affected. Therefore, mitigations would not be applicable for this proposal.

In accordance with AFI 32-7065, all NHPA Section 106 consultation has been completed. In the event that previously unrecorded or unevaluated cultural resources are encountered, the Army would manage these resources in accordance with the NHPA and other Federal and State laws, Air Force, and DoD regulations and instructions, and DoD American Indian and Alaska Native Policy (DoD 1998).

3.4.10 Land Use

Reference also Appendix B, *Definition of the Resources and Regulatory Settings*, Section B.10.

3.4.10.1 Affected Environment

LAND STATUS, MANAGEMENT AND USE

Land Status

All the land within the expanded R-2205 footprint (250,208 acres) is withdrawn for military use. Most of the adjacent land is State-owned. A small amount of municipal land occupies the southwestern most corner of the proposal area.

Land Management and Use

Military land in the proposal area is within YTA, and falls under the management of USAG-FWA. YTA occupies about 257,280 acres of the Middle Tanana Valley approximately 16 miles east-southeast of Fort Wainwright. Eighteen training areas and numerous artillery and mortar firing points occupy about

226,855 acres. About 30,427 acres is classified as dudded impact area and is used to support individual crew/team training and up to large scale exercises by the Air Force and Army (USAEC 2010).

Land within YTA is used foremost for military purposes. Public recreation is allowed in nondudded areas when military operations are not taking place. Some timber harvesting occurs on YTA under the management of the USAG-FWA Forrester, in cooperation with BLM. Since the DOI maintain vegetation rights on the withdrawn lands, commercial timber harvest is done through advertised timber sales, in accordance with BLM stipulations (USARAK 2006-2).

Within YTA there is one State of Alaska closed mineral order, and six State-permitted prospecting sites. At least one of these sites produced a small amount of gold (value of $3,000) before closing for lack of profitability. No activity currently occurs on any of these prospecting sites. Also, YTA has a network of supporting infrastructure (such as roads, communications lines, utilities) some above and some below ground. These infrastructure alignments restrict activities that can occur on the surface (without causing damage to the asset). Several existing rights-of way, leases, and permits are also in effect for regional and national infrastructures, such as communications lines and towers, transmission lines, and energy pipelines. Off-road vehicle and other weight-bearing activities and ground disturbance are not allowed to interfere with the maintenance work pad that parallels the pipeline.

State-owned land borders the proposal area. Most of the surrounding State land is managed for habitat values, (for fish wildlife), and for public recreation, including hunting and fishing. Specifically, land on the northeast border of YTA is within the Chena River State Recreation Area. The privately-owned Chena River Springs Resort, which features lodging and dining facilities, a geothermal demonstration project, greenhouses, sled dog kennel, and hot springs is a jumping off point for back country recreation of all types. State lands to the south are managed for fish and wildlife habitat and forestry. Some of the surrounding State land is categorized for disposal and available for future recreational settlements or fee-simple homesteads. About 3,000 acres have been designated for agricultural sale and settlement immediately to the north or YTA. The State legislatively designated Tanana Valley State Forest occupies large parcels interspersed around YTA (see Figure 3-32).

Private and borough-owned land parcels are located south of YTA and along the Salcha River. To the west of YTA is a mixture of private and municipal land comprising the outskirts of North Pole and Moose Creek. Eielson AFB adjoins the western boundary of YTA. To the north of the proposed airspace are the communities of Two Rivers and Pleasant Valley along the Chena River.

PUBLIC ACCESS

Ground Access

The proposal area includes about 1 mile of RS 2477/RST 322, the Salcha-Caribou Sled Road. The location of the roads and other trails in the R-2205 proposal area are shown in Figure 3-32.

There are two primary entrances to YTA: one through Eielson AFB via the Manchu Lake Road, and one via Johnson Road, which connects to the Richardson Highway farther south. YTA is subject to temporary closures based on training schedules. Closures are posted on the USARTRAK system.

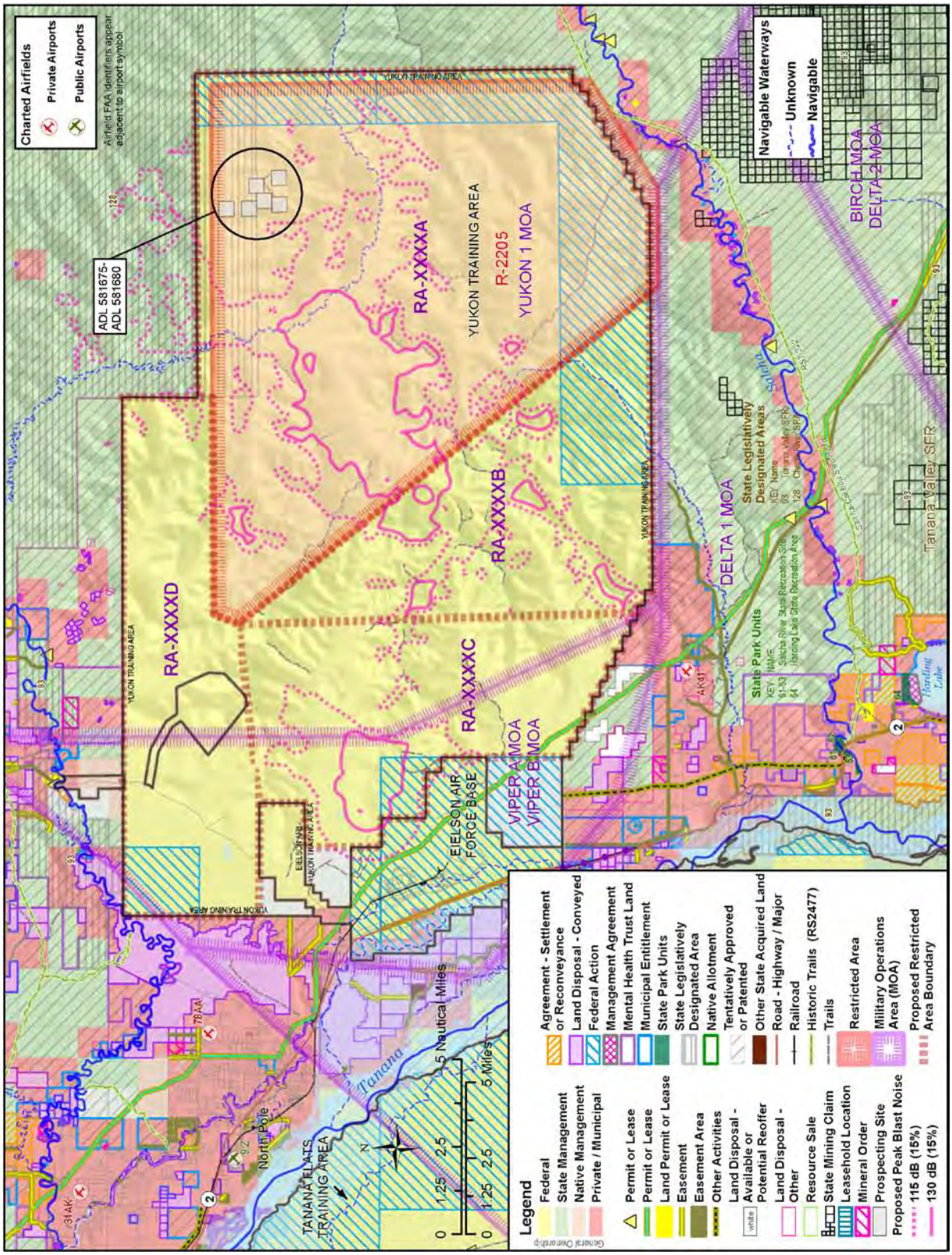


Figure 3-32. Land Status and Special Use Areas Around Expand R-2205 Proposal Area
Source: ADNR 2007, ADNR 2009-1, ADNR 2009-2, ADNR 2009-3, ADNR 2011-2, ADNR 2011-3, ADNR 2011-7, ADNR 2011-8, ADNR 2011-13

The Stuart Creek, Manchu, and French Creek Impact Areas are permanently closed to the public. Stuart Creek, French Creek, Globe Creek, and part of the South Fork Chena River lie within the impact area. In addition, within YTA, the Military Operations in Urban Terrain Site, the Air Force Technical Applications Center, Bravo and Charlie Batteries, the Manchu Impact Areas, all established training sites and structures, and the Arctic Survival Training Site are all off limits to public access and use. Gates and warning signs are posted at the two roads that pass into the Stuart Creek Impact Area. The restricted access signs state that there is an active Army Impact Area and that the area contains UXO. Signs are placed every 200 meters around the perimeter of the Air Force Technical Applications Center on Transmitter Road. These signs state that the area cannot be entered without permission from the Air Force Technical Applications Center Commander. The Trans-Alaska Pipeline corridor through YTA is closed to ORRV traffic.

Aerial Access

A list of the public and private airports and airstrips in the area surrounding the proposal footprint is provided in Table 3-52. The table indicates what communities and special use areas are served by charted airports and airfields in the DMPTR proposal area.

FAA regulations require the military to generate NOTAMs when there exists a hazard to the safe flow of air traffic. R-2205 over the Stuart Creek Impact Area is closed to all civilian aviation during periods of scheduled activity. A detailed discussion of airspace associated with the proposed action is provided in Section 3.4.1.1.

Navigable and Public Waters

There are numerous creeks and water bodies underlying the proposed R-2205. None of these water bodies are designated navigable and public waters. The Salcha River and the Chena River, both designated navigable waters, are outside but close to the project area (see Figure 3-32) (ADNR 2011).

RECREATION

There are no Federal special use areas within the proposal area. One State special use area, Chena River State Recreation Area, is located adjacent to the expanded R-2205 proposal area footprint. The recreational use associated with this area is described in Appendix I, *Land Use, Public Access, and Recreation*. Most of the surrounding State lands support the general range of recreational uses permitted by ADNR.

Public recreation on YTA is governed by the same regulations as described for DTA and TFTA in Section 3.2.10.1, Recreation subsection.

Recreation on Military Lands

Public recreational uses on YTA are similar to those on DTA-West, DTA-East and TFTA, as described in Sections 3.2.10.1 and 3.3.10.1. Hunting takes place under the management and regulations of the ADFG. USAG-FWA public access procedures apply as previously described. The following recreational activities take place in YTA:

Hunting

Hunting is popular in YTA, which is within GMU 20B. The demand for moose hunting in this GMU is high and moose is the most popular game species taken. A total moose harvest between 900 to 1,000 in GMU 20B is about average over the last several years (ADFG 2010-1).

Table 3-52. Charted Airports Serving the Digital Multi-Purpose Training Range Proposal Area

Charted Airport	Areas Underlying or Within 20-mile Service Radius	
	Community	**Special Use Area**
Greg 'n Sage Airport	Badger CDP, North Pole City, Moose Creek CDP, Salcha CDP, Eielson AFB, CDP, Harding-Birch Lakes CDP	Tanana Valley SFR, Chena River, SRA, Harding Lake SRA, Birch Lake SRA, Salcha River SRS
Chena Hotsprings Airport	Chena Hot Springs	Steese National Conservation Area, Birch Creek Wild and Scenic River, Chena River SRA
Scotts Airport	Harding-Birch Lakes CDP, Salcha CDP, Eielson AFB CDP	Tanana Valley SFR, Harding Lake SRA, Salcha River SRS, Birch Lake SRS, Birch Lake SRS
Lakewood Airport	North Pole, Fox, Fairbanks, Two Rivers CDP, Moose Creek CDP, North Pole City, Eielson AFB CDP, Fairbanks City, Badger CDP, Fox CDP, Pleasant Valley CDP, Chena Ridge CDP, Ester CDP, Salcha CDP, Goldstream CDP, South Van Horn CDP, Steel Creek CDP, Farmers Loop CDP, College CDP	Goldstream PUA, Tanana Valley SFR, Creamer's Field Migratory Waterfowl Refuge, Chena River SRA, Chena River SRS,
Dalrymple's Airport	Ester, Fairbanks, North Pole, Fox, North Pole City, Badger CDP, Pleasant Valley CDP, Moose Creek CDP, Fairbanks City, Chena Ridge CDP, Fox CDP, Goldstream CDP, Farmers Loop CDP, Two Rivers CDP, College CDP, Salcha CDP, Steel Creek CDP, Ester CDP, Eielson AFB CDP, South Van Horn CDP	Goldstream PUA, Chena River SRA, Tanana Valley SFR, Lower Chatanika River SRA, Chena River SRS,
Bradley Sky Ranch Airport	North Pole, Fox, Ester, Fairbanks, Steele Creek CDP, South Van Horn CDP, Salcha CDP, Pleasant Valley CDP, Two Rivers CDP, College CDP, Goldstream CDP, Eielson AFB CDP, Chena Ridge CDP, Badger CDP, Fox CDP, Moose Creek CDP, Ester CDP, North Pole City, Farmers Loop CDP, Fairbanks City	Chena River SRA, Goldstream PUA, Creamer's Field Migratory Waterfowl Refuge, Tanana Valley SFR, Chena River SRS
Moen's Ranch Airport	Ester, North Pole, Fox, Fairbanks, Two River CDP, Chena Ridge CDP, Chena Ridge CDP, Ester CDP, College CDP, Pleasant Valley CDP, Fairbanks City, Farmers Loop CDP, Moose Creek CDP, Moose Creek CDP, Eielson AFB CDP, North Pole city, Goldstream CDP, Steele Creek CDP, Badger CDP, Fox CDP, South Van Horn, CDP	Creamer's Field Migratory Waterfowl Refuge, Goldstream PUA, Tanana Valley SFR, Chena River SRS, Lower Chatanika River SRA

Note: Bold text indicates that the airport is under the proposed airspace for this proposal.
Key: CDP=Census Designated Place; CHA=Critical Habitat Area; PUA=Public Use Area; RMA=Resource Management Area; SFR=State Forest; SGR=State Game Refuge; SRA=State Recreation Area; SRS=State Recreation Site.
Source: FAA 2011-6; AirNav 2011.

Trapping

Trapping is allowed in YTA. Marten is the most common furbearer caught; fox and weasels are also successfully harvested.

Fishing

Fishing occurs in YTA. Manchu Lake is stocked by the ADFG and is accessible via Manchu Road. Horseshoe Lake has a natural population of northern pike and is accessed over an unimproved road. The

Chena River and Beaver Creek in the northeast portion of YTA offer catch-and-release arctic grayling fishing (USARAK 1999-1).

Trail Use

Trails within YTA are open for recreational activities, which include hiking and biking. Snowmobiling is popular use of trails on YTA. Camping and picnicking are not allowed on YTA.

ORRV

YTA contains approximately 90 miles of roads and trails used by the public, primarily for ORRV activity. ORRVs are allowed in YTA year-round, but are prohibited from the Stuart Creek Impact Area, Air Force Technical Applications Center, except for Beaver Creek Road, Bravo Battery on Quarry Road, Charlie Battery on Johnson Road, and the Firebird Assault Strip. ORRV users are required to check in using the USARTRAK system.

Other

Berry picking, wildlife viewing, cross-country skiing, and dog sledding are other recreational activities that occur within YTA. Beaver Creek, located in the northeast area of YTA, is used for dog sledding.

Recreation on Non-military Lands

Most of the land surrounding YTA is State land. Principal management of State land to the east of YTA is for fish and wildlife habitat and public recreation. State lands to the south are managed for fish and wildlife habitat and forestry (USARAK 1999-1). The Chena River State Recreation Area provides a range of summer and winter activities, including hiking, dog sledding, skiing, and access to hunting and fishing areas. The hot springs and associated lodge and cabins are very popular and used year-round by Alaska residents and U.S. and international visitors. The site is producing geothermal power and is becoming an educational setting as a self-sustainable community. Hunting is popular throughout this area within GMU 20B, particularly due to quality habitat and proximity to Fairbanks, and several larger communities such as North Pole, Moose Creek, Delta Junction, Salcha, Eielson AFB, Moose Creek, and Pleasant Valley.

3.4.10.2 Impact Assessment Methodology

The general methodology for evaluating land use, public access and recreation is described in Section 3.1.10.2.

PROPOSAL-SPECIFIC METHODOLOGY

The methodology for assessing impacts of this proposal on land use, public access, and recreation is described in Section 3.2.10.2 and 3.3.10.2.

3.4.10.3 Environmental Consequences

The primary issues and assumptions for this proposal are similar to those described the RLOD proposal in Section 3.2.10.3. The activities proposed for DMPTR with expanded restricted airspace would result in extremely limited time available for public access and use on YTA. Increased capabilities for munitions could also cause increased noise in areas surrounding Stuart Creek Impact Area and the DMPTR.

3.4.10.3.1 Proposed Action

The proposal involves the use of airspace and weapons firing at existing training areas, impact areas, and ranges. There would be no new areas exposed to surface disturbance; therefore, no impact to existing infrastructure, leases, rights-of way, or permits on military land on military or non-military land would result.

Effects of Noise on Land Use. The primary source of noise for this proposal is from weapons firing. Noise levels associated with the proposed restricted airspace and operations on YTA and the DMPTR are presented in Section 3.4.2.3. Noise contours (exhibited in Figure 3-30) show that all areas exposed to 62 dB CDNL (both current and proposed) are contained within YTA training areas, and are compatible with military uses. Under the proposal, the area exposed to 62 dB CDNL and greater would remain within military land, with a slight increase within Eielson AFB (from 126 to 230 acres). This would not extend as far as the housing areas on base. As such, no areas would experience incompatible impulsive noise levels from airspace and augmentation of the DMPTR capabilities.

Table 3-53 shows the acres affected by peak noise levels under the Expand R-2205 proposal. The table reveals that current firing activity on YTA already affects 62,686 acres of military land and about 5,047 of State land in the Chena River State Recreation Area (see Figure 3-30) with peak levels of 115 dB PK 15(met) or louder. Under this proposal, an increase of about 401 acres in areas exposed to these peak levels would occur, mostly on military land (389 acres) with only minimal extension onto State lands (12 acres). This minimal increase would not cause a perceptible change in noise exposure. An increase in frequency of individual impulsive events (reflected in the CDNL measurement) may annoy some persons engaging in outdoor activities but the proposal would cause little change to areas off the installation.

Table 3-53. Peak Noise Exposure Associated with the Expanded R-2205 Proposal Area

Location	Current 115 dB PK 15(met) Exposure (acres)	Proposed 115 dB PK 15(met) Exposure (acres)	Change (acres)
Military Land	62,686	63,075	389
Non-military Land			
State	5,047	5,059	12
Total (all lands)	67,733	68,134	401

Source: ADNR 2011-2

Effects on Land Use from Restricted Access. Currently, the only public uses taking place on YTA are recreational, including personal use and subsistence hunting, gathering and trapping, and some timber harvesting and wood cutting. With increased use of YTA for hazardous operations (up to 300 days per year), time available for these public uses and range management tasks, including vegetation management, restorative projects, research, monitoring, and surveys, would be very limited. Coordinated scheduling could minimize conflicts in arranging adequate time on range for management functions. Considering the extent of forested land in surrounding areas available for commercial and personal fire wood cutting, the loss of this area as a source for these resources would have a minimal adverse impact. Other public uses (for example, agriculture, or mining), do not take place on YTA and would not be impacted. The proposed action conforms with the priority use of withdrawn lands for military use. The impact of reduced access on YTA for hunting, fishing, and recreational uses is addressed below.