Proposal to Relocate the 18th Aggressor Squadron (18 AGRS) from Eielson Air Force Base (EAFB), Alaska to Joint Base Elmendorf-Richardson (JBER), Alaska and to Right-Size the Remaining Wing Overhead/Base Operating Support at EAFB, Alaska

Draft
Environmental Impact Statement
May 2013

Cover Sheet

ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE PROPOSAL TO RELOCATE THE 18TH AGGRESSOR SQUADRON (18 AGRS) FROM EIELSON AIR FORCE BASE (EAFB), ALASKA TO JOINT BASE ELMENDORF-RICHARDSON (JBER), ALASKA AND TO RIGHT-SIZE THE REMAINING WING OVERHEAD/BASE OPERATING SUPPORT AT EAFB, ALASKA

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

b. ***Proposed Action:*** The Air Force proposes to relocate 18 primary assigned and 3 back up F-16 aircraft from EAFB to JBER, Alaska and to adjust EAFB personnel over the following 2 years to reflect reduced base operating support requirements. EAFB is the only Pacific Air Forces (PACAF) base with a one squadron wing. The Proposed Action to consolidate 3 squadrons of fighters under the 3rd Wing would achieve operational efficiencies in the PACAF Pacific Region that would meet both Air Force cost-saving and force-sizing requirements while maintaining current operational capabilities within PACAF.

Alternative A would relocate the 18 AGRS squadron F-16s to JBER and would subsequently deploy aircraft and support personnel to EAFB for Red Flag Alaska, Distant Frontier, and related exercises (estimated to be a total of 12 weeks per year). The 18 AGRS would annually fly 1,270 sorties from JBER, 630 sorties from EAFB, and 800 sorties from other locations. Profiles of F-16 sorties would have 75% departures on Runway 34 and training flights continuing in existing Alaskan training airspace. Eight JBER facilities would be modified for the F-16 aircraft. The initial reduction of 623 active duty EAFB positions would relocate 542 positions to JBER and eliminate 81 active duty positions. Follow-on EAFB personnel reductions would eliminate 749 military and 179 civilian positions at EAFB. An estimated 17 EAFB vacated facilities would be available for re-use or demolition.

Alternative B would relocate 18 AGRS to JBER, with the associated changes in active duty and civilian personnel and implement all Alternative A JBER renovations and include reuse and/or demolition of EAFB vacated facilities. The 18 AGRS would fly 1,900 sorties from JBER and 800 sorties from other locations, and would support all exercises directly from JBER on a daily basis using tanker aircraft refueling.

Alternative C No Action would maintain existing operations and not relocate 18 AGRS.

c. ***Comments and Inquiries:*** Written comments on this document should be directed to Mr. Allen Richmond, AFCEC/CZN, 2261 Hughes Ave, Ste. 155, Lackland AFB, TX 78236-9853. Telephone inquiries may be made to (210) 395-8555.

d. ***Designation:*** Draft EIS

e. ***Abstract:*** This Draft EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, 42 United States Code (USC) 4321-4374, as implemented by the Council on Environmental Quality (CEQ) regulations, 40 Code of Federal Regulations (CFR) 1500-1508, and the Environmental Impact Analysis Process, as promulgated in 32 CFR 989.

This EIS assessed the environmental effects of the alternatives for the following resource categories: airspace management and use, noise, health and safety, air quality, physical resources, hazardous materials and waste, biological resources, cultural resources, land use, infrastructure, socioeconomics, environmental justice, and cumulative projects. Analysis established that no substantial adverse impacts to most resource categories would result from implementing any of the alternatives. The primary exceptions are noise impacts at JBER and socioeconomic impacts at EAFB. At JBER, the existing 65 decibels (dB) Day-Night Average Sound Level (L_{dn}) or greater off-base noise impacts would expand from 408 persons (No Action) to 831 persons (Alternative A) or 1,079 persons (Alternative B) in the highly minority and disadvantaged community of Mountain View. Children in the community and in the elementary school would be impacted by 65 dB L_{dn} or greater noise levels. Aircraft overflights of the Knik Arm are projected by the Air Force analysis to result in a "may affect but not likely to adversely affect" determination for the Cook Inlet beluga whales for either Alternative A or B. An additional 542 personnel (and 306 students) at JBER would not substantially affect commute times or local schools.

EAFB Alternative A relocation of 18 AGRS would result in a total reduction of 3,154 direct and indirect jobs and a net reduction of 1,224 Fairbanks North Star Borough (FNSB) jobs after out-migration of military and families. Unemployment in the FNSB would increase from 6.2% to 8.9%, which is greater than experienced in the past decade. EAFB personnel reductions and maintaining on-base family housing occupancy would reduce demand for off-base owner housing by up to 246 units (9 months' supply) and/or reduce rental demand by up to 1,428 units (local vacancy rates would double to17-20%). Reduced school enrollment of 786 students would result in an excess and 80 to 100 teachers/administrators and of 2.5 schools. Schools located on base could close due to bussing and budgets. Remaining EAFB personnel would have their students bussed off-base. Alternative B impacts at EAFB would be basically the same as Alternative A with an additional 10-20 support personnel losing seasonal employment. Impacts to employment, education, and housing in the FNSB, and especially the community of North Pole, could continue for 4 to 5 years.

Up to 1 additional sonic boom per month could occur under certain approved training airspaces. Alaska Natives or others who reside or spend extensive time under the airspaces could notice the increase.

No Action would leave 18 AGRS at EAFB and needed asset consolidation would not occur, and would continue the current environmental impacts identified in this EIS.

DRAFT

ENVIRONMENTAL IMPACT STATEMENT

PROPOSAL TO RELOCATE THE 18TH AGGRESSOR SQUADRON FROM EIELSON AIR FORCE BASE (EAFB), ALASKA TO JOINT BASE ELMENDORF-RICHARDSON (JBER), ALASKA AND RIGHTSIZING THE REMAINING WING OVERHEAD/BASE OPERATING SUPPORT AT EIELSON AFB, ALASKA

PRIVACY ADVISORY

Your comments on this Draft Environmental Impact Statement (EIS) are requested. Letters or other written or oral comments provided may be published in the Final EIS. As required by law, comments will be addressed in the Final EIS and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of any public meetings or hearings or to fulfill requests for copies of the Final EIS or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EIS. However, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EIS.

United States Air Force
Air Force Civil Engineer Center
Pacific Air Forces

May 2013

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ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE PROPOSAL TO RELOCATE THE 18TH AGGRESSOR SQUADRON (18 AGRS) FROM EIELSON AIR FORCE BASE (EAFB), ALASKA TO JOINT BASE ELMENDORF-RICHARDSON (JBER), ALASKA AND TO RIGHT-SIZE THE REMAINING WING OVERHEAD/BASE OPERATING SUPPORT AT EAFB, ALASKA

EXECUTIVE SUMMARY

INTRODUCTION

In January 2012, the Department of Defense (DoD) announced a new Defense strategy guidance, Sustaining U.S. Global Leadership: Priorities for 21st Century Defense (DoD 2012), based on the results of the May 2011 Department of Defense comprehensive review to provide a strategy-based assessment of defense requirements over the next decade. The U.S. Air Force (Air Force) employed this guidance to develop force structure changes that ensures the Air Force meets the following capability and force-sizing requirements:

- Adaptable and capable of deterring aggression and providing a stabilizing presence, especially in the highest priority areas and missions in the Asia-Pacific region and the Middle East, while still ensuring the ability to maintain defense commitments to Europe and other allies and partners;
- Structured to be ready, rapidly deployable, and expeditionary, with the capacity to project power on arrival;
- Capable of conducting homeland defense and providing support to civil authorities;
- Armed with cutting edge capabilities that exploit technological, joint, and networked advantages;
- Able to reconstitute quickly or grow capabilities as needed; and
- Manned and led by the highest quality professionals.

The Air Force's proposed force structure changes (*USAF Force Structure Changes: Sustaining Readiness and Maintaining the Total Force, February 12*) are based on this new strategic guidance and are focused on investments in continued global engagement, robust capabilities to deter and defeat potential adversaries, and flexible capacity across multiple conflicts. As part of this restructuring, and in response to Resource Management Directive 703 and reduction in Total Obligation Authority, the Air Force tasked Major Commands, including Pacific Air Forces (PACAF), to identify operational efficiency measures, which could reduce costs in the PACAF Pacific Region. PACAF was originally requested to identify annual costs savings in excess of $100 million per year beginning in Fiscal Year (FY) 2013 and in each of the following four years, and a separate manpower reduction of at least 600 civilian positions. The following selection standards were used by PACAF to identify alternatives that would meet these funding and manpower reduction targets, while meeting Air Force capability and force-sizing requirements:

- The action should maintain the necessary operational support to tenant units at PACAF installations and joint installations, including the Air National Guard (ANG);
- The action should have no negative effect on the required installation support at joint bases in PACAF where the Air Force is the executive (or supporting) agency;
- The action should not close any PACAF installations;
- The action should not terminate any current or planned PACAF missions;

- The action should not have a significant adverse impact on strategic or war-fighting capabilities; and
- The action should not have a negative effect on foreign relations or existing international agreements.

Using these standards, PACAF proposed relocating the 18th Aggressor Squadron to JBER and reducing the Base Operating Support (BOS) component. During negotiations with the Air Force corporate structure, a final end-state of 769 personnel at Eielson (559 military and 210 civilians) was determined to be sufficient to maintain remaining mission support requirements. This proposal would generate a cost savings of $227 million over the Future Year Defense Plan (FYDP) and was accepted as PACAF's share of Air Force cost savings. Red Flag and other training exercises would continue to be supported at EAFB with the remaining BOS infrastructure.

The Proposed Action would achieve operational efficiencies by consolidating three squadrons of fighters (two F-22 squadrons and one F-16 squadron) under the 3rd Wing (WG) at JBER, Alaska. The proposed end-strength of 769 military and civilians would be sufficient to maintain EAFB as a valuable strategic location as part of the Total Force. The base would continue to provide critical training through the Joint Pacific Alaska Range Complex (JPARC); support vital joint operations through the Joint Mobility Center (and Ammunition Processing Center); and support the Survival School, the Rescue Squadron operations, and contingency and operational plan requirements. The current JPARC development initiative, as being analyzed in the *Modernization and Enhancement of Ranges, Airspace, and Training Areas in the Joint Pacific Alaska Range Complex (JPARC) EIS*, (JPARC Draft EIS) also highlights the DoD desire to continue, and expand, training opportunities in Alaska such as Exercises Red Flag Alaska and Northern Edge (Air Force 2012a).

The purpose of the Proposed Action is to achieve operational efficiencies in the PACAF Pacific region that would meet both Air Force cost-saving and force-sizing requirements while maintaining current operational capabilities within PACAF. The Proposed Action would achieve operational efficiencies by:

- Improving operational effectiveness for the missions at JBER by co-locating aircraft, pilots, and support personnel with the units they provide training support for,
- Maintaining necessary mission effectiveness for the Red Flag mission at EAFB, and
- Continuing to provide realistic combat training experience in the largest combination of overland Military Operation Areas (MOAs) in the United States.

These benefits are in line with an increased focus on the Asia-Pacific region by DoD and emphasis on readiness. The Alaskan theater is one mission area where the PACAF must balance risk to force structure and modernization while maintaining readiness and operational programs across all mission areas.

PURPOSE AND NEED

The Proposed Action would reduce defense spending, while maintaining the mission effectiveness of Alaska's Air Force bases. This proposal meets the need for PACAF to contribute to the Air Force portion of the directed savings and garner manpower savings by consolidating operations/maintenance, supervision, over-head, and base support functions. The subsequent right-sizing of the BOS function is an example of the disciplined use of defense dollars in a constrained fiscal environment.

PROPOSED ACTION

The Proposed Action would relocate the 18 AGRS squadron with 18 F-16 primary assigned aircraft and 3 F-16 backup aircraft to JBER. At JBER, F-16 sorties would fly as the current F-22s fly, with approximately 75% of the departures using Runway 34. Training flights would continue in existing Alaskan training airspace. Eight JBER facilities vacated by the F-15 aircraft (which were relocated from JBER by 2008) would be modified and/or added-to at an estimated cost of $2 to $3 million for the F-16 aircraft. Figure 2.4-2 identifies facility projects at JBER. JBER would receive 542 active duty positions, 308 students, and 350 other family members from EAFB.

EAFB would incur an initial reduction of 623 positions, with 542 relocating to JBER and 81 eliminated. Follow on personnel reductions would eliminate an estimated 749 military and 179 civilian positions at EAFB to accomplish the required increased efficiencies. The final Air Force active duty and appropriated fund civilian end-strength at EAFB would be 559 military and 210 civilian personnel. Other personnel at EAFB would be Alaska Air National Guard, Non-Appropriated Fund, Base Exchange, and contract personnel. An estimated 17 EAFB facilities would be vacated and made available for re-use or demolition. Figure 2.4-3 identifies EAFB facilities.

ALTERNATIVES

The Proposed Action would be accomplished through either Alternative A or B.

Alternative A would base 18 AGRS at JBER as described above. F-16 aircraft and required personnel would be temporarily deployed to EAFB an estimated total of 12 weeks per year to participate as aggressor aircraft for Major Flying Exercises (MFEs), including Red Flag Alaska, Distant Frontier, and related exercises. Under Alternative A, 18 AGRS would annually fly 1,270 sorties from JBER, 630 sorties from EAFB, and 800 sorties from other locations. Normal 18 AGRS training would fly from, and return to, JBER.

Alternative B would base 18 AGRS at JBER as described above. F-16 aircraft would fly from JBER using tanker fueling support to participate as aggressor aircraft for MFE, including Red Flag Alaska, Distant Frontier, and related exercises for an estimated total of 12 weeks per year. Under Alternative B, 18 AGRS would not temporarily deploy to EAFB. The 18 AGRS would annually fly 1,900 sorties from JBER and 800 sorties from other locations. Normal 18 AGRS training would fly from, and return to, JBER.

Alternative C No Action is required to be addressed in a National Environmental Policy Act (NEPA) decision document. The No Action Alternative would not relocate 18 AGRS from EAFB. The No Action Alternative would maintain mission capabilities in Alaska, but would not result in any operational efficiencies.

ENVIRONMENTAL EFFECTS

The Draft Environmental Impact Statement (EIS) describes the affected environment and assesses environmental effects of the alternatives for the following resources:

Airspace Management and Use would not be impacted at JBER or at EAFB (see Sections 3.1 and 4.1). Anchorage Alaska Terminal Area management of regional airspace would be minimally impacted by the 18 AGRS flight operations under either Alternative A or B. Comparable levels of flight operations were managed as recently as 2008 when 3 fighter squadrons were based at JBER. Air traffic control procedures are in place for managing fighter operations in the Anchorage area. One standard F-16 training procedure not previously conducted at JBER would be the Simulated Flameout (SFO). An SFO

is a practice approach to a runway at an idle power to prepare a pilot for an engine failure or loss of power. SFOs performed at JBER would be to Runway 06 or Runway 16. The initial altitude needed for an SFO would extend above JBER airspace into airspace controlled by Anchorage Approach Control. Federal Aviation Administration (FAA) controllers would approve or deny an SFO request, depending on other air traffic conditions. Procedures for coordinating SFO requests would be outlined in a Letter of Agreement between JBER and the FAA to ensure those maneuvers do not conflict with other air traffic operations and priorities. The No Action Alternative would result in no change from baseline conditions.

Figure 2.4-1 presents the training airspace currently used for fighter aircraft training. Either Alternative A or B would result in a sortie increase in the Stony (6.6% increase), Susitna (10.0% increase), and Fox 3 (2.4% increase) Military Operations Areas (MOAs) near JBER. There would be a reduction in sorties near EAFB in the Eielson (1.1% reduction), Fox 1, 2 (1.4% reduction), Viper B (1.6% reduction), and Yukon (2.7% reduction) MOAs.

Noise would have the potential for continuing and greater off-base environmental impacts at JBER (see Sections 3.2 and 4.2). The existing 65 decibels (dB) Day-Night Average Sound Level (L_{dn}) or greater off-base noise impacts would expand from 408 persons (under No Action) to 831 persons (Alternative A) or 1,079 persons (Alternative B) in the high minority and disadvantaged community of Mountain View. Figure 3.2-1 presents noise contours under Alternative A, Alternative B, and Alternative C, existing conditions or No Action.

The community of Mountain View has the highest proportion of minorities and low income when compared with the Municipality of Anchorage as a whole. Children attending the Mountain View Elementary School and/or residing under the existing and expanded 65 dB L_{dn} noise contours could be impacted by existing and/or increased noise levels. At this noise level, schools are not considered a compatible land use according to DoD guidelines, unless the structure provides at least 25 dB outdoor-to-indoor noise level reduction

Aircraft noise at EAFB would be expected to decrease under Alternative A or B. The change in use of training airspace would not result in a discernible subsonic change in noise. A calculated increase of an average of up to 1 additional sonic boom per month under certain approved training airspaces could be detected by someone living under the airspace, but would not be expected to increase annoyance substantially. The No Action Alternative would result in continued JBER off-base noise impacts and no change from baseline conditions for EAFB. In general, noise under the airspaces would not noticeably increase.

Health and Safety would not be significantly impacted at JBER, EAFB, or under the training airspace. (Sections 3.3 and 4.3). The F-16 uses hydrazine to fuel the aircraft emergency power unit. Hydrazine containers would be stored at JBER in a specially designated and constructed facility and would be handled by trained and certified personnel to ensure safety. The No Action Alternative would result in no change from baseline conditions.

Air Quality would not be significantly impacted with the implementation of either Alternative A or B (Sections 3.4 and 4.4). The Anchorage area is in attainment for all criteria pollutants and anticipated construction and aircraft emissions resulting from implementation of either Alternative A or B and would not cause, or contribute to, a new National Ambient Air Quality Standards violation. Under Alternative A or B, aircraft emissions and mobile source emissions would decrease at EAFB. Alternatives A or B would not have a significant impact on greenhouse gas emissions and would not normally fly at altitudes that could contribute to emission impacts in the training airspace. The No Action Alternative would result in no change from baseline conditions.

Physical Resources would not be significantly impacted under either Alternative A or B (Sections 3.5 and 4.5). Renovations at JBER would disturb less than 1 acre. Demolition projects at EAFB would affect

more than 1 acre and would require a site specific Stormwater Pollution Prevention Plan. No adverse effects from erosion would be anticipated. Floodplain management standards would apply to one EAFB building in the 100-year flood zone. There would be no change from existing conditions under training airspace. The No Action Alternative would result in no change from baseline conditions.

Hazardous Materials and Waste Management impacts would not be anticipated under either Alternative A or B (Sections 3.6 and 4.6). The *JBER Operations Plan (OPLAN) 19-3* would be updated to include hydrazine for the F-16 (JBER 2011a). Hydrazine is used to fuel the aircraft emergency power unit. At EAFB, existing procedures would be implemented to handle the demolition of buildings and to deal with potential asbestos containing material and lead based paint issues. No hazardous materials or wastes would be anticipated under the training airspace. The No Action Alternative would result in no change from baseline conditions.

Biological Resources on JBER, EAFB, or under training airspace are regularly exposed to noise and human activity including military aircraft, defensive chaff and flares, and base construction activities. Biological resources would not be expected to be adversely affected with either Alternative A or B (Sections 3.7 and 4.7). Aircraft noise associated with either Alternative A or B extends into the Knik Arm of the Cook Inlet and Cook Inlet beluga whale (CIBW) regularly traverse the area overflown by aircraft (see noise contours on Figure 3.2-1). Potential effects to CIBW include behavioral response to aircraft overflight. No harassment by military aircraft of listed species has been reported. In 2011, the Air Force consulted with the National Marine Fisheries Service (NMFS) for the addition of F-22 aircraft to JBER and the NMFS determined that overflight "may affect, but would not likely adversely affect" listed species. Air Force studies for this F-16 proposed relocation EIS recommend a determination that overflight "may affect, but would not likely adversely affect" listed species. The Air Force and NMFS are participating in ongoing informal consultation under Section 7 of the Endangered Species Act for the proposed relocation and flight operations of the 18 AGRS squadron at JBER. The No Action Alternative would result in no change from baseline conditions.

Cultural Resources, including historic properties or traditional cultural properties, would not be expected to be impacted with implementation of Alternative A or B (Sections 3.8 and 4.8). Renovation of historic Hangars 1, 3, and 7 would require consultation with the Alaska State Historic Preservation Officer. Demolition of any of the facilities at EAFB has the potential to encounter previously unknown archaeological resources. In the case of unanticipated or inadvertent discoveries, the Air Force would comply with Section 106 of the National Historic Preservation Act, as specified in standard operating procedures described in the JBER and EAFB Integrated Cultural Resources Management Plans (EAFB 2006a). There would be no impacts to historic properties under the airspace, and no impacts to traditional cultural properties or Alaska Native activities would be expected as a result of either Alternative A or B. The No Action Alternative would result in no change from baseline conditions.

Land Use and Recreation would be somewhat affected by implementing the Proposed Action as described in Sections 3.9 and 4.9. The JBER off-base over land 65 dB L_{dn} noise contour would increase from the No Action Alternative of 266 acres to 281 acres with Alternative A or 289 acres with Alternative B. Off base residential land uses can be compatible with 65 dB L_{dn} or greater noise levels with sound attenuation and/or noise attenuation. Parks and most outdoor recreational facilities and activities on JBER are compatible with current and projected noise levels. No impacts would be expected at EAFB. No discernible effects would occur to land use or land use patterns, ownership, or management under the training airspace. The No Action Alternative would result in no change from baseline conditions.

Infrastructure at JBER is adequate to support the proposed 18 AGRS relocation (Sections 3.10 and 4.10). Increased JBER employment and commuters by 2.8% could increase wait times at already congested gates during high demand periods. Ongoing traffic planning has recommended base projects to ameliorate existing and projected JBER transportation issues. Depending on housing location decisions, an addition of less than 400 daily commute trips on the Glen Highway would be less than 1% of the current approximately 50,000 average daily trips. Congestion can already occur, and a very small increase in traffic would not be expected to result in any discernible change to traffic flow. The small amount of traffic change would not be expected to increase moose-car accidents. EAFB demolition of excess structures could generate approximately 50 tons of construction debris, which would be recycled and/or disposed of in licensed landfills. The water distribution within the above ground utilidor must be maintained at design temperatures. Water pumped into ponding areas to prevent freezing creates potentially hazardous ice fog. Depending upon the extent of water consumption, potential capping of the utilidor where multiple buildings are demolished, and/or water distribution requirements, a reduced EAFB water demand could result in a greater incidence of ice fog in winter months. Wastewater systems design changes could be required to maintain wastewater treatment quality during low flow or high dilution periods. Capping utilidor lines has the potential to reduce coal requirements depending on heating requirements. Reduced electrical system loads, roadway use, and taxiway use could have beneficial effects. There would be no impacts under training airspaces. The No Action Alternative would result in no change from baseline conditions.

Socioeconomics at JBER would not be significantly impacted by the proposed addition of approximately 1,200 Air Force accompanied, unaccompanied, and family members to the Anchorage area. Figure 3.11-1 locates JBER, the Municipality of Anchorage, and the Mat-Su valley. A 0.3% increase in population to the Municipality of Anchorage would not be noticed (Sections 3.11 and 4.11). The Air Force personnel increase of 542 positions, or a 2.8% increase in base employment, would create approximately 338 indirect and induced jobs in the community. The addition of 306 dependent students would not substantially affect local schools. Depending on market conditions, an estimated up to 150 relocated personnel would not be able to obtain housing in the Anchorage area that met Air Force cost, quality, and commute standards. This could result in additional commute and/or housing costs for those personnel. From the perspective of Air Force housing standards, the increased commute distance for suitable housing or increased cost of housing would be a potential impact to the personnel and associated families. There would be no substantial socioeconomic distinction between Alternative A and B at JBER.

EAFB reductions would result in a regional decline of 3,154 direct and indirect Fairbanks North Star Borough (FNSB) jobs and a net decline of 1,224 jobs after out-migration of military families. Civilian, Non Appropriated Fund, Base Exchange, and regional indirect employees who lose jobs are assumed to remain unemployed in the FNSB. Figure 3.11-2 locates EAFB, the City of Fairbanks, the City of North Pole, and Fort Wainwright. Assuming that none of the unemployed civilians find jobs or out-migrate, unemployment in the FNSB could increase from 6.2% to 8.9%. This level of unemployment is greater than experienced in the past decade. EAFB contracting would depend on projects initiated, although the overall estimated EAFB contracting would be projected to decline from an average of $90 million per year over the past decade to an average of $45 million per year in the future. This contracting reduction is reflected in the regional job decline. EAFB Alternative A would supply an estimated 100 seasonal jobs to support the MFEs and 18 AGRS Temporary Duty (TDY) to EAFB. If the proposed relocation were implemented, the population of FNSB would be projected to be flat or decline slightly prior to continuing growth in 4 to 5 years.

EAFB on-base Military Family Housing (MFH) occupancy would be maintained by a process that would permit occupancy by persons with access to EAFB. The combination of EAFB personnel reductions and maintaining on-base MFH occupancy would reduce demand for off-base owner housing by up to 246 units. This represents an approximate 9-month supply of houses for sale. Rental unit demand could be reduced by up to 1,428 units, which would double local rental vacancy rates from 9% to 17% to 20%. Residents of owner-occupied housing and owners of rental units including off-base military personnel could lose a substantial portion of their investment. Non-military homeowners seeking to sell their homes in the area would face the same potential loss. Over the next 4 to 5 years, housing prices and rents would be expected to stabilize at lower than current levels.

Reduced school enrollments of at least an estimated 786 students would result in an anticipated excess of 2.5 schools and an excess of 80 to 100 teachers and administrators in the Fairbanks North Star Borough School District (FNSBSD). FNSBSD is responsible for EAFB schools and, in the face of declining budgets; FNSBSD would likely be forced to close schools. If on-base schools were closed, the Air Force would pay the costs to bus students off base. EAFB schools could be expected to close due to budget constraints and EAFB personnel and others occupying on-base MFH would have to bus students to schools located off-base. Overall impacts to employment, education, and housing would continue for 4 or more years.

Alternative B impacts at EAFB would basically be the same as Alternative A with all the impacts described for housing and education. Alternative B would have the same employment impacts with a seasonal demand of between 80 to 90 employees because 18 AGRS personnel would not be TDY to EAFB for 12 weeks of MFEs. Socioeconomic activities under the training airspace are not expected to be affected. The No Action Alternative would result in no change from baseline conditions.

Environmental Justice at JBER would have the potential for continuing and greater off-base disproportionate environmental impacts to minority and low income populations and impacts to children (Sections 3.12 and 4.12). At JBER, the affected population in the off-base community of Mountain View is 74% minority and 12.3% below the poverty level as compared with Anchorage 37% minority and 7.8% below the poverty level. Under the No Action Alternative, an estimated 408 persons are within the existing 65 dB L_{dn} or greater. With Alternative A, 831 persons are within that noise contour and with Alternative B, 1,079 persons in the minority and disadvantaged community are within the 65 dB L_{dn} or greater noise contour.

Children attending Mountain View Elementary School and/or residing under the existing and expanded 65 dB L_{dn} noise contours could experience health risks by existing and/or increased noise levels. At this noise level, schools are not considered a compatible land use according to DoD guidelines unless the structure provides at least 25 dB outdoor-to-indoor noise level reduction

At EAFB, there would not be disproportionate impacts to minority or low-income populations. An estimated 10% of the annual EAFB service contracts are with Alaska Native Corporations. In 2012, the service contracts with Alaska Native Corporations were $2.1 million. The reduction of total contracts from an annual average of $90 million per year to an annual average of $45 million per year could have the potential to reduce contracts with Alaska Native Corporations by one-half, to $1.05 million per year. For service contracts, that amount translates to an approximate reduction in 20 direct, indirect, and induced FNSB jobs. These 20 jobs are included in the socioeconomic employment discussion above.

Children living in MFH on EAFB could incur longer bussing and less available academic-related after school time with school closings.

Alaska Natives who live under training airspace are representative of rural populations throughout the state. Persons living under the airspace, particularly the Stony MOAs could notice up to an additional 1 sonic boom per month. No disproportionately high or adverse impacts to minority or low-income communities under the airspace would result from implementation of either Alternative A or B. There would be no health or safety risks to children under the airspace. The No Action Alternative would result in continued JBER off-base noise impacts to the disadvantaged community of Mountain View and no change from baseline conditions for EAFB.

CUMULATIVE EFFECTS

Cumulative effects analysis considers the potential environmental consequences resulting from "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). Federal and non-Federal projects near the bases and airspace were identified and evaluated to see whether cumulative impacts could occur (Chapter 5.0). Several projects within the region would overlap in time or location with the proposed F-16 relocation and EAFB personnel reductions.

The major projects with potential for cumulative effects include the realignment of the Army's force structure (Army 2013), which, under their Alternative 1, would reduce either JBER by a military population of 4,300 and reduce Fort Wainwright by a military population of 4,900 or, under Alternative 2, could increase JBER by 1,000 and increase Fort Wainwright by 1,000. The Joint Pacific Alaska Range Complex (JPARC) modernization and enhancement project would change the shape and altitude of the Fox 3 and Paxon MOAs used for military training (JPARC 2002). Anchorage Port and Knik Arm Bridge are major construction projects immediately adjacent to JBER. The Army resumption of year–round live fire training opportunities would be at the upper end of the Knik Arm, and energy-related projects could increase the demand for construction personnel and supplies.

Potential Cumulative Effects at JBER - JPARC modernization and enhancements propose changes in the Fox 3 MOA (JPARC 2012). F-16 AGRS aircraft are already incorporated into JPARC airspace use projections. Proposed relocation of the F-16 to JBER is projected to increase Fox 3 usage by 0.5%. This is not expected to have a cumulative impact on the proposed JPARC airspace modernization and enhancements.

Port of Anchorage expansion and the Knik Arm Crossing and Resumption of Year-Round Firing Opportunities at JBER could cumulatively increase noise and/or disturbance to the CIBW habitat (USARK 2010b). The proposed additional fighter aircraft overflights of the Knik Arm are not expected to contribute to any cumulative impact to the CIBW or any other sensitive species.

Knik Arm Crossing bridge access routes on JBER could intrude into JBER runway safety zones. This potential cumulative impact is being addressed through coordination among affected Air Force and bridge development agencies.

Realignment of the Army force at JBER could, under Alternative 1, reduce Army presence at JBER by 4,300 personnel and open housing space for Air Force personnel relocating to JBER. Under Alternative 2, JBER would gain 1,000 Army personnel with a potential to increase demand for housing and schools and increase gate traffic on JBER. An Army action could open housing for EAFB relocating personnel or could reduce housing space and result in more relocating JBER personnel living in housing that did not meet Air Force quality, cost, and location parameters (Army 2013).

Potential Cumulative Effects at EAFB - Realignment of the Army force at Fort Wainwright could, under Alternative 1, reduce Army personnel by 4,900 and more than double the estimated EAFB

reduction impacts to employment, housing, and education in FNSB. Under Alternative 2, Fort Wainwright could gain 1,000 personnel. Such an increase could reduce by approximately one-third the projected employment and housing impacts associated with the proposed EAFB changes. An Army decision to locate an Unmanned Aerial Vehicle flying mission into the FNSB could reduce the projected employment and housing impacts associated with the proposed EAFB relocation by approximately 10% (Army 2013).

Proposed energy, rail, and/or dam construction projects within the FNSB, or staging for energy related construction from the FNSB, could increase regional economic activity and reduce the impacts to employment, housing, and education associated with the EAFB reduction.

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1.0 PURPOSE AND NEED

1.1 Introduction

In January 2012, the DoD announced a new Defense strategy guidance, Sustaining U.S. Global Leadership: Priorities for 21st Century Defense (DoD 2012), based on the results of the May 2011 Department of Defense comprehensive review to provide a strategy-based assessment of defense requirements over the next decade. The U.S. Air Force (Air Force) employed this guidance to develop force structure changes that ensures the Air Force meets the following capability and force-sizing requirements:

Adaptable and capable of deterring aggression and providing a stabilizing presence, especially in the highest priority areas and missions in the Asia-Pacific region and the Middle East, while still ensuring the ability to maintain defense commitments to Europe and other allies and partners;

- Structured to be ready, rapidly deployable, and expeditionary, with the capacity to project power on arrival;
- Capable of conducting homeland defense and providing support to civil authorities;
- Armed with cutting edge capabilities that exploit technological, joint, and networked advantages;
- Able to reconstitute quickly or grow capabilities as needed; and
- Manned and led by the highest quality professionals.

The Air Force's proposed force structure changes (*USAF Force Structure Changes: Sustaining Readiness and Maintaining the Total Force, Feb 12*) are based on this new strategic guidance and are focused on investments in continued global engagement, robust capabilities to deter and defeat potential adversaries, and flexible capacity across multiple conflicts. As part of this restructuring, and in response to Resource Management Directive 703 and reduction in Total Obligation Authority, the Air Force tasked Major Commands, including Pacific Air Forces (PACAF), to identify operational efficiency measures, which could reduce costs in the PACAF Pacific Region. PACAF was originally requested to identify annual costs savings in excess of $100 million per year beginning in Fiscal Year (FY) 2013 and in each of the following four years, and a separate manpower reduction of at least 600 civilian positions. The following selection standards were used by PACAF to identify alternatives that would meet these funding and manpower reduction targets, while meeting Air Force capability and force-sizing requirements:

- The action should maintain the necessary operational support to tenant units at PACAF installations and joint installations, including the Air National Guard (ANG);
- The action should have no negative effect on the required installation support at joint bases in PACAF where the Air Force is the executive (or supporting) agency;
- The action should not close any PACAF installations;
- The action should not terminate any current or planned PACAF missions;
- The action should not have a significant adverse impact on strategic or war-fighting capabilities; and
- The action should not have a negative effect on foreign relations or existing international agreements.

Using these standards, PACAF proposed relocating the 18th Aggressor Squadron to JBER and reducing the Base Operating Support (BOS) component. During negotiations with the Air Force corporate structure, a final end-state of 769 personnel at Eielson (559 military and 210 civilians) was determined to be sufficient to maintain remaining mission support requirements. This proposal would generate a cost savings of $227 million over the Future Year Defense Plan (FYDP) and was accepted as PACAF's share of Air Force cost savings. Red Flag and other training exercises would continue to be supported at EAFB with the remaining BOS infrastructure.

The Proposed Action would achieve operational efficiencies by consolidating three squadrons of fighters (two F-22 squadrons and one F-16 squadron) under the 3rd Wing (WG) at JBER, Alaska. The proposed end-strength of 769 military and civilians would be sufficient to maintain EAFB as a valuable strategic location as part of the Total Force. The base would continue to provide critical training through the Joint Pacific Alaska Range Complex (JPARC); support vital joint operations through the Joint Mobility Center (and Ammunition Processing Center); and support the Survival School, the Rescue Squadron operations, and contingency and operational plan requirements. The current JPARC development initiative, as being analyzed in the *Modernization and Enhancement of Ranges, Airspace, and Training Areas in the Joint Pacific Alaska Range Complex (JPARC) EIS* (Air Force 2012a), also highlights the DoD desire to continue, and expand, training opportunities in Alaska such as Exercises Red Flag Alaska and Northern Edge.

1.2 Background

During public scoping for this EIS, there were many comments about the mission of the 18 AGRS based at EAFB, which does not have an air interdiction mission. The F-22s based at JBER are responsible for the air interdiction mission in Alaska. The mission of the 18 AGRS is to prepare aviation forces, including F-22 pilots from JBER and aircrews from joint and allied services, for air-to-air combat. The F-16 Aggressor pilots replicate the tactics and techniques of potential adversaries (as the Red Force) in regular training scenarios with JBER-based F-22s and in large scale training exercises against U.S. and allied aircrews (the Blue Force). The18 AGRS has 18 primary assigned F-16 aircraft to perform the adversary mission. The F-16 C/D Block 30 is a multirole fighter aircraft with a maximum speed of 2.05 Mach and the ability to function at high speeds from low to high altitudes. In their role as aggressors, the F-16s are able to use opposing force tactics to threaten Blue Force aircraft realistically.

The Air Force’s Aggressor program began in early 1970s in response to the high combat losses during the Vietnam War. Aggressor squadrons support Red Flag exercises at the Nevada Test and Training Range and in the Joint Pacific Alaska Range Complex (JPARC). Exercises in Alaska primarily use Air Force and Army air and ground assets in south central Alaska. The18 AGRS, under the 354th Fighter Wing, is dedicated to this mission in support of Red Flag Alaska. As part of their aggressor role, the squadron has an ongoing mission to stay abreast and informed of the latest and emerging tactics of adversaries. The 18 AGRS aircrews are trained to maintain an aggressor training status to enhance Air Force missions.

RFA is a PACAF-sponsored large-scale two week joint training exercise with an emphasis on tactical air combat training. Exercises allow aircrews to practice and learn skills and tactics in a realistic environment so that they can prevail in combat. The exercises increasingly integrate all services in combined air, ground, space, and electronic threat environment. A typical Red Flag exercise can involve

100 aircraft (about 60 deployed to EAFB and about 40 to JBER) and can include fighter, bomber, reconnaissance, air superiority, airlift, air refueling, search and rescue, and remotely piloted aircraft, as well as ground-based command and control forces (executing both allied and adversary roles). During a large scale exercise, two combat missions are flown each day to cover multiple combat threats during the course of the exercise. Smaller exercises with fewer training aircraft are conducted during the weeks before and after the large scale exercise. Participating aircrews and aircraft arrive prior to the exercise and receive briefings on local flying restrictions, safety, and survival procedures.

1.3 Purpose and Need

The purpose of the Proposed Action is to achieve operational efficiencies in the PACAF Pacific region that would meet both Air Force cost-saving and force-sizing requirements while maintaining current operational capabilities within PACAF. The Proposed Action would achieve operational efficiencies by:

- Improving operational effectiveness for the missions at JBER by co-locating aircraft, pilots, and support personnel with the units they provide training support for,
- Maintaining necessary mission effectiveness for the Red Flag mission at EAFB, and
- Continuing to provide realistic combat training experience in the largest combination of overland Military Operation Areas (MOAs) in the United States.

These benefits are in line with an increased focus on the Asia-Pacific region by DoD and emphasis on readiness. The Alaskan theater is one mission area where the PACAF must balance risk to force structure and modernization while maintaining readiness and operational programs across all mission areas.

The Proposed Action would reduce defense spending, while maintaining the mission effectiveness of Alaska's Air Force bases. This proposal meets the need for PACAF to contribute to the Air Force portion of the directed savings and garner manpower savings by consolidating operations/maintenance, supervision, over-head, and base support functions. The subsequent right-sizing of the BOS function is an example of the disciplined use of defense dollars in a constrained fiscal environment.

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2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This chapter develops and describes the alternatives evaluated in this EIS. No final decision will be made to implement any of these alternatives until after completion of this EIS and an associated Strategic Assessment by PACAF. A set of selection standards based on the purpose and need were applied to a set of potential alternatives identified early in the planning process to define viable alternatives for analysis. The application of the selection standards resulted in the identification of three alternatives to be carried forward in this analysis.

The Proposed Action is to relocate 18 AGRS from EAFB to JBER. The 18 AGRS provides F-16 Aggressor training for JBER-based F-22s and for major flying exercises such as Red Flag Alaska.

2.1 Application of Alternative Selection Standards

The proposal to relocate the 18 AGRS and subsequently reduce the BOS structure at EAFB was the only action available that would produce the required savings and manpower reductions while meeting all of the selection standards designed to maintain current operational capabilities. Specifically, the proposal satisfies the selection standards in the following manner, if implemented:

- The proposed action is estimated to save $227 M in Operations and Maintenance (O&M) costs over the FYDP,
- The proposed action would achieve manpower reductions of more than 600 military and civilian personnel positions,
- The proposal would maintain operational support to tenant and ANG missions at PACAF installations, as continued support would be provided to the mission of the 168th Air Refueling Wing (ARW) at EAFB,
- The proposal would not negatively affect the Air Force's ability to comply with its responsibilities as supporting Component at Joint Base Elmendorf-Richardson,
- The proposal would not result in the closure of EAFB, as it would continue to serve as an active Air Force installation, available for beddown of future missions,
- The proposal would not terminate any existing PACAF missions, as training mission such as Red Flag and Northern Edge would continue to occur in Alaska, and EAFB would still be able to host squadrons from other locations to participate in similar large training exercises,
- The proposal would improve war-fighting capabilities by co-locating fourth generation aircraft (F-16s) with the fifth generation aircraft (F-22s) for which they provide training support, and would not adversely affect strategic capabilities in the region. Improved operational efficiency is gained by eliminating the only single squadron Fighter Wing in PACAF and bringing the 3rd WG at JBER up to a full complement of three flying squadrons. Relocating the 18 AGRS to JBER has no direct impact on war-fighting capabilities, because its mission is purely training support with no air interdiction role.
- The proposal would not negatively affect foreign relations or any existing international agreements, because the action would take place within Alaska. It would continue to support foreign air forces participating in Red Flag and other exercises.

2.2 Alternatives Considered But Not Carried Forward for Environmental Analysis

As identified in Chapter 1, several alternatives were evaluated and rejected from further consideration in the budget process and were not carried forward for analysis in this EIS:

Although across-the-board cuts were considered early in the proposal identification phase, they were not carried forward for further consideration due to their potential risk for impacting war-fighting capabilities and international agreements. All installations in PACAF, with the exception of EAFB, have a war-fighting mission, with a majority of these located in foreign countries in the Pacific region. Across-the-board cuts at these installations were not considered to be in the best interest of security in the PACAF Pacific region.

During Public Scoping, comments were received requesting the Air Force consider moving other missions to EAFB as alternatives to the proposed action being considered. These included:

- PACAF relocating the F-16 aircraft and personnel of the 52 Fighter Wing (FW) from Spangdahlem Air Base, Germany to EAFB.
- Relocating a U.S. Coast Guard General Aviation Unit to EAFB to support future patrol requirements generated by the opening of the Arctic Ocean to domestic and foreign shipping traffic, as pack ice continues to decline.
- Offering access to EAFB for Canadian Air Force units.

In regard to relocating the F-16 aircraft of the 52nd FW from Spangdahlem Air Base, Germany, PACAF has no authority to evaluate this as an alternative, because this FW is in another MAJCOM and a decision to evaluate this action would require HAF approval. In a letter dated 4 Apr 13 to Governor Parnell in reference to the transfer of 52 FW aircraft to EAFB, Secretary Donley and General Welsh stated: "moving F-16s from Europe to Alaska would leave missions in the European theater uncovered, while no operational assessment indicates that additional F-16 aircraft are needed in Alaska. An assessment of Air Force operational capacity in Europe is ongoing and will be used to inform future decisions." For these reasons, this proposed alternative was not originally considered and is not being carried forward for analysis in this EIS.

The other two suggested alternatives also fail to achieve cost savings or manpower reductions in the PACAF Pacific region. Even if the Air Force had the authority to decide to relocate non-Air Force military units to EAFB or any other base, such action would not fulfill the purpose and need of this EIS. Offering the Coast Guard access to EAFB for an air unit beddown is a lengthy process and beyond the time frames of this EIS, and is left for future consideration. Offering EAFB for use by Canadian Forces requires additional involvement of the State Department and is not being considered at this point in time. No other efficiency proposals are available to PACAF that satisfy the selection standards, while meeting the cost reduction commitment accepted by HAF in the budget negotiation process.

2.3 Summary Application of Selection Standards

The proposal being analyzed in this EIS will result in a Record of Decision to either relocate the 18 AGRS to JBER or maintain its current basing at EAFB. During a Site Activation Task Force (SATAF) in April 2012, two alternate courses of action were identified regarding the operational support of Major Flying Exercises (MFEs), such as Red Flag, Distant Frontier and Northern Edge. For the purposes of this analysis, these courses of action are treated and analyzed as separate alternatives because they potentially impact the affected environment in different ways and have different total cost savings accruing to the Air Force if either of the actions were to be implemented. The final list of alternatives being analyzed is:

- Relocate the 18 AGRS to JBER, with subsequent staging of aircraft and personnel back to EAFB for the duration of Major Flying Exercises (MFE), such as Red Flag and Distant Frontier
- Relocate the 18 AGRS to JBER, with MFEs being supported directly from JBER, on a daily basis, using additional aerial refueling support
- No Action – Maintain the 18 AGRS at EAFB

Although the No Action Alternative does not meet the cost savings requirements PACAF has been tasked to accomplish, NEPA requires that this alternative be considered in any environmental analysis document, either an Environmental Assessment or an Environmental Impact Statement. A comparison of Alternatives as they relate to the selections standards is provided Table 2.3-1.

Table 2.3-1. Summary of the Selection Standards Application

Potential Alternative	Description of Potential Alternative	Supports Tenant Units	Maintains Joint-Base Support	Keeps EAFB Open	Maintains Red Flag Mission	Maintain War-Fighting Capabilities	Maintains International Commitments	Achieves Cost Reduction
A	Relocate 18 AGRS to JBER with EAFB MFE Staging	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B	Relocate 18 AGRS to JBER with JBER MFE Staging	Yes	Yes	Yes	Yes	Yes	Yes	Yes, some
C	No Action – Maintain 18 AGRS at EAFB	Yes	Yes	Yes	Yes	Yes	Yes	No

2.4 Alternatives Carried Forward for Environmental Analysis

2.4.1 Alternative A, the Preferred Alternative

Alternative A is the Preferred Alternative identified by the Air Force. It provides for the relocation of the F-16 Aggressors to JBER with the temporary deployment of the F-16s to EAFB to support MFEs such as Red Flag and other training such as Northern Edge. Alternative A would relocate 18 AGRS (18 primary and 3 backup F-16 aircraft) and their supporting units (maintenance group) from EAFB to JBER, Alaska. For the purpose of this analysis, the initial implementation year is designated as FY1 and subsequent years are designated FY2, FY3, etc. Relocating 18 AGRS and associated support units from EAFB to JBER would be expected to achieve cost savings of $227 million over 5 years through personnel and facility maintenance reductions at EAFB. The initial relocation of 18 AGRS in FY1 affects 623 military positions; 542 authorizations would transfer from EAFB to JBER; the remaining 81 authorizations would be eliminated. Reductions in BOS at EAFB that would be implemented in FY2 and FY3 would result in a total of $227 million cost savings over a 5-year period (Table 2.4-1).

Table 2.4-1. Cost Savings - Alternative A

	In Millions					
	FY1	FY2	FY3	FY4	FY5	FYDP
Manpower	$3.20[1]	$6.50[2]	$48.40[3]	$91.60[4]	$93.90	$243.60
Annual Costs[5]		-$1.69	-$1.69	-$1.69	-$1.69	-$6.76
Permanent Change of Station (PCS) Costs[6]	-$6.80					-$6.80
Joint Base Elmendorf-Richardson (JBER) Construction	-$2.05					-$2.05
Total	**-$5.65**	**$4.81**	**$46.71**	**$89.91**	**$92.21**	**$227.99**

Notes:
1 Includes 81 reduced positions
2 Full year funding savings from Fiscal Year (FY)1 reductions
3 Planned reductions of 749 active duty and 169 civilian positions
4 Full year funding savings from FY2-FY3 reductions
5 Includes costs for temporary deployment to EAFB for exercises
6 One-time costs for personnel relocation to JBER

Under Alternative A, 18 AGRS and their supporting units would relocate to JBER, but would conduct MFEs out of EAFB. Figure 2.4-1 shows EAFB, JBER, and Alaska Training Special Use Airspace (Training Airspace) used for routine training and MFEs. The 18 AGRS would deploy the squadron's 18 participating F-16s, along with required support personnel, to EAFB for the duration of each of the 3 anticipated Red Flag exercises per year (typically about 2 weeks each). Distant Frontier exercises are conducted during the week before and after each Red Flag exercise (for a total of 6 weeks). The estimated annual cost of this temporary deployment (12 weeks total) would be $1.01 million. The remainder of the 18 AGRS F-16 flight training would be conducted at JBER. Other elements of Alternative A include:

- 18 AGRS would become a squadron under 3 WG at JBER.
- A total of 623 military personnel positions at EAFB would be impacted in FY1 by this action with 542 being transferred to JBER and the remaining 81 positions being eliminated to support Air Force manpower reduction targets.
- Planned follow-on personnel reductions would eliminate approximately 749 military and 179 civilian positions at EAFB in FY2 and FY3, none of which would be transferred to JBER.
- After the proposed 18 AGRS relocation and personnel adjustments, EAFB annual contracts are estimated to average $45 million, a reduction from an annual average of $90 million, to be consistent with projected EAFB mission requirements.
- No changes to MFE training schedules or syllabus before FY2.
- Approximately 2,700 18 AGRS sorties would be flown by JBER-based F-16s annually, 1,270 from JBER, 630 from EAFB, and 800 from other locations.
- Use of existing Alaskan airspace and ranges by 18 AGRS F-16s would change somewhat by shifting some usage from the northern airspace units to the southern airspace units.
- With completion of the Sustainment Restoration Modernization facility modifications at JBER ($2.05 million), sufficient facilities would be available to support 18 AGRS.
- Sufficient BOS would be retained at EAFB to accommodate MFE deployments, support remaining units/tenants, and to support MFE facilities.

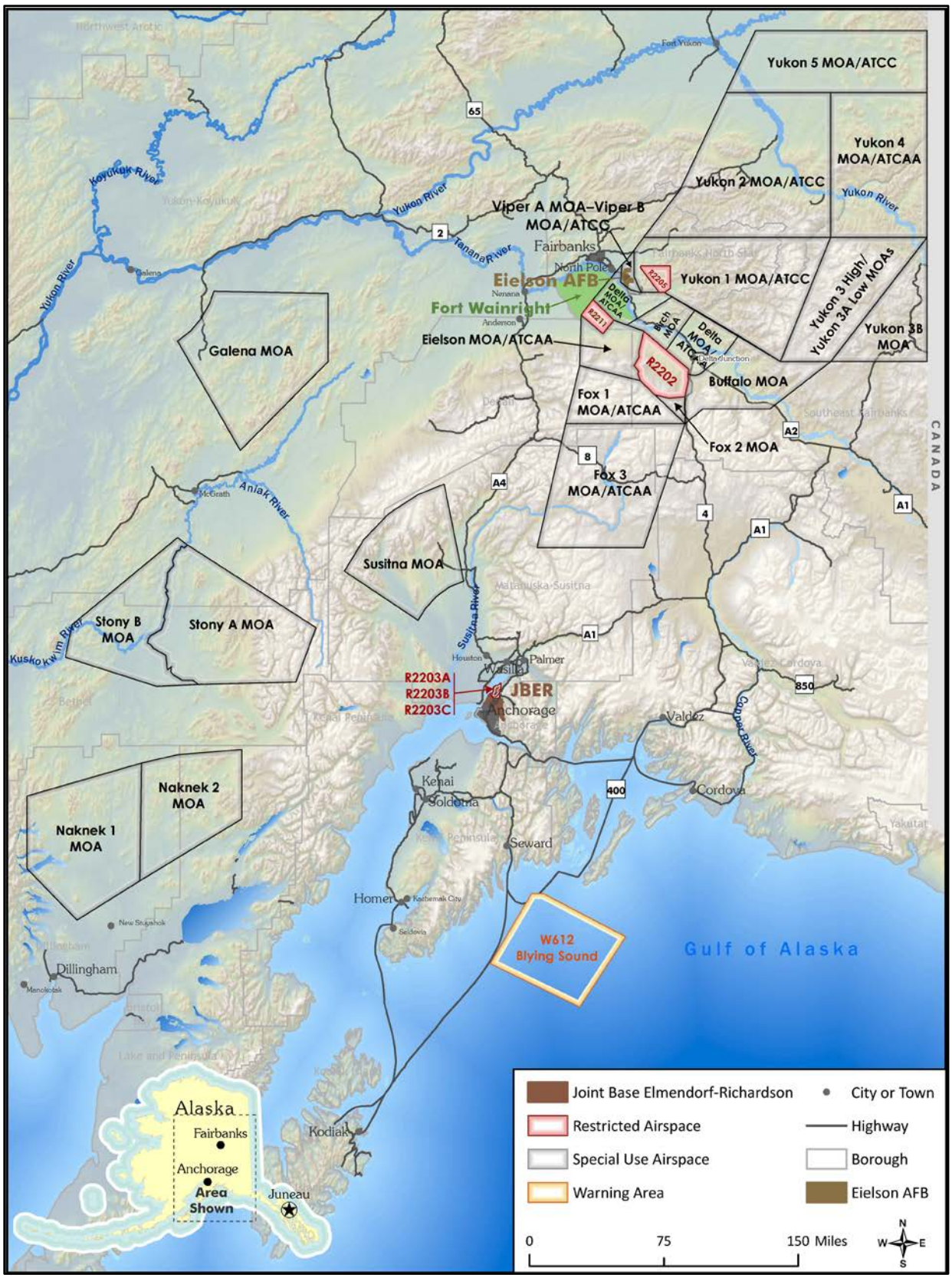

Figure 2.4-1. Alaska Training Special Use Airspace (SUA)

2.4.1.1 Alternative A Elements Affecting JBER-Elmendorf

JBER is used in this EIS to refer to all of Joint Base Elmendorf-Richardson. JBER-Elmendorf refers to the F-16 activities and operations at, and in the vicinity of, the airfield of the former Elmendorf AFB. The proposed relocation of 18 AGRS to JBER-Elmendorf could affect three aspects of the base:

1. The proposed 18 AGRS relocation would require modifications or additions to some existing JBER facilities.
2. The proposed 18 AGRS relocation and flight activity of an additional 18 primary aircraft could affect the base and vicinity.
3. The proposed 18 AGRS relocation would affect the numbers and responsibilities of base personnel.

This section describes the proposed modifications or additions to existing JBER facilities, the existing and proposed flight activities near the base, and the proposed personnel changes.

Facilities - Facilities at JBER proposed for use by 18 AGRS and their support units are listed in Table 2.4-2 and illustrated in Figure 2.4-2. These facilities would require interior and exterior modifications before being available for F-16 support (Table 2.4-2). It is estimated that approximately $2 to $3 million in building improvements would be required to make JBER capable of basing the F-16 Aggressor squadron.

Table 2.4-2. Facility Projects in Support of 18 AGRS Relocation

Facility Number	Facility Name	Size (SF)	Infrastructure Improvement Project	Project Type
8559	Avionics Facility	34,511	Enlarge roll-up door, pod hoist, repair Heating, Ventilation, Air Conditioning (HVAC) (for special temperature and humidity requirements), install security system, and add 20-foot x 20-foot canopy. Facility located in Clear Zone (CZ) so a waiver will be required.	Modification
8681	Aircraft Fuels Maintenance Facility	112,591	Add 22-foot x 32-foot Hydrazine Servicing Station with underground stainless steel double walled spill containment tank, fire protection, and grounding system.	Addition
9336	Egress Facility	20,037	Build a 20-foot x 50-foot addition required for F-16 canopy maintenance and storage (the canopy contains small explosives that require the facility to be licensed).	Modification / Addition
9477	Band Building	20,993	Create office space for personnel by subdividing interior space.	Modification
10286	Hangar 7	105,815	Repair outer sections of Hangar doors.	Modification
10571	Hangar 3	259,796	Install fire suppression equipment.	Modification
11551	Hangar 1	450,645	Alter office spaces in Hangar.	Modification
N.A.	Towlane to 6263 Corrosion Control	N/A	Patch/repair pavement.	Modification

Personnel - JBER-Elmendorf personnel would increase by 542 positions due to transfers from the relocation of 18 AGRS. This is an employment increase of 3.6%. The additional personnel would operate and maintain the aircraft and provide necessary support services.

Flight Activities - The 18 F-16 primary aircraft assigned to 18 AGRS would use the base runways and fly in the existing JBER airspace (take-off and landings, training, and deployment) similar to how the existing 42 F-22 aircraft currently fly, except for the Simulated Flameout (SFO) that is required training for F-16s only.

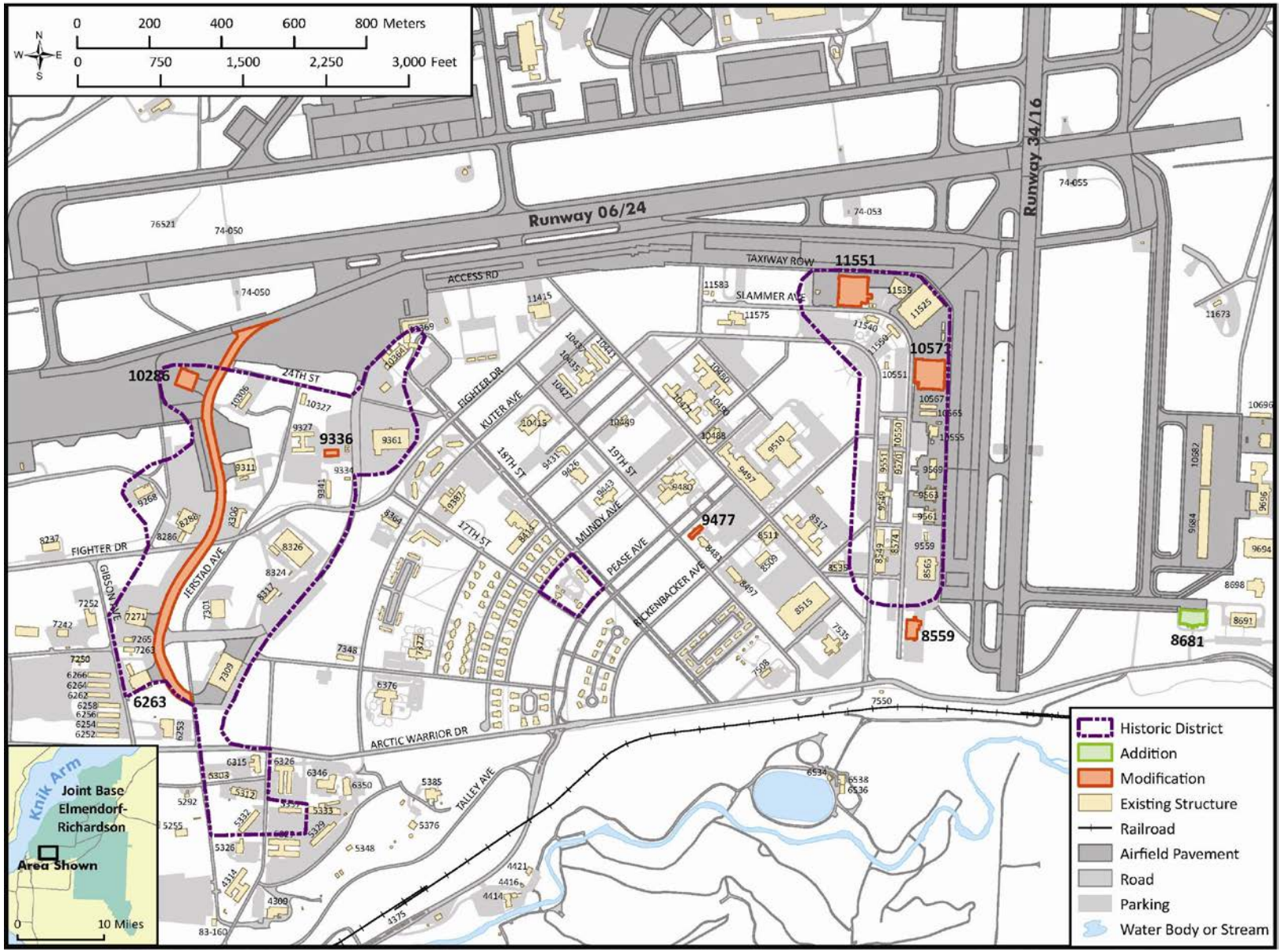

Figure 2.4-2. Facility Projects at JBER in Support of the Proposed 18 AGRS Relocation

An SFO is a practice approach to a runway at an idle throttle that helps prepare a pilot for any emergency condition where loss of power may require such a recovery maneuver. This maneuver starts at a relatively high altitude over the runway (9,500 feet MSL at EAFB) where the aircraft begins a high rate of descent in a circular pattern that aligns to the landing runway. This maneuver may also be conducted as a Straight-In SFO (SISFO) approach to a runway. An SFO can be conducted by one aircraft requiring about 15 minutes of cleared SFO airspace or they may be performed individually by several aircraft over a 1- to 3-hour timeframe. These maneuvers may not always require that all airspace be cleared for each SFO operation.

SFOs performed at JBER would be to Runway 06 or Runway 16 and would generally follow the same pattern as currently exists at EAFB where the horizontal boundaries of Class D airspace support an SFO maneuver, thus not requiring use of any adjacent airspace sectors.

Due to long hours of darkness during the winter months, aircrews operating from JBER can fulfill night-flying requirements without flying during environmental night (after 10:00 PM to 7:00 AM).

JBER 3 WG fighter aircraft would consist of 2 squadrons of F-22s and 1 squadron of F-16s. The F-16s would fly approximately 2,700 sorties per year, with 1,270 sorties from JBER, 630 sorties from EAFB, and 800 sorties from other locations. The F-16s would continue to use Alaskan airspace and ranges as they are currently used.

A sortie is the flight of a single aircraft from takeoff to landing.

JBER F-22s would continue to fly the same percentage (30 %) of sorties after dark (i.e., about one hour after sunset) as required under the Air Force initiative to increase readiness. Aircrews operating from JBER-Elmendorf can normally fulfill the annual night flying requirements during winter months without flying after 11:30 PM or before 6:00 AM on weekdays and after 11:30 PM or before 8:00 AM on weekends and holidays to be consistent with the JBER-Elmendorf noise abatement program.

The drawdown of the 3 F-15 squadrons was completed in 2010 and beddown of 2 F-22 squadrons has reduced total fighter aircraft based at JBER-Elmendorf by 18 primary aircraft. The proposed addition of 18 F-16 primary aircraft would result in the same number (60) of primary aircraft assigned to JBER that were there before 2010.

Table 2.4-3 presents the type and number of fixed-wing aircraft currently assigned to, and proposed for, JBER-Elmendorf. Additional aircraft assigned to JBER include helicopters. This table permits a comparison of current aircraft assignments and proposed F-16 beddown assignments.

Table 2.4-3. Baseline and Proposed Primary Aircraft Assigned to JBER-Elmendorf

Aircraft Type	Number Assigned	
	Baseline	Proposed
F-22	42	42
C-17	8	8
C-130	16	16
C-12	2	2
E-3A	2	2
F-16*	0	18
Total	**70**	**88**

* Currently not assigned to JBER-Elmendorf

JBER-Elmendorf flight operations occur on Runway 06/24 and Runway 16/34. F-22 aircraft assigned to the 90th and 525th fighter squadrons generally use Runway 34 for departures when it is available primarily because use of this runway reduces scheduling conflicts with aircraft landing on Runway 06. During winter months, Runway 16/34 is often closed due to snow accumulation. During these times, all operations are conducted on Runway 06/24. Records indicate that during the months of August through December 2012, approximately 74% of operations departed northbound on Runway 34. Approximately 25% of departure operations were conducted on Runway 06/24, with roughly equal numbers using the eastbound (i.e., Runway 06) and westbound (i.e., Runway 24) direction. Departures southbound on Runway 16 are rare. Since the amount of snowfall is variable from one year to the next and the amount of snowfall drives runway usage patterns, departure runway usage patterns are variable as well. According to pilot interviews, initial arrivals and second approaches are conducted primarily to Runway 06 (95% of annual operations), with relatively fewer arrival operations being conducted to Runway 16 (3%) and Runway 34 (2%). 18 AGRS aircraft would be expected to follow the same pattern of runway usage as the F-22 squadrons.

JBER-Elmendorf also supports a range of transient users. On an annual basis, the installation supported the levels of aviation operations shown in Table 2.4-4. An operation can be a take-off or departure, a landing or arrival, or a touch-and-go within a closed pattern around the airfield.

Table 2.4-4. JBER-Elmendorf Airfield Annual Operations

Fiscal Year (FY)	Number of Operations
2008	40,354
2009	44,561
2010	47,315
2011	34,490
2012	34,889

Operations conducted in recent years have been affected by many factors including beddown of C-17 and C-130 aircraft, drawdown of F-15C aircraft, plus-up of F-22 aircraft, and frequent deployment of assigned units overseas. While annual traffic has been highly variable, annual operations conducted in FY09 and FY10 provide an approximation of the installations expected annual demand.

2.4.1.2 Alternative A Elements Affecting EAFB

Initial reduction of personnel associated with the 18 AGRS proposed relocation would reduce manning by 623 military positions. Follow-on personnel reductions of 928 (749 military and 179 civilian) in the EAFB BOS is projected to result in an end-state of 769 military and civilian personnel by the end of FY3 (PACAF 2012). Any military base, such as EAFB, is continually undergoing an ebb and flow of personnel. The EAFB reduction numbers reflect active duty military and Air Force civilian personnel as of March 2012. The personnel numbers also represent authorized positions. In nearly all cases, the authorized positions are greater than the actual number of personnel at the base due to deployments, training, funding, and/or other limitations on personnel assignments.

There would be no anticipated change to National Guard personnel. Key functions at EAFB, such as security, air traffic control, Army mission support, and other EAFB tenant support would continue. The SATAF projected personnel reductions of EAFB active duty and civilian personnel would be expected to result in additional reductions in on-base employment. These reductions would be expected from reduced

demand and purchase of goods, services, education, and other support activities due to the potential drawdown of active duty military and civilian positions (PACAF 2012). Seasonal employment would be expected to continue at EAFB, especially to provide support for MFEs and other flying exercises.

Facility Re-use or Demolition at EAFB - Should 18 AGRS transfer to JBER, the remaining functions at EAFB could be consolidated to reduce energy and sustainment costs further. The transfer would vacate 17 facilities and make them available for re-use or demolition (Table 2.4-5). Most of the facilities that would be considered "excess capacity" (extra space) due to relocation of 18 AGRS are located on EAFB's taxiway loop (Figure 2.4-3).

Table 2.4-5. EAFB Facilities Vacated or Otherwise Impacted

Facility Number	Facility Name	Size (square feet)	Vacant after F-16 Move?
1232	Nose Dock 7	20,778	No
1306	Aircraft Support Equipment Maintenance	18,710	No Data
1307	Aircraft Organizational Main	4789	Yes
1332	Base Supplies and Equipment Shed	516	Yes
1334	Vertical Tank Storage	5177	Yes
1335	4-Bay Hangar	28,062	Yes
1336	Electronic Countermeasures Pod Shop	6475	Radio Frequency Support
1337	Squadron Operations Building	27,426	Yes
1338	8-Bay Hangar	68,063	Yes
1338	Alternate Fuel Cell	5,858	Yes
1340	Weapons Standardization	17,127	Yes
1341	Avionics Shop and Egress	18,132	Yes
1346	Engine Inspection and Maintenance	22,453	Yes
1347	Squadron Operations/Alternate Command Post	18,622	Yes
1349	Storage Shed	151	Yes
1350	Engine Test Cell	445	Yes
4361	Alternate Mission Equipment Storage	4769	Yes

2.4.1.3 Alternative A Elements Affecting Alaskan Airspace

The Air Force expects that 18 AGRS F-16s would use the existing Alaskan training airspace in the same manner as it is presently used. Operational requirements for the Aggressor mission and performance characteristics of the F-16 dictate that most training activity would occur in existing Alaska Military Operation Areas (MOAs), associated Air Traffic Control Assigned Airspace (ATCAA), and ranges).

Table 2.4-6 summarizes current and projected sorties used by 18 AGRS for its aggressor mission, which would be comparable to existing operations, with some changes in the amount of use of specific MOAs. As Table 2.4-6 indicates, a portion of the current F-16 sorties would shift to training airspace closer to JBER following the proposed relocation. This would primarily affect Fox 3, Stony, and Susitna MOAs, which would experience an increase in sorties; and Eielson, Fox 1 and 2, Viper B, and Yukon 1 MOAs and R-2205, which would experience a decrease in sorties.

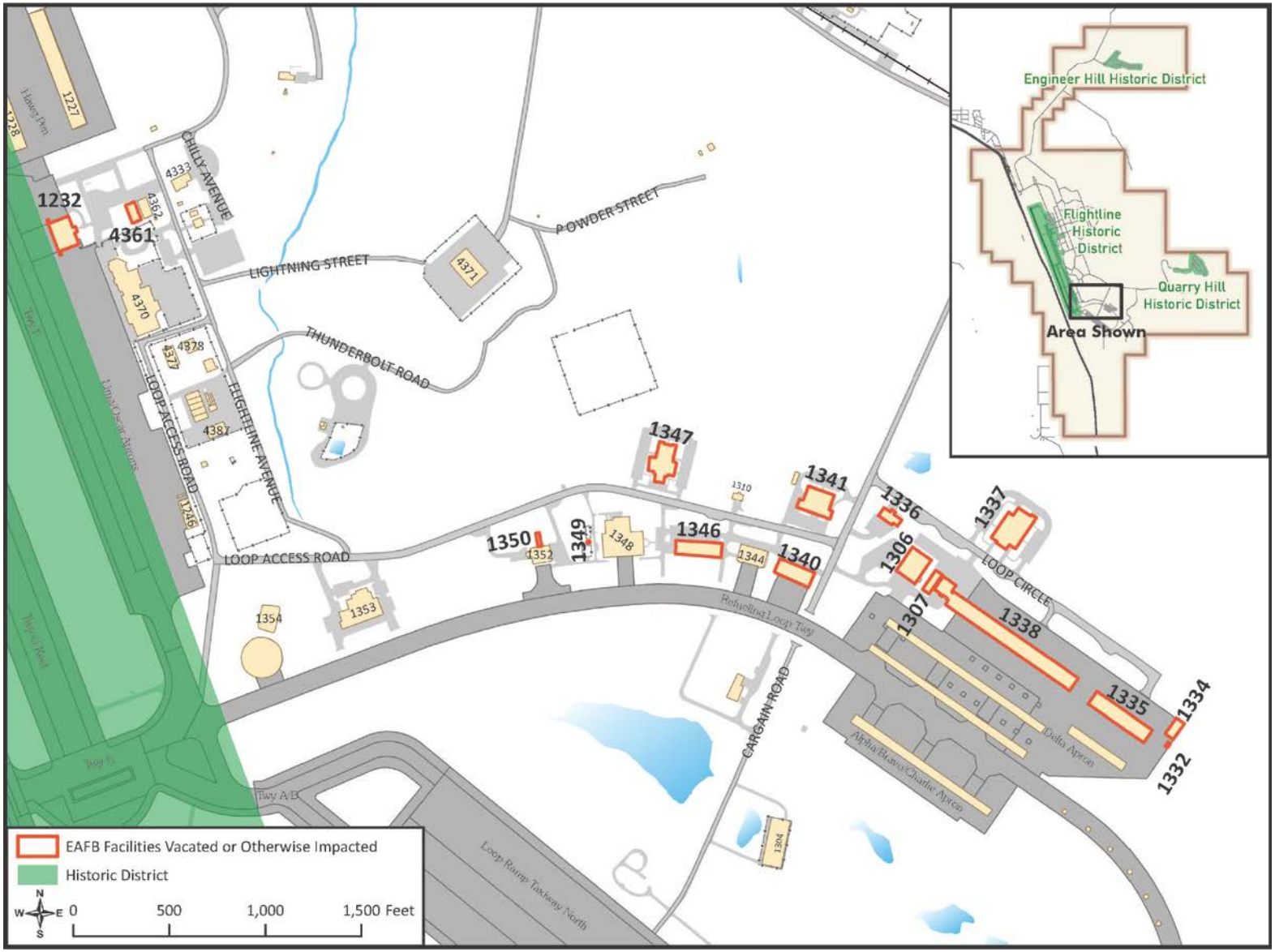

Figure 2.4-3. EAFB Facilities Available for Re-use or Demolition under the Proposed 18 AGRS Relocation

Table 2.4-6. Baseline and Projected Annual Sortie-Operations in Regional MOAs

Airspace Unit	Floor (feet AGL)	Ceiling[1] (feet MSL)	FY12 Total	Baseline			Alternative A			Alternative B MFE Sorties from JBER		
				18 AGRS F-16	Other	Total	18 AGRS F-16	Other [2]	Total	18 AGRS F-16	Other [3]	Total
Birch	500	5,000	3,846	6	3840	3846	6	3840	3846	5	3840	3845
Buffalo	300	7,000	3,846	6	3840	3846	6	3840	3846	5	3840	3845
Delta	3,000	18,000	2,426	145	2,281	2,426	145	2,281	2,426	116	2,281	2,397
Eielson	100	18,000	6,631	180	6,451	6,631	104	6,451	6,555	104	6,451	6,555
Fox 1	5,000	18,000	6,631	325	6,306	6,631	262	6,306	6,568	230	6,306	6,536
Fox 2	5,000	18,000	6,631	180	6,451	6,631	104	6,451	6,555	104	6,451	6,555
Fox 3	5,000	18,000	6,553	486	6,067	6,553	520	6,067	6,587	646	6,067	6,713
Galena	1,000	18,000	27	0	27	27	0	27	27	0	27	27
Gulf of AK	Surface	29,000	876	0	876	876	0	876	876	0	876	876
R-2205			4,365	85	4,280	4,365	0	4,280	4,280	0	4,280	4,280
Naknek ½	3,000	18,000	100	0	100	100	0	100	100	0	100	100
Stony A/B	100	18,000	3,025	0	3,025	3,025	201	3,025	3,226	201	3,025	3,226
Susitna	5,000 AGL or 10,000 MSL (whichever is higher)	18,000	2,015	0	2,015	2,015	201	2,015	2,216	201	2,015	2,216
Viper	500	18,000	5,408	85	5,323	5,408	0	5,323	5,323	0	5,323	5,323
Yukon 1	100	18,000	5,408	400	5,008	5,408	315	5,008	5,323	252	5,008	5,260
Yukon 2[3]	100	18,000	4,272	0	4,272	4,272	0	4,272	4,272	0	4,272	4,272
Yukon 3 A/B[3]	100	18,000	3,391	0	3,391	3,391	0	3,391	3,391	0	3,391	3,391
Yukon 4[3]	100	18,000	3,391	0	3,391	3,391	0	3,391	3,391	0	3,391	3,391
Yukon 5[3]	5,000	18,000	3,266	0	3,266	3,266	0	3,266	3,266	0	3,266	3,266

Notes:

[1] ATCAAs overlie all MOAs in the table.

[2] 'Other' aircraft include F-16 aircraft not assigned to 18 AGRS as well as F-22 and several transient aircraft types.

[3] 18 AGRS does not regularly use this airspace unit.

Key:

18 AGRS=18th Aggressor Squadron
AGL=Above Ground Level
ATCAA=air Traffic Control Assigned Airspace
FY=Fiscal Year
JBER=Joint Base Elmendorf-Richardson
IR=Instrument Route
MFE=Major Flying Exercise
MOA – Military Operation Area
MSL=Mean Sea Level
SUA=Special Use Airspace

2.4.2 Alternative B

Alternative B would also relocate 18 AGRS to JBER and implement all elements and projects discussed under Alternative A with the following changes to MFE and related flight operations:

- In FY1, 18 AGRS would temporarily deploy to EAFB for annual MFEs (+$1.01 million).
- Beginning in FY2, all 18 AGRS flight training, including annual MFEs, would be conducted from JBER, requiring an increase in air-refueling support (+$12.98 million per year).
- Approximately 1,900 18 AGRS sorties would be flown by F-16s at JBER annually.

With the increased costs associated with air-refueling support for 18 AGRS to participate in MFEs from JBER, the 5-year savings would be reduced to approximately $182 million or approximately $45 million less than realized through implementation of Alternative A (Table 2.4-7).

Table 2.4-7. Cost Savings – Alternative B

	In Millions					
	FY1	FY2	FY3	FY4	FY5	FYDP
Manpower	$3.20[1]	$6.50[2]	$48.40[3]	$91.60[4]	$93.90	$243.60
Annual Costs[5]		-$12.98	-$12.98	-$12.98	-$12.98	-$51.92
Permanent Change in Station Costs[6]	-$6.80					-$6.80
Joint Base Elmendorf-Richardson Construction	-$2.05					-$2.05
Total	**-$5.65**	**-$6.48**	**$35.42**	**$78.62**	**$80.92**	**$182.83**

Notes:

1 Includes 81 reduced positions.
2 Full year funding savings from FY1 reductions.
3 Planned reductions of 749 and 169 civilian positions.
4 Full year funding savings fromFY2-FY3 reductions.
5 Includes costs for temporary deployment to Eielson Air Force Base (EAFB) for exercises (FY1) and air refueling, flight hours, personnel costs for staging Major Flying Exercises (MFEs) from Joint Base Elmendorf-Richardson (FY2-Future Year Defense Plan [FYDP]).
6 One-time costs for personnel relocation to Joint Base Elmendorf-Richardson.

2.4.3 Alternative C, No Action

The No Action Alternative would leave 18 AGRS at EAFB. All F-16 flight operations, including MFEs, would continue out of EAFB. All 18 AGRS activities, support unit activities, and future construction and maintenance requirements at EAFB would remain the same as currently programmed. No change in operational capabilities or cost savings would accrue to the Air Force.

2.5 Environmental Impact Analysis Process

NEPA is the basic national requirement for identifying environmental consequences of Federal decisions. NEPA ensures that environmental information is available to the public, agencies, and the decision maker before decisions are made and before actions are taken.

The Environmental Impact Analysis Process (EIAP) involves several steps, which are depicted in Figure 2.5-1. EIAP reviews all information pertinent to the Proposed Action and No Action Alternative and provides a full and fair discussion of potential consequences to the natural and human environment resulting from implementing the proposed relocation of 18 AGRS from EAFB to JBER, Alaska.

2.5.1 Scope of Resource Analysis

The Proposed Action has the potential to affect certain environmental resources, which are identified through communications with state and Federal agencies and Alaska Natives, review of past environmental documentation, and public input. Specific environmental resources anticipated to have the potential for environmental consequences include airspace management and use (including airport traffic), noise, health and safety, air quality, physical resources (earth and water), hazardous materials and waste management, biological resources, cultural resources, land use and recreation, infrastructure, socioeconomics, and environmental justice.

2.5.2 Issues Not Carried Forward For Detailed Analysis

It was determined that the environmental resources listed below do not present a potential for significant environmental impact as there would be no potential for direct, indirect, or cumulative impacts, and therefore are not carried forward for detailed analysis in this EIS.

Aesthetics and Visual Resources – Visual resources are defined as the natural and manufactured features that constitute the aesthetic qualities of an area. Construction and renovated structures associated with the Proposed Action would be located within the existing developed area of the installation.

2.5.3 Public and Agency Input

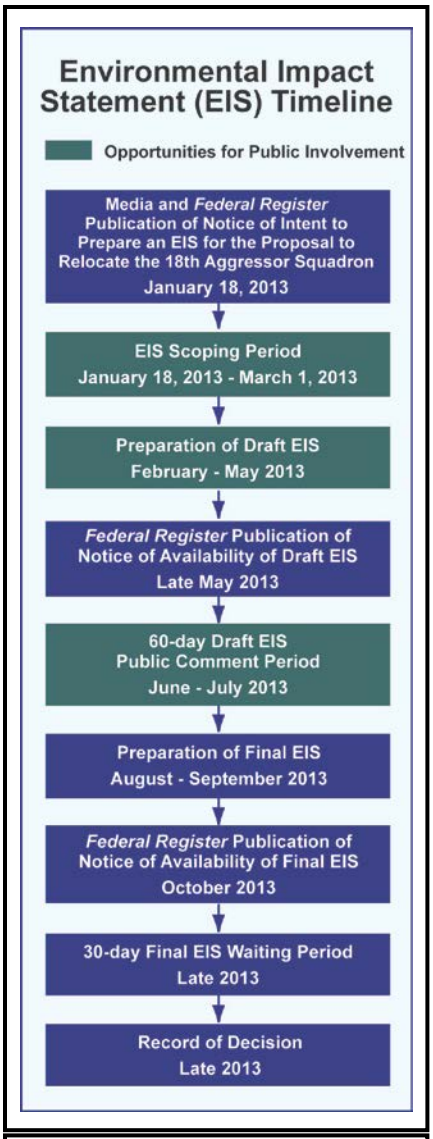

Figure 2.5-1. EIS Timeline

Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the Interagency and intergovernmental Coordination for Environmental Planning (IICEP) process, the proponent must notify concerned Federal, state, and local agencies and allow them sufficient time to evaluate potential environmental impacts of a proposed action. Comments from these agencies are subsequently incorporated into the EIAP. An IICEP list of relevant Federal, state, and local agencies are provided in Appendix A.

In its October 1999 annotated *Department of Defense American Indian and Alaska Native Policy*, which was formulated to address DoD responsibilities to native groups as derived from a number of Federal statutes and policies, DoD clarified its policy for interacting and working with Federally recognized American Indian and Alaska Native governments (DoDI 4710.02). Under this policy guidance, proponents must provide timely notice to, and consult with, tribal governments prior to taking any actions that have the potential to affect protected tribal resources, tribal rights, or Indian lands. Tribal input must be solicited early enough in the planning process that it may influence the decision to be made. For this EIS, all Federally-recognized Alaska Native Tribes beneath the Alaskan SUA received an IICEP letter

from the Air Force in January, inviting them to consult on a government-to-government basis and participate in the EIAP (Appendix A). The request to participate included an invitation to attend the nearest scoping meeting and communicate directly with the Air Force NEPA team. JBER followed the scoping letter with an additional letter to Alaska Native tribes, as well as Alaska Native Corporations, requesting input on any issues of concern to Alaska Natives. No responses have been received at this time. The Air Force will continue to engage the Federally-recognized Alaska Native tribes, as well as Alaska Native Corporations in consultation throughout the EIAP.

The Air Force is the proponent for this proposal and is the lead agency for preparation of the EIS. There are no cooperating agencies. As defined in 40 CFR 1508.5, a cooperating agency is "any Federal agency other than a lead agency that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. A state or local agency of similar qualifications or, when the effects are on a reservation, an Indian Tribe may, by agreement with the lead agency, become a cooperating agency."

Scoping (40 CFR 1501.7) for the EIS was conducted from January 18, 2013 through March 1, 2013. The Air Force held open-house style public scoping meetings in Palmer, Anchorage, Fairbanks, and North Pole, Alaska on February 4, 5, 6, and 7, 2013, respectively. Table 2.5-1 presents details on the public scoping meetings.

Table 2.5-1. Public Scoping Meetings

Date	Time	Location
Feb. 4, 2013	6:00 – 8:00 p.m.	Alaska State Fairgrounds 2075 Glenn Highway, Hoskins Building, Palmer, Alaska
Feb. 5, 2013	6:00 – 8:00 p.m.	Tyson Elementary School 2801 Richmond Avenue, Anchorage, Alaska
Feb. 6, 2013	12:00 – 2:00 p.m. and 6:00 – 8:00 p.m.	Fairbanks Princess Riverside Lodge 4477 Pikes Landing Road, Edgewater & Jade Rooms Fairbanks, Alaska
Feb. 7, 2013	6:00 – 8:00 p.m.	North Pole High School 601 North Pole High School Boulevard, North Pole, Alaska

During all of the scoping meetings, the public was encouraged to provide written comments and given the opportunity to provide oral comments recorded by a stenographer. Throughout the scoping period, the Air Force actively solicited comments through press releases, newspaper ads, flyers, and information regarding the proposal was sent to Federal, state, and local agencies. These entities were solicited to ensure that their concerns and comments about the proposal were included in the analyses. The Air Force initiated the IICEP process by submitting letters to local, state, Alaska Native tribal, and Federal agencies informing them of the Air Force's intent to prepare the EIS. To the extent possible, scoping comments are used to shape the analysis and focus the issues within this EIS. Comments on the Proposed Action and Alternatives will continue to be accepted throughout the environmental process.

Table 2.5-2 presents issues identified by the public, Alaska Natives, and government entities during scoping for this EIS. Column 4 provides the reader with a reference to the sections in the EIS where the response may be found.

Table 2.5-2. Summarized Scoping Comments

Resource Area/Category	Number of Comments	% of Total Comments	EA Section
Airspace Management and Use	92	6.1	Sections 3.1, 4.1
Air Quality	2	0.1	Sections 3.4, 4.4
Biological Resources	22	1.5	Sections 3.1, 4.1
Cultural Resources	2	0.1	Sections 3.8, 4.8
Cumulative and Mitigations	8	0.5	Chapter 5
Environmental Justice	54	3.6	Sections 3.12, 4.12
General	19	1.3	Sections 3.1, 4.1
General Observation	3	0.2	Not Applicable
General Opposition	134	8.9	Not Applicable
General Support	3	0.2	Not Applicable
Hazardous Materials	8	0.5	Sections 3.6, 4.6
Infrastructure	55	3.7	Sections 3.10, 4.10
Land Use and Recreation	6	0.4	Sections 3.9, 4.9
National Environmental Policy Act	26	1.7	Section 2.7
Noise	15	1.0	Sections 3.2, 4.2
Proposed Action/Description of Proposed Action and Alternatives	381	25.3	Chapter 2
Purpose and Need	11	0.7	Chapter 1
Physical Resources (Soils and Water)	3	0.2	Sections 3.5, 4.5
Safety	22	1.5	Sections 3.3, 4.3
Subsistence	4	0.3	Sections 3.8, 3.9, 4.8, 4.9
Socioeconomics	598	39.7	Sections 3.11, 4.11
Transportation	37	2.5	Sections 3.10, 4.10
TOTAL	**1505**	**100.0**	

2.6 Regulatory Compliance

This EIS analyzes the potential environmental consequences associated with the Proposed Action to relocate 18 AGRS from EAFB to JBER, Alaska according to the requirements of NEPA (42 USC 4321 *et seq.*), CEQ regulations (40 CFR 1500–1508), and *The Environmental Impact Analysis Process* (32 CFR 989 *et seq.*). NEPA is the basic national charter for identifying environmental consequences of major Federal actions. NEPA ensures that environmental information is available to the public, agencies, and the decision makers before decisions are made and before actions are taken.

2.6.1 National Environmental Policy Act (NEPA)

In accordance with NEPA of 1969 (42 USC 4321-4347), CEQ *Regulations for Implementing the Procedural Provisions of NEPA* (40 CFR 1500-1508), and 32 CFR 989, *et seq.*, *EIAP* (formerly promulgated as AFI 32-7061), the Air Force is preparing this EIS to consider the potential consequences to the human and natural environment that may result from implementation of this proposal.

NEPA requires Federal agencies take into consideration the potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore, and enhance the environment through well-informed Federal decisions. The CEQ was established under NEPA to implement and oversee Federal policy in this process. The CEQ subsequently issued the *Regulations for Implementing the Procedural Provisions of the NEPA* (40 CFR 1500–1508) (CEQ 1978).

The activities addressed within this document constitute a Federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action includes the development of the EIS to address the environmental issues related to the proposed activities. The Air Force implementing procedures for NEPA are contained in 32 CFR 989 *et seq*., *EIAP*.

2.7 Environmental Comparison of Alternatives

Table 2.7-1 summarizes the consequences at JBER-Elmendorf, EAFB, and the training airspace of implementing the Proposed Action or Alternatives. This summary is derived from the detailed analyses presented in Chapter 4.0. Chapter 5.0 addresses cumulative consequences and finds that there are cumulative environmental consequences resulting from a decision to relocate 18 AGRS to JBER when added to other past, present, or reasonably foreseeable future Federal and non-Federal actions.

Table 2.7-1. Summary of Impacts by Resource

Resource	Alternative A	Alternative B	Alternative C, No Action
Airspace Management and Use (Section 4.1)	***JBER -*** There would be 1,270 more annual sorties at JBER with minimal impacts on current uses of the JBER airfield environment and the surrounding Class D airspace and Anchorage, Alaska Terminal Area (AATA). Procedures for coordinating Simulated Flame Out (SFO) requests would be outlined in a Letter of Agreement between JBER and the Federal Aviation Administration (FAA) to ensure those maneuvers do not conflict with other air traffic operations and priorities. To the maximum extent possible, SFOs would only be requested during lower density air traffic periods when they would have less potential to affect civil aviation activities in this area. ***EAFB -*** There would be approximately 1,270 fewer annual sorties from EAFB and no changes to use and availability of EAFB as an emergency or alternate airfield for FAA Fairbanks. ***Airspace -*** There would be negligible effects on Military Operations Area (MOA)/Air Traffic Control Assigned Airspace (ATCAA) and Restricted Areas (RAs) used by the F-16s. No changes to how the airspace is currently managed would be needed.	***JBER -*** There would be approximately 1,900 more annual sorties from JBER, but impacts would be similar to Alternative A. ***EAFB -*** There would be 1,900 fewer annual sorties at EAFB but impacts would be similar to Alternative A. ***Airspace -*** Same as for Alternative A.	Existing terminal airspace, MOA, range, and other airspace usage would not change. F-16s would continue to train from EAFB and in the airspace as they do today.
Noise (Section 4.2)	***JBER -*** Off-installation acres exposed to noise levels greater than 65 dB L_{dn} would increase from 1,303 to 1,328 and persons in Mountain View from 408 to 831 persons. On-base noise would increase to include 2 additional residences affected by noise greater than 65 dB L_{dn} and 2 more airfield buildings affected by noise greater than 80 dB L_{dn}. ***EAFB -*** Noise levels would be reduced while Major Flying Exercises (MFEs) are not under way. During MFEs, noise levels would stay the same as the No Action Alternative. ***Airspace -*** Noise levels would imperceptibly increase by less than 1 decibel (dB) under MOA/ATCAA airspace units Fox 3, Naknek, Stony, and Susitna with increased operations. An average of up to 1 additional sonic boom per month could occur under certain approved training airspaces.	***JBER -*** Off-installation acres exposed to noise levels greater than 65 dB L_{dn} would increase from 1,303 to 1,340 and persons in Mountain View from 408 to 1,079 persons. On-base noise would increase to include 5 more acres of residential land affected by noise greater than 65 dB L_{dn} and 7 more airfield buildings affected by noise greater than 80 dB L_{dn}. ***EAFB -*** Noise levels would be reduced relative to the No Action Alternative. ***Airspace -*** Same as for Alternative A.	Noise contours and conditions at JBER using topography not previously assessed. Existing condition has identified 1,303 off-installation acres and 408 persons in Mountain View exposed to noise levels greater than 65 dB L_{dn}. Continuation of current noise levels from subsonic and supersonic flight in training Airspace. Continued sonic booms under approved airspaces.
Health and Safety (Section 4.3)	***JBER -*** No change in ground safety conditions, munitions, or personnel safety. Hydrazine containers for F-16 emergency power units would be stored in a specially designated and constructed facility and would be handled by certified personnel to ensure safety. Increase in JBER flight activity would result in slightly higher Bird-Aircraft Strike Hazard (BASH). ***EAFB -*** No significant impacts to airfield safety conditions, BASH, munitions, or personnel safety. ***Airspace -*** No impacts.	***JBER -*** Same as for Alternative A. ***EAFB -*** Same as for Alternative A. ***Airspace -*** Same as for Alternative A.	Continuation of current safety conditions at JBER-Elmendorf. No change from existing training by F-16s in Airspace. Continued use of chaff and flares in training Airspace.

Table 2.7-1. Summary of Impacts by Resource

Resource	Alternative A	Alternative B	Alternative C, No Action
Air Quality (Section 4.4)	***JBER -*** Construction emissions would produce localized, short-term elevated air pollutant concentrations. This localized elevation would be short-term and would not be expected to adversely impact air quality or visibility. Operational emissions are projected to be minimally higher. For example, nitrogen oxide and sulfur oxide increase 0.63% and 0.49 %, respectively. Aircraft emissions of carbon dioxide equivalents are projected to increase by 0.76% at JBER. Air quality, including greenhouse gas emissions, would not be significantly impacted. The action would not cause, or contribute to, a new National Ambient Air Quality Standards violation. **EAFB -** Air quality would not be significantly impacted. ***Airspace -*** Flight operation altitudes would not result in emission impacts. No significant impact to Greenhouse gas emissions.	***JBER -*** Construction emissions are the same as for Alternative A. Aircraft emissions of carbon dioxide equivalents are projected to increase by 1.03% at JBER. Air quality would not be significantly impacted as noted for Alternative A ***EAFB -*** Air pollutant emissions would decrease at EAFB. ***Airspace –*** Negligible impacts.	Aircraft operations would not change from current activity. There would be no new construction and no change from current emissions.
Physical Resources (Section 4.5)	***JBER -*** A total of less than 1 acre of soil disturbance in 2 locations. ***EAFB –*** Demolition projects would affect more than 1 acre and require a site specific Stormwater Pollution Prevention Plan. Floodplain management would apply to one building in the 100-year flood zone. No adverse effects on earth or water resources, ***Airspace -*** No impacts.	***JBER -*** Same as for Alternative A. ***EAFB -*** Same as for Alternative A. ***Airspace -*** Same as Alternative A.	No change from existing conditions.
Hazardous Materials and Waste Management (Section 4.6)	**JBER -** No significant impact on hazardous materials, hazardous wastes, or the Environmental Restoration Program (ERP). Existing hazardous waste accumulation sites and procedures are adequate to handle the changes anticipated with the expected 18 additional primary aircraft. Facility additions will take place to accommodate hydrazine servicing and maintenance. ***EAFB -*** No significant impact on hazardous materials, hazardous wastes, or the ERP. Existing hazardous waste procedures s are in place to handle asbestos, lead based paint, and other materials anticipated with Alternative A demolition. **Airspace -** No significant impact on hazardous materials or hazardous wastes in training airspace.	***JBER -*** Same as for Alternative A. ***EAFB -*** Same as for Alternative A ***Airspace -*** Same as for Alternative A.	No change from existing use of hazardous materials and generation of hazardous waste.
Biological Resources (Section 4.7)	***JBER –*** Facility modifications and increased airspace activity would result in minimal impacts to biological resources on JBER. Air Force and National Marines Fishery Service are consulting on potential effects to Cook Inlet beluga whale population. No significant effect on any Federally listed, candidate, or proposed species eagles, and/or designated or proposed critical habitat is anticipated. ***EAFB -*** Possible demolition would not affect vegetation or wildlife habitat. Construction contract specifications would further minimize potential effects to local biological resources. ***Airspace –*** Possible minor effects to Endangered Species Act (ESA)-listed species from noise or visual presence. No impacts to biological resources from continued use of chaff and flares under Alternative A.	***JBER -*** Same as for Alternative A. ***EAFB -*** Same as Alternative A. ***Airspace -*** Same as Alternative A.	Biological resources would not change from existing conditions.

Table 2.7-1. Summary of Impacts by Resource

Resource	Alternative A	Alternative B	Alternative C, No Action
Cultural Resources (Section 4.8)	***JBER -*** No significant impacts are expected to historic properties or traditional properties at JBER. JBER will consult with Alaska's State Historic Preservation Office (SHPO) to reduce, minimize, or avoid impacts in compliance with the National Historic Preservation Act (NHPA) Section 106 for renovations in the historic district. ***EAFB -*** No significant impacts are expected to historic properties or traditional properties at EAFB. EAFB will consult with Alaska SHPO in compliance with NHPA Section 106 for building demolitions. ***Airspace -*** No impacts to historic properties under the airspace. Increase in of up to 1 sonic boom per month under approved airspace, when discernible, may annoy users of land, but would not be expected to affect Alaska Native subsistence hunting.	***JBER -*** Same as Alternative A. ***EAFB -*** Same as Alternative A. ***Airspace -*** Same as Alternative A.	No change from existing conditions.
Land Use and Recreation (Section 4.9)	***JBER -*** No change in land use and recreation on base. Some extension of the 65 dB L_{dn} over land noise contours from 266 acres to 281 acres. Residential land use requires sound attenuation to be compatible in over 9 additional acres of residential land and approximately 4 acres of transportation land to the west around the docks. Industrial land uses would be compatible with existing and projected noise levels. About 2.8% increase in JBER employment would result in slight increases in usage of local recreational facilities, but is not expected to exceed the resource capacity. ***EAFB -*** Noise levels and traffic would be reduced at EAFB and in surrounding communities. Possible reduction in support for recreational areas. ***Airspace -*** No impact to land use or land use patterns under the Airspace. Recreationists, hunters, and fishermen may discern an increase up to 1 sonic boom per month under approved training airspace.	***JBER -*** No change in land use and recreation on base. Some extension of the 65 dB L_{dn} noise contours from 266 acres to 289acres. Other impacts same as Alternative A. ***EAFB -*** Same as for Alternative A. ***Airspace -*** Same as Alternative A.	No change to land use and recreation at JBER, EAFB, or beneath training airspace. JBER would continue to have 266 over land acres exposed to 65 dB L_{dn} or higher noise levels.
Infrastructure (Section 4.10)	***JBER -*** Utilities are adequate to support the proposed 18 AGRS relocation. Increased JBER employment and commuters by 2.8% could increase wait times at already congested gates during high demand periods. Depending on housing location decisions, an addition of less than 400 daily trips on the Glen Highway would be less than 1% of the current traffic load. Congestion can already occur, especially in periods of extreme weather, and a very small increase in traffic would not be expected to result in any discernible change to traffic flow. The small amount of traffic change would not be expected to increase moose-car accidents on the highway. ***EAFB -*** Water distribution within the above ground utilidor must be maintained at design temperatures to prevent damage. Water pumped into ponding areas to prevent freezing creates localized ice fog. A reduced EAFB water demand could result in a greater incidence of potentially hazardous ice fog in winter months. Wastewater systems design changes could be required to maintain wastewater treatment quality during low flow or high dilution periods. Capping utilidor lines could reduce coal consumption, although heating systems are continuously run in cold weather to avoid risks of heating system failure and could have continuing high energy requirements. Reduced electrical system loads, roadway use, and taxiway use could have beneficial effects. ***Airspace -*** There would be no infrastructure impacts under the airspace.	***JBER -*** Same as Alternative A. ***EAFB -*** Same as for Alternative A. ***Airspace –*** No effect.	No change from existing conditions, which include adequate capacity at JBER and continued cold weather actions to protect utilities at EAFB.

Table 2.7-1. Summary of Impacts by Resource

Resource	Alternative A	Alternative B	Alternative C, No Action
Socioeconomics (Section 4.11)	***JBER -*** JBER would not be significantly impacted by the proposed addition of approximately 1,200 Air Force accompanied, unaccompanied, and family members to the Anchorage area. A 0.3% increase in population to the Municipality of Anchorage would not be noticed. Between $1 million and $2 million in facility modification costs would generate between 5 and 33 temporary construction jobs and between $775,000 and $2.3 million in indirect and induced income. Air Force personnel increase of 542 positions, or a 3.6% increase in base employment, would create approximately 338 indirect and induced jobs in the community. The 306 dependent students would not substantially affect local schools. Depending on market conditions, up to 150 relocated personnel would not be able to obtain housing in the Anchorage area that met Air Force cost, quality, and commute standards. Additional commute and/or housing costs could result for those personnel and is a potential impact to the personnel and associated families. ***EAFB -*** EAFB reductions result in a decline of 3,154 direct and indirect Fairbanks North Star Borough (FNSB) jobs and a net decline of 1,224 jobs after out-migration of military families. Civilian, Non Appropriated Fund (NAF), Base Exchange, and regional indirect employees are assumed to remain unemployed in the FNSB. Unemployment in the FNSB would increase from 6.2% to 8.9%, which is greater than experienced in the past decade. Estimated EAFB contracting is projected to decline from a past average of $90 to $45 million per year in the future. Contracting reduction is reflected in job decline. An estimated $2.1 million of the contracts are with Alaska Native Corporations. EAFB Alternative A would have an estimated 100 seasonal jobs to support MFEs and 18 AGRS Temporary Duty (TDY) assignments. FNSB population after relocation would be flat or decline slightly prior to continuing growth in 4 to 5 years. The combination of EAFB personnel reductions and maintaining on-base Military Family Housing (MFH) occupancy would reduce demand for off-base owner housing by up to 246 units or an approximate 9 month's supply of houses for sale. Rental unit demand could be reduced by up to 1,428 units, which would double local rental vacancy rates from 9% to 17% to 20%. Residents of owner-occupied housing, including off-base military personnel, could lose a substantial portion of their investment. Over the next 4 to 5 years, housing prices and rents would be expected to stabilize at lower than current levels. Reduced school enrollments of at least an estimated 786 students would result in an excess of 2.5 schools and 80 to100 teachers and administrators in the Fairbanks North Star Borough School District (FNSBSD). FNSBSD is responsible for EAFB schools and, in the face of declining budgets, the FNSBSD would likely be forced to close schools. If on-base schools were closed, the Air Force would pay costs to bus students off base. EAFB schools could be expected to close due to budget constraints and EAFB personnel and others occupying on-base MFH would have students that needed to be bussed off-base. Overall impacts to employment, education, and housing would continue for 4 or more years. ***Airspace -***Socioeconomic activities under the training airspace are not expected to be affected. An increase of up to 1 sonic boom per month would not be expected to affect activities under the airspace or local economies that rely on subsistence resources.	***JBER -*** There would be no discernible socioeconomic distinction between Alternative A and Alternative B at JBER. ***EAFB -*** Alternative B impacts at EAFB would be basically the same as Alternative A with all the impacts described for housing and education. Alternative B would have the same employment impacts with a seasonal demand of between 80 to 90 employees because 18 AGRS personnel would not be TDY to EAFB for 12 weeks of MFEs. ***Airspace -*** Same as for Alternative A.	***JBER -*** No change from existing conditions. There are no costs associated with facility modifications or benefits of temporary construction jobs. No F-16 induced change in base personnel. ***EAFB -*** No change from existing conditions.

Table 2.7-1. Summary of Impacts by Resource

Resource	Alternative A	Alternative B	Alternative C, No Action
Environmental Justice (Section 4.12)	***JBER -*** Existing 65 dB L_{dn} noise in the 74% minority and 12% low income community of Mountain View and associated elementary school would expand from approximately 408 persons to approximately 831 persons. Children attending the Mountain View Elementary School and/or residing under the existing and expanded 65 dB L_{dn} noise contours could experience health risks by existing and/or increased noise levels. At this noise level, schools are not considered a compatible land use, according to DoD guidelines, unless the structure provides at least 25 dB outdoor-to-indoor noise level reduction. ***EAFB -*** No disproportionate impacts to disadvantaged populations. The estimated reduction of contracts from an annual average of $90 million per year to an annual average of $45 million per year could have the potential to reduce by one half (to $1.05 million) service contracts with Alaska Native Corporations. For service contracts, $1.05 million translates to an approximate reduction in 20 direct, indirect, and induced FNSB jobs. Children living in MFH on EAFB and east of EAFB could incur longer bussing and less available academic-related after school time with school closings. ***Airspace -*** Alaska Natives who live under training airspace are representative of rural populations throughout the state. Persons living under the airspace, particularly the Stony MOAs could notice up to an additional 1 sonic boom per month. No disproportionately high or adverse impacts to minority or low-income communities under the airspace would result from Alternative A. There would be no health or safety risks to children	***JBER -*** Existing 65 dB L_{dn} noise in highly minority and disadvantaged community of Mountain View and associated elementary school would expand from approximately 408 persons to approximately 1,079 persons. ***EAFB -*** Same as Alternative A. ***Airspace -*** Same as for Alternative A.	***JBER -*** Approximately 408 persons off-base in the Mountain View Community, who are primarily minority and/or low income, are exposed to 65 dB L_{dn} noise levels or greater. This impact estimate not been previously assessed is derived from topographic components of the noise model. ***EAFB -*** Same as current conditions. ***Airspace -*** Same as current conditions.

3.0 AFFECTED ENVIRONMENT

This chapter contains information on the environment potentially affected by the action alternatives of the Proposed Action and No Action Alternative. NEPA requires that this analysis address those areas and components of the environment with the potential to be affected. Locations and resources with no potential to be affected need not be analyzed. Resource definitions, as well as the regulatory setting and methodology of analysis, are found in Appendix B.

For the purpose of this EIS, the term JBER refers to the entire combined base. The term JBER-Elmendorf refers to the historic Elmendorf AFB, which is primarily affected by proposed relocation of the 18 AGRS from EAFB to JBER, AK. JBER- Richardson refers to the historic Fort Richardson portion of JBER.

Each environmental resource discussion begins with an explanation of the potential geographic scope of any potential consequences or the Region of Influence (ROI). For most resources in this chapter, the ROI is defined as the area affected by airfield operations, the Municipality of Anchorage and Mat-Su, the Fairbanks North Star Borough (FNSB), or the existing military training airspace where aircraft train. In this EIS, the airfield and its vicinity are termed JBER-Elmendorf. For some resources (such as noise, air quality, and socioeconomics), the ROI extends over a larger jurisdiction unique to the resource.

The existing condition of each relevant environmental resource is described to give the public and agency reviewers a meaningful point to compare potential future environmental, social, and economic effects. The baseline conditions described in this chapter constitute conditions under the No Action Alternative.

3.1 Airspace Management and Use

The airspace management and use ROI considered the JBER and EAFB airfields and their surrounding designated airspace areas and the SUA areas where the F-16s train. These airspace areas were examined relative to the potential effects the Proposed Actions may have on other airspace uses and the policies/procedures that have been established to ensure a safe operating environment for all concerned within each area.

3.1.1 JBER

The JBER airfield is contained within Class D airspace (Figure 3.1-1) that extends from the surface (212 feet Mean Sea Level [MSL]) up to and including 3,000 feet Above Ground Level (AGL). As described in Appendix C, Airspace, Class D is that airspace surrounding those airports having an operational control tower where all aircraft operating within this area must establish communications with the tower. The JBER control tower manages airfield and air traffic operations within this Class D airspace. This Class D airspace is adjacent to the larger Class C airspace area surrounding the Anchorage International Airport to the southwest and Restricted Area (RA) R-2203 over JBER-Richardson to the northeast as shown in Figure 3.1-1. Class C airspace is the larger airspace area that surrounds higher use airports that have an operational control tower and which are serviced by a terminal radar approach control facility (Anchorage Approach) All aircraft must be in communication with the Air Traffic Control (ATC) facility prior to entering, and while operating within, this Class C airspace.

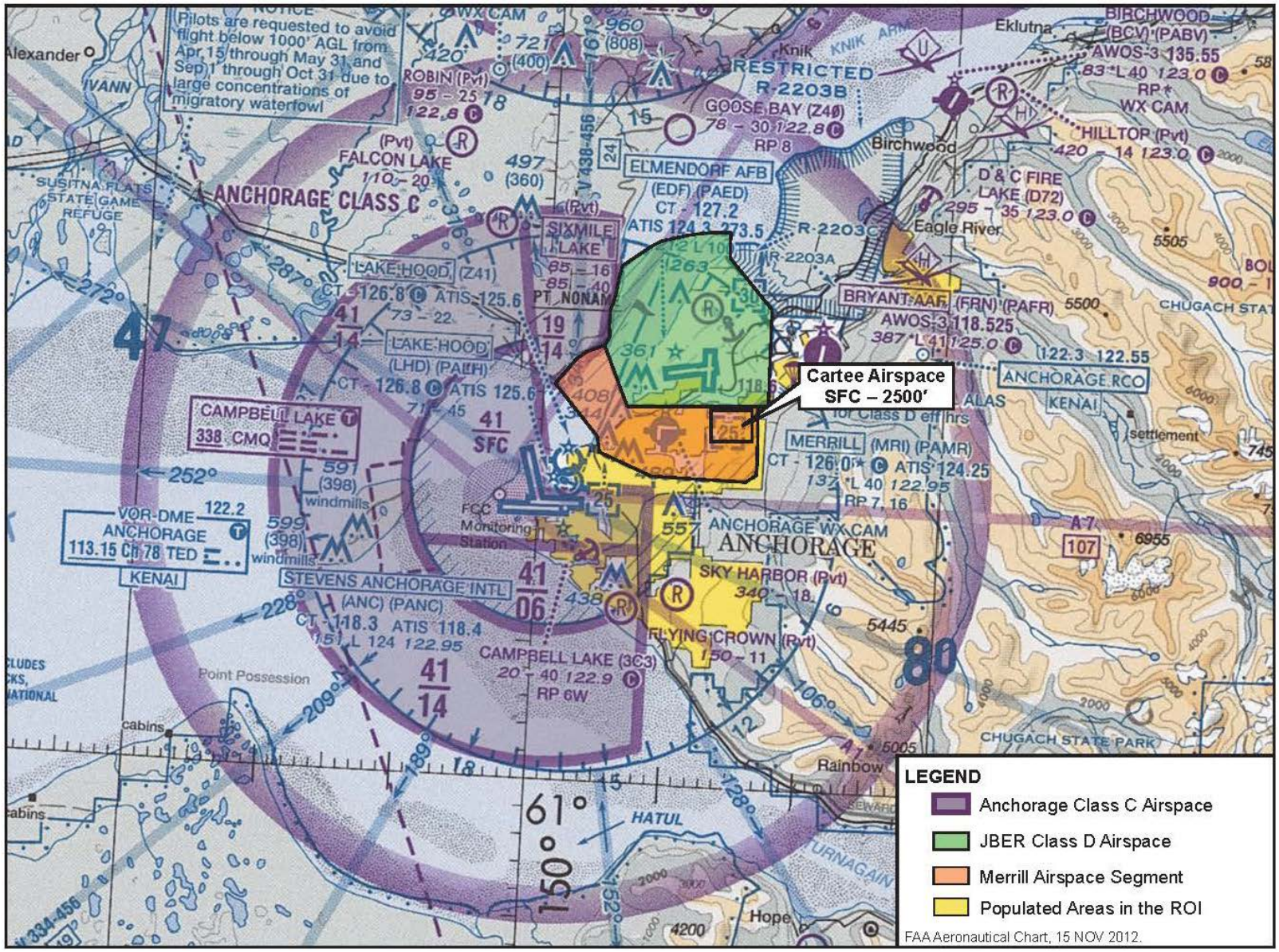

Figure 3.1-1. Anchorage Class C and JBER-Elmendorf Class D Airspace

JBER has two intersecting runways where differing wind speeds/directions, availability of instrument approach/departure procedures, aircraft types, air traffic conditions, and other such factors can dictate which runway/runway direction is used for aircraft landings and takeoffs on a real-time basis. Runways are normally used in both directions where each end is designated by a number between 01 and 36 based on the magnetic directional heading of each end. For instance, a north-south oriented runway is designated as Runway 18 to the south (180 degrees) while the other end to the north (360 degrees) is Runway 36. Therefore, the directional orientation of the two JBER runways is such that one is designated Runway 06 with its reciprocal Runway 24, while the other is Runway 16 with its reciprocal Runway34. As noted in Section 2.5.1, most airfield operations are conducted on Runway 06 (landings/takeoffs to the northeast). This airfield is open on a continuous basis.

A Tactical Navigation (TACAN) system provides instrument approach procedures to Runway 06 and Runway 16 and instrument departures for Runways 06, 24, and 34. An Instrument Landing System (ILS) provides a precision approach capability for Runway 06. Two Standard Terminal Arrival Routes (STARs) provide another option for aircraft to navigate to the airfield when returning to the base. JBER has also established stereo routes for military aircraft transitioning to/from the different SUA where training activities are conducted. These different routes provide a safe and efficient means for ATC to segregate JBER arriving and departing military aircraft from other air traffic operating within this region.

The Class C airspace surrounding the general Anchorage region (Figure 3.1-1) is managed and controlled by the Federal Aviation Administration (FAA) -operated Anchorage Terminal Radar Approach Control (TRACON), which provides radar ATC services to JBER, Anchorage International Airport, Merrill Field, and other airfields within this airspace jurisdiction. The FAA has designated terminal area airspace that is subdivided into 6 sectors to more effectively manage and control all military and civilian aircraft operating within the Anchorage complex as described in Appendix C, Airspace. Each subdivision has rules that specify those altitudes and flight restrictions pilots must adhere to when operating through these airspace segments. The terminal airspace segments and associated requirements are published in aeronautical charts and publications. The JBER tower works closely with Merrill Field, Anchorage Approach, and the Anchorage Air Route Traffic Control Center, as necessary, when coordinating the safe passage of military aircraft through the areas encompassed by this airspace.

The Cartee Airspace portion of the Merrill Segment shown in Figure 3.1-1 is requested at times when extended pattern airspace is needed for fighter aircraft recoveries to JBER Runway 16 or 34. Pilots must request this extension in sufficient time (at least 15 minutes) to allow JBER and Merrill towers to coordinate the release of this airspace. Once approved, this extension is terminated as soon as the last aircraft has exited the Cartee airspace. This arrangement is a cooperative effort that helps accommodate JBER fighter traffic to this runway while not imposing on Merrill Field flight activities.

The annual number of airfield operations conducted at JBER over the past 5 years is shown in Table 2.4-4. Airfield operations account for each time every aircraft crosses the runway arrival and departure thresholds for a take-off, landing, and practice maneuvers (low approaches and touch and go's). Annual airfield operations and associated airspace uses will fluctuate over time as aircraft realignments, mission requirements, budget considerations, and other such factors may affect operational levels at any military airfield. In most cases, ATC system capabilities and staffing are normally maintained at levels that can accommodate those fluctuations.

3.1.2 EAFB

The EAFB airfield is surrounded by Class D airspace that extends from the surface up to and including 3,000 feet AGL. This airspace is controlled by the EAFB Control Tower. This airfield consists of one runway (Runways 14 and 32) that supports both routine training and Red Flag and other exercise activities conducted at this location. TACAN, ILS, STARs, and stereo arrival/departure routes established for Runway 14 and 32 provide a safe and efficient way for ATC to segregate EAFB arriving and departing aircraft from other air traffic in the Fairbanks region. Approximately 22,000 airfield takeoff and landings are conducted annually at EAFB by the F-16s, KC-135s, and different transient aircraft types participating in the Red Flag exercises.

The Fairbanks Terminal Radar Service Area (TRSA) is made up of Class C/E airspace around the Fairbanks region and the EAFB Class D area. TRSA includes designated areas and altitudes within which the Fairbanks FAA TRACON provides radar services for all Instrument Flight Rules (IFR) and participating Visual Flight Rules (VFR) aircraft operating within this TRSA. TRSA boundaries and upper/lower altitudes of each segment are shown on Sectional Aeronautical charts. While not mandatory, VFR pilots may contact Fairbanks Approach to request radar flight following services where ATC will separate them from other VFR and IFR aircraft operating within this airspace structure. This service provides an added measure of safety in areas where higher density air traffic conditions may exist.

3.1.3 Training Airspace

The availability of the varied SUAs shown in Figure 2.4-2 and ranges encompassed by the JPARC provides the Air Force with a unique training environment not available in other areas of the U.S. The aircrews and aircraft types participating in the annual Red Flag-Alaska and Distant Frontier exercises are able to fly against a variety of Alaska-based aircraft. These exercises mimic real-world deployments to unfamiliar territory where the local forces have the advantage of airspace familiarity. Continued use of JPARC MOAs, RAs, and target ranges is a key factor in maintaining the fourth generation (such as the F-16) and fifth generation (such as the F-22) fighter aircraft capability in Alaska. Those MOAs and RAs shown in Figure 2.4-2are used by 18 AGRS for conducting both routine training and MFE missions along with the annual baseline sortie operations performed by these aircraft in each area.

A MOA is designed and depicted on aeronautical charts as “joint use” airspace in which nonhazardous military flight activities, such as air combat maneuvers, are conducted. By definition, IFR aircraft must be segregated and separated from an active MOA unless the controlling ATC agency (i.e., Anchorage Center) directs these aircraft through this airspace while maintaining required separation from MOA aircraft. VFR traffic may fly through an active MOA, but requires that both military and VFR pilots be vigilant of each other’s presence while exercising “see and-avoid” practices to maintain a safe operating distance from each other while in this shared airspace.

All MOAs noted in Figure 2.4-2 have an overlying ATCAA with lateral boundaries that are normally coincidental with the underlying MOA. ATCAAs extend from 18,000 feet MSL up to 60,000 feet MSL or as stipulated in a Letter of Agreement with FAA. The combined MOA and ATCAA airspace provides a greater range of altitudes in which military aircraft can conduct those mission activities requiring use of the higher altitudes. Anchorage Center maintains control over this airspace and segregates/separates civil and commercial aircraft that are routed through this airspace from ATCAA military aircraft.

RAs support ground or flight activities that could be hazardous to non-participating aircraft such as air-to-ground weapons delivery on range target areas. By definition, an RA is considered airspace within which the flight of non-participating aircraft, while not wholly prohibited, is subject to restriction. Most RAs, including those listed in Table 2.4-6, are designated "joint-use" where IFR/VFR flights may be authorized by the controlling ATC facility to operate within this airspace when not being utilized by the military.

The Air Force is proactive in publicizing MOA and RA real-time uses through the SUA Information Service (SUAIS), Eielson Range Control, and other means to help increase public awareness of those periods when military operations are in progress. A SUAIS pamphlet, along with EAFB and JBER Midair Collision Avoidance (MACA) pamphlets, describe the airspace and routings used by military aircraft while operating within both the airfield and SUA environments. The information provided in these pamphlets, along with military interactions with the civil aviation community, help enhance flight safety for all aviation interests sharing use of the different airspace areas. These publicly available documents can be obtained through EAFB and JBER websites or the respective base Public Affairs (PA) or Flight Safety offices. The JBER MACA pamphlet is included in the Airspace Appendix C.

3.2 Noise

The ROI for noise includes areas that are located on and near JBER and EAFB as well as areas beneath SUAs in which the number of aircraft operations are predicted to change under the action alternatives of the Proposed Action.

3.2.1 JBER

3.2.1.1 Noise Levels on Land

Existing condition noise levels, expressed as L_{dn}, were modeled based on aircraft types, runway use patterns, engine power settings, altitude profiles, flight track locations, airspeed, and other factors using the program NOISEMAP (Version 7.2). Noise contours were plotted in 5 dB increments from 65 dB L_{dn} to 85 dB L_{dn} using the program NMPLOT. Social surveys have found that at 65 L_{dn}, about 12% of the population can be expected to be highly annoyed by noise, while at 70 and 75 dB L_{dn} 22% and 37%, respectively are annoyed (Schultz 1978, Finegold *et al.* 1994). Population affected by elevated noise levels was estimated based on 2010 U.S. Census data. For purposes of the analysis, population was assumed to be evenly distributed across census blocks.

In addition to operational changes with the replacement of F-15s by F-22s and then the plus-up of the F-22 squadron, two aspects of noise modeling methods used in the current analysis differ from previously published NEPA documents for JBER-Elmendorf. Noise modeling incorporated the effects of terrain (e.g., hills, valleys, etc.) and surface impedance (e.g., grass absorbs sound energy to a greater degree than water). Computer topographic effects modeling were not approved for use by the Air Force in the F-22 Plus-Up EA (Air Force 2011a), but are now standard for this type of analysis. Use of the topographic effects module has a strong effect on noise levels in the Ship Creek Valley and adjacent neighborhood of Mountain View. In this setting, the topographic effects model predicts that sound energy will reach Mountain View at greater intensity than if the intervening ground were flat or a hill. Application of variable ground impedance in the modeling results in a prediction of higher noise levels where the sound has travelled over water (e.g., in Knik Arm). This is because water absorbs less sound energy than most

ground surfaces. In addition, for this EIS, noise levels were calculated for an Average Annual Day (AAD), meaning that total annual operations were divided among 365 days to generate an average. In past analyses, including the F-22 Plus-Up EA, noise was described for an average operational day, meaning that annual operations were divided among only those days on which the unit was flying. Since social surveys of annoyance due to noise and noise-related land use compatibility guidelines are based on yearly average noise levels, noise contours developed based on AAD operations are thought to be the best predictor of impacts in most situations.

Aircraft at JBER-Elmendorf generally operate according to established flight paths and overfly the same areas surrounding the base. JBER-Elmendorf employs a quiet-hours program in which, barring a national emergency, scramble order for alert aircraft, or a MFE, fighter aircraft operations (takeoff and landing patterns as well as engine run-ups) are avoided between 11:30 PM to before 6:00 AM on weekdays, and 11:30 PM to before 8:00 AM on weekends and holidays. At JBER-Elmendorf, noise exposure from airfield operations typically occurs beneath approach and departure corridors along both Runway 06/24 and Runway 16/34 and in areas immediately adjacent to parking ramps and aircraft staging areas.

A review of runway utilization records indicates that runway usage has changed since publication of the F-22 Plus-Up EA in 2011. Runway 34 is used more frequently for F-22 departure operations than it had been in past years, increasing from about 25% of total departures to closer to 75%. Usage of Runway 16/34 is common in summer months, but in winter months, snowfall often outpaces clearance efforts resulting in closure of Runway 16/34. Use of Runway 34 for departures allows for easier aircraft de-confliction during simultaneous recoveries to the main runway. Furthermore, under the current aircraft parking plan, use of Runway 34 for departure requires less taxi time for many of the based F-22 aircraft, reducing fuel usage and improving training efficiency. Aircraft departures using Runway 34 taxi to the southern end of the runway, set engines to full-throttle, and then begin the takeoff roll along the runway toward the north. Noise contours for current operations (i.e., baseline conditions) are depicted in Figure 3.2-1, and a comparison of the current noise contours and the noise contours in the F-22 Plus-Up EA are depicted in Figure 3.2-2. Current noise levels of 65 dB Ldn or greater affects areas on JBER, parts of the Mountain View neighborhood, residential areas north of Ship Creek, the Knik Arm, and industrial areas including the Port of Anchorage. As shown in Table 3.2-1, a total of 9,483 acres on JBER and 1,303 acres off-installation (1,037 over water and 266 over land) are affected by noise levels of 65 dB or greater under existing conditions. Noise contours calculated as part of the F-22 Plus-Up EA included approximately 10,208 acres on JBER and 4,176 acres off-installation (3,808 over water and 368 over land) at noise levels of 65 dB L_{dn} or greater. Off-base populations were estimated by proportioning the area of the census blocks affected by noise contours. Approximately 408 off base residents are affected by noise levels of 65 dB L_{dn} or greater under existing conditions (Table 3.2-2). The F-22 Plus-Up EA had no off-base residents affected by noise levels of 65 dB L_{dn} or greater because calculated off-base noise contours were either over water or over an industrial portion of the Port of Anchorage and not over residential areas (see previous discussion in this section).

Table 3.2-1. Area Exposed to Noise Levels of 65 dB L_{dn} or Greater Under Existing Conditions

Noise Level (dB L_{dn})	Area (In Acres) Exposed to Indicated Noise Levels F-22 Plus-Up EA			
	JBER	Off Installation Over Water	Off Installation Over Land	Total
65 - 69	5,572	3,280	214	9,066
70 - 74	2,557	509	106	3,172
75 - 79	1,059	19	46	1,124
80 - 84	530	0	2	532
≥85	490	0	0	490
TOTAL	**10,208**	**3,808**	**368**	14,384
Noise Level (dB Ldn)	**Existing Conditions**			
	JBER	**Off Installation Over Water**	**Off Installation Over Land**	**Total**
65 - 69	5,164	1,006	176	6,346
70 - 74	1,953	31	81	2,065
75 - 79	1,091	0	6	1,097
80 - 84	641	0	3	644
≥85	634	0	0	634
TOTAL	**9,483**	**1,037**	**266**	**10,786**

Table 3.2-2. Estimated Off-installation Population Exposed to Noise Levels of 65 dB L_{dn} or Greater Under Existing Conditions

Noise Level Decibels (dB) Day-Night Average Sound Level (L_{dn})	Off-Installation Population (Census 2010)	
	F-22 Plus-Up EA	Existing Conditions
65	0	406
70	0	2
75	0	0
80	0	0
85	0	0
TOTAL	**0**	**408**

As shown in Table 3.2-3, Mountain View Elementary School and Mount Spurr Elementary School are exposed to noise levels of 65 dB L_{dn} or greater under existing conditions. At this noise level, schools are not considered a compatible land use according to DoD guidelines, unless the structure provides at least 25 dB outdoor-to-indoor noise level reduction (DoDI 4165.57).

Table 3.2-3. Noise Levels at Points of Interest under Existing Conditions

ID	Location Description	Noise Level Existing Conditions Decibels (dB) Day-Night Average Sound Level (L_{dn})
1	Aurora Elementary School	60
2	Government Hill Elementary School	56
3	Mount Iliamna Elementary School	59
4	Mountain View Elementary School	66
5	Orion Elementary School	58
6	William Tyson Elementary School	56
7	Mount Spurr Elementary School	71
8	JBER Hospital	55

Of the land area on JBER affected by noise levels greater than 65 dB L_{dn}, approximately 98 acres are used for residential purposes, 677 acres are used for community support, and 1,800 acres are used for administrative/industrial. Other land uses on JBER, such as open land, range areas, and airfield pavements, are not as noise-sensitive.

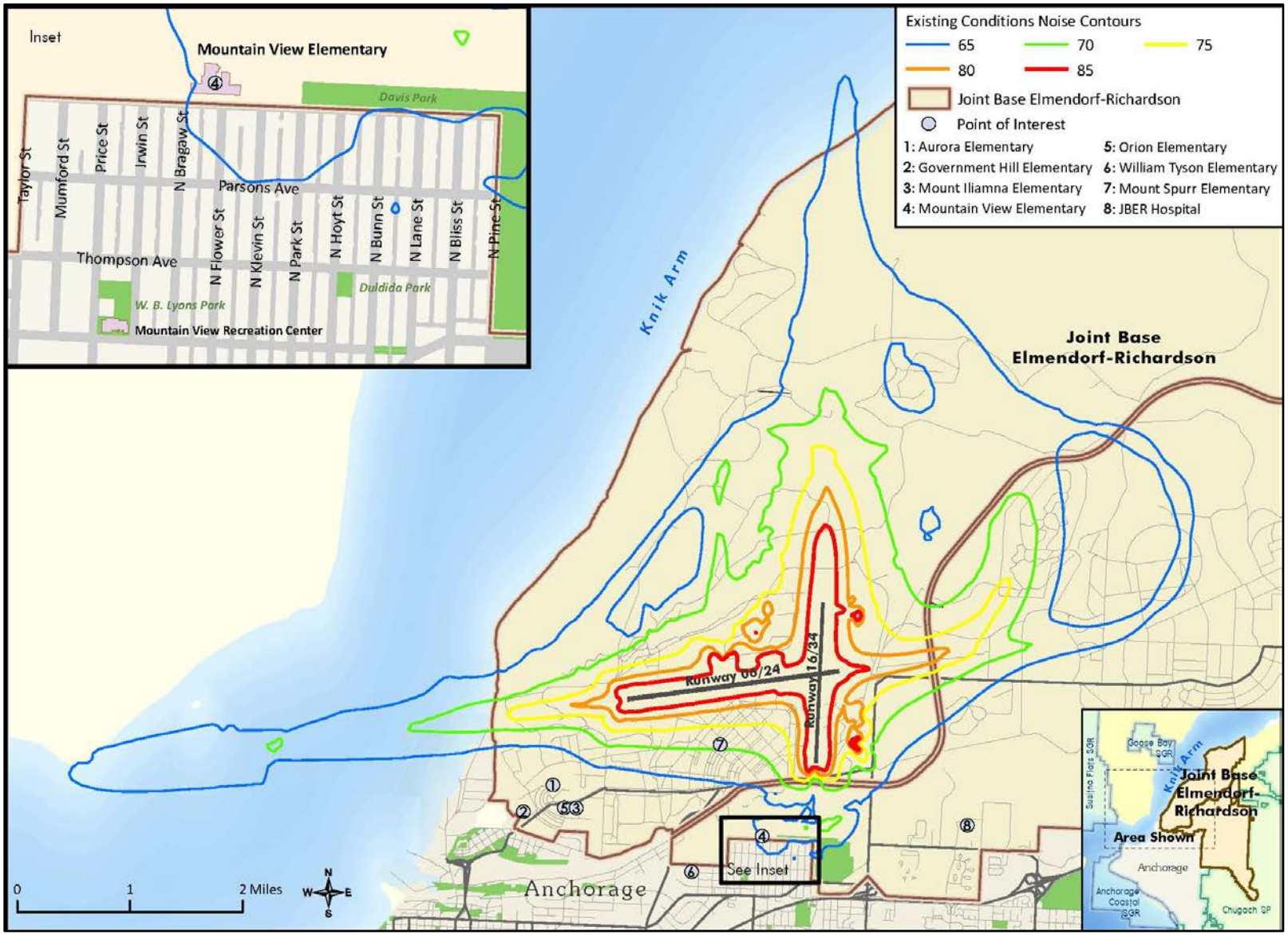

Figure 3.2-1. Noise Contours Under Existing Conditions

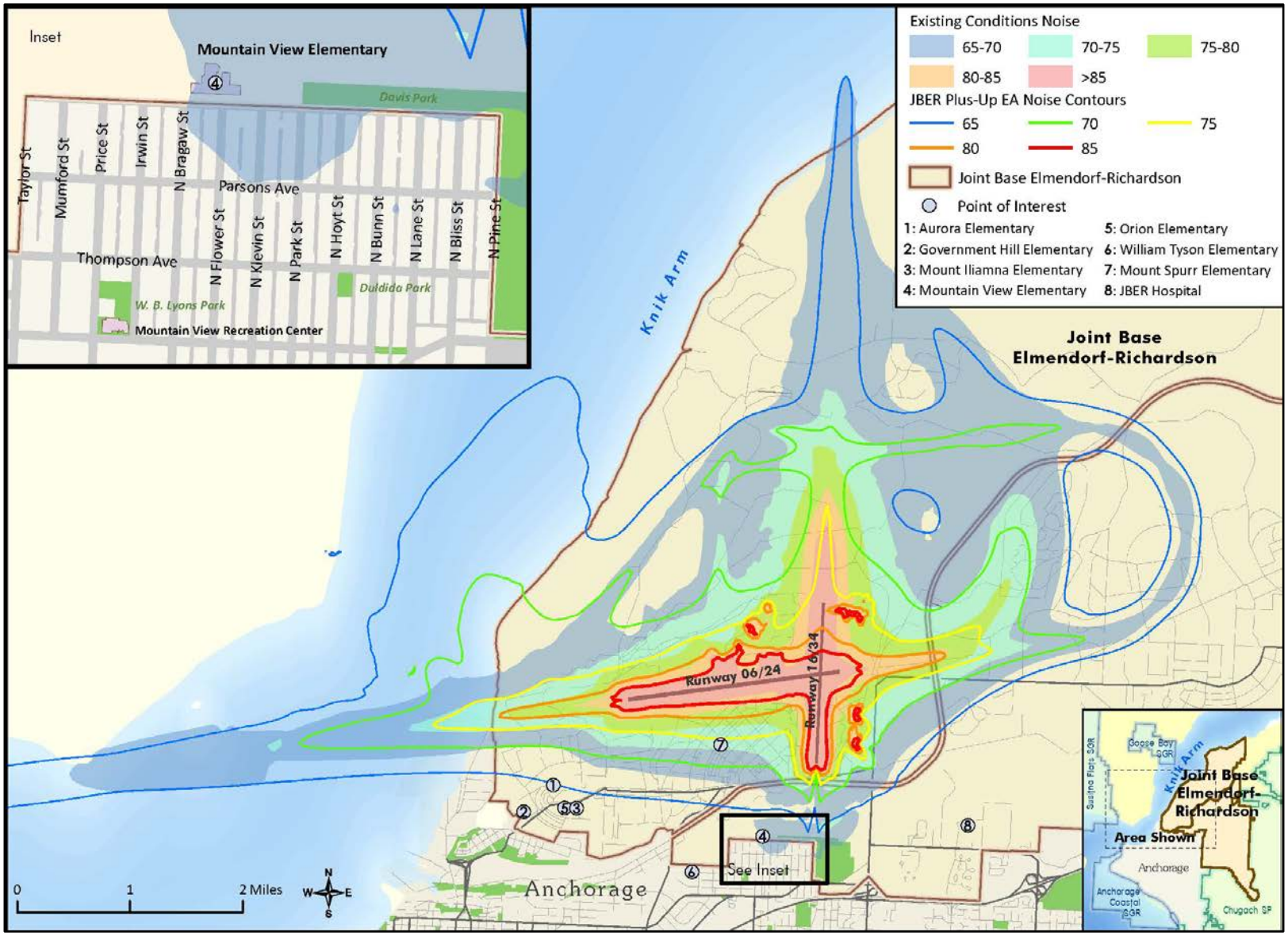

Figure 3.2-2. Noise Contours Calculated for F-22 Plus-Up EA Compared to Noise Contours under Existing Conditions

The effects of aircraft noise at residences are of particular concern, because background noise levels are often low and because sleep, relaxation, and other activities common in a residential environment are easily disturbed by noise. Under baseline conditions, 103 residential structures on JBER are exposed to noise greater than 65 dB L_{dn}.

Due to climactic conditions in Alaska, structures on JBER are designed to avoid any unnecessary heat loss. Measures taken to avoid heat loss (e.g., thicker insulation, double-paned windows, etc.) also result in improved exterior-to-interior noise attenuation. The average exterior-to-interior noise level reduction provided by a typical American home located in a cold climate is 27 dB, if the windows are closed and 17 dB if the windows are open (EPA 1974). Noise attenuation provided by non-residential structures on JBER varies widely based on structure type. However, most structures on JBER that are frequently occupied are also designed with energy-efficient construction elements and therefore high levels of structural noise attenuation. Due to structural noise attenuation, a person's indoor experience contains substantially lower noise levels than a person's outdoor noise experience and the likelihood of noise-related annoyance is lower indoors rather than outdoors.

Noise is a highly subjective phenomenon and the likelihood of annoyance is strongly linked to characteristics of the listener including the attitude of the listener towards the noise source. As most of the persons on base are either directly or indirectly employed by the military, their attitude towards the military is generally assumed to be positive and they may be less likely to be annoyed due to the noise of Air Force aircraft than civilian population off installation.

3.2.1.2 Workplace Noise

There are situations where noise in certain locations on JBER may exceed levels at which long term noise-induced hearing loss is possible. At JBER-Elmendorf, the hearing conservation program is conducted in accordance with Air Force Occupational Safety and Health (AFOSH) Standard 48-20, *Occupational Noise and Hearing Conservation Program,* DoD Instruction 6055.12, *DoD Hearing Conservation Program,* and 29 CFR 1910.95, *Occupational Noise Exposure*. DoD, Air Force, and the National Institute of Occupational Safety and Health have all established occupational noise exposure damage risk criteria (or "standards") for hearing loss not to exceed 85 dB as an 8-hour time weighted average, with a 3 dB exchange rate in a work environment. The exchange rate is an increment of decibels that requires the halving of exposure time or a decrement of decibels that requires the doubling of exposure time. For example, a 3 dB exchange rate requires that noise exposure time be halved for each 3 dB increase in noise level. Therefore, an individual would achieve the limit for risk criteria at 88 dB for a period of 4 hours and at 91 dB, for a period of 2 hours. The standard assumes "quiet" (where an individual remains in an environment with noise levels less than 72 dB) for the balance of the 24-hour period. Also, Air Force and Occupational Safety and Health Administration (OSHA) occupational standards prohibit any unprotected worker exposure to continuous (i.e., of a duration greater than one second) noise exceeding a 115 dB sound level. OSHA established this additional standard to reduce the risk of workers developing noise-induced hearing loss.

JBER's Hearing Conservation Program is administered by the Bioenvironmental Engineering Office. In accordance with AFOSH Standard 48-20, representatives from the Bioenvironmental Engineering Office visit facilities where workers could potentially be expected to be exposed to noise levels exceeding noise exposure thresholds. A health risk assessment is conducted in those facilities and, as part of the

assessment, a representative sample of employees are instructed to carry noise dosimeters for a specified period. If noise exposure exceeds established thresholds, an audiometric monitoring program is initiated. Workers in known high noise exposure locations may be required to wear hearing protection devices including, but not limited to, ear plugs and ear muffs. If noise exposure thresholds are not exceeded, then a schedule is established for return visits to repeat testing to confirm that conditions have not changed.

DoD policy for assessing hearing loss risk pursuant to NEPA is to use the 80 L_{dn} noise contour to identify populations at the most risk of potential hearing loss (UDATL 2009). There are currently 67 structures, which are all located on JBER-Elmendorf near the flightline, that are within the 80 dB L_{dn} contour. The majority of the structures are manned and, as such, employees working in these buildings are subject to occupational noise exposure laws and regulations as described in the 2011 JPARC Master Plan (Army and Air Force 2011). The JBER Bioenvironmental Engineering Office considers several factors, including structural noise attenuation and the amount of time workers spend outside, when deciding on the appropriate course of action with regards to implementation of the Hearing Conservation Program.

3.2.1.3 Noise Levels in the Knik Arm

Ambient noise levels in the Knik Arm are relatively high due to natural processes and anthropogenic noise sources and may meet or exceed the threshold for behavioral harassment of the Cook Island Beluga Whale (CIBW) as published by National Marine Fisheries Service (NMFS) (120 dB re 1 micropascal [μPa] for non-impulse sound). The high levels of noise measured in the Knik Arm are attributed primarily to strong tidal flow, intense wind, and wave action, and sounds generated in the Port of Anchorage. In the Blackwell and Greene paper (2002), water noise levels averaging 119 dB Sound Pressure Level (SPL) adjacent to JBER-Elmendorf while no overflights were taking place. The same paper reported measured ambient noise of 124 dB re 1 μPa at the nearby Point Possession during a changing tide. More recently, KABATA (2010) summarized a variety of existing noise studies conducted within the Knik Arm and concluded that measured background levels are rarely below 125 dB re 1 micropascal (μPa), except in conditions of no wind and slack tide. Ambient noise energy in the Knik Arm is typically concentrated at frequencies below 10 kilohertz (kHz) (Blackwell and Greene 2002). Although beluga hearing is most sensitive at frequencies from about 10 kHz to 80 kHz, their overall hearing range extends from about 40 Hz to at least 130 kHz (NMFS 2008, Awbrey *et al.* 1988, Finneran *et al.* 2005) and would likely be able to detect sounds made by F-16s.

3.2.2 EAFB

The sound environment near EAFB is dominated by military aircraft noise including F-16C/D, KC-135R, and many types of transient aircraft types. Transient and based aircraft operations tempo increases substantially during Large Force Exercises (LFEs), which typically occur in spring, summer, and fall. Noise contours reflecting LFE and non-LFE conditions as described in the most recent operational data collection are shown in Figure 3.2-3 and Figure 3.2-4(AFCEE 2001). Under both LFE and non-LFE conditions, noise levels exceeding 65 dB L_{dn} occur primarily on DoD-owned land. Under LFE conditions, approximately 495 of off-installation acres are affected by greater than 65 dB L_{dn} while under non-LFE conditions only 128 acres of off-installation acres are affected. Off-installation land exceeding 65 dB L_{dn} is located almost entirely in the town of Moose Creek, with the remainder occurring in a small area along the western boundary of the installation.

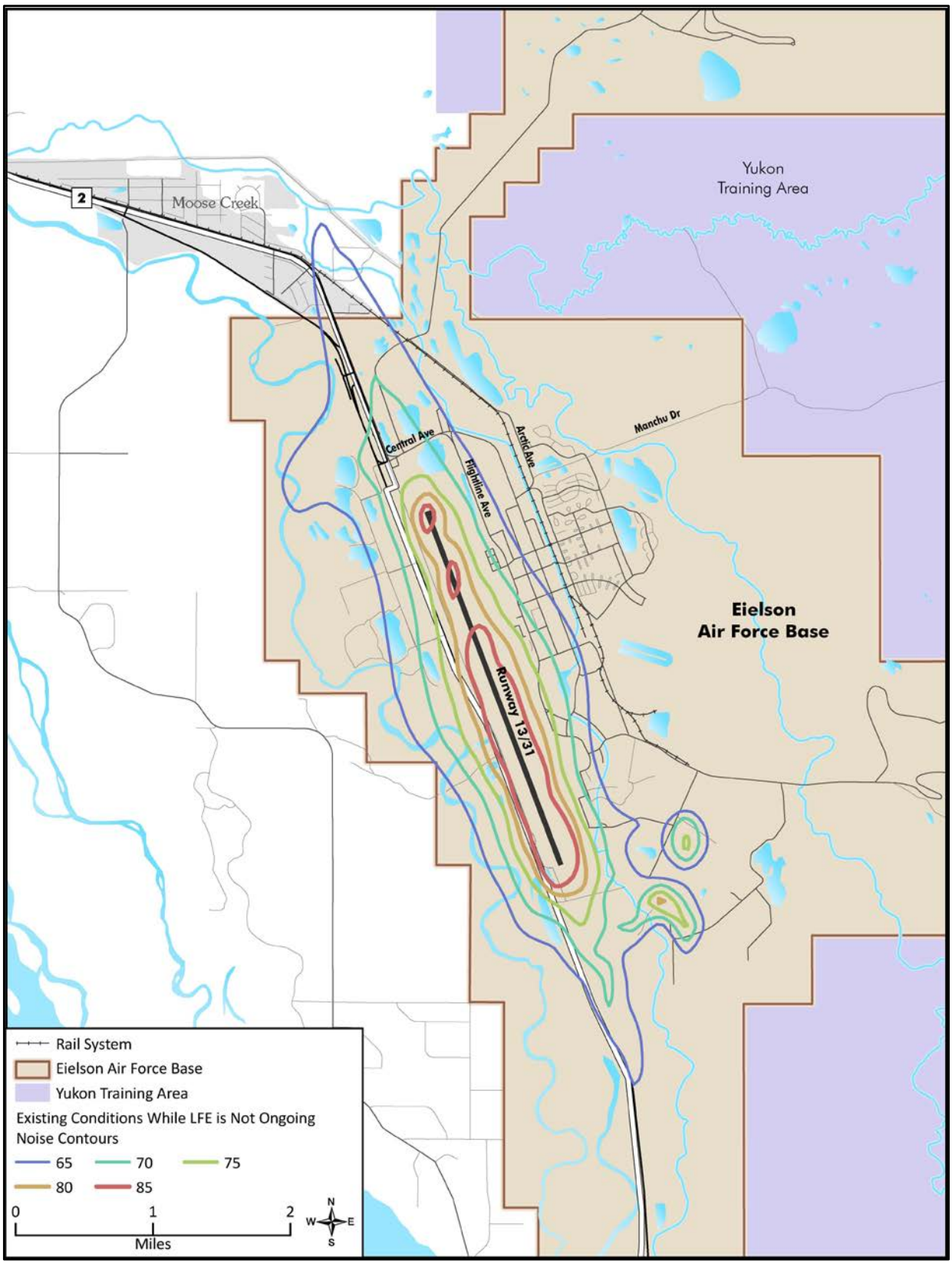

Figure 3.2-3. EAFB Non-Large Force Exercise (LFR) Noise Contours

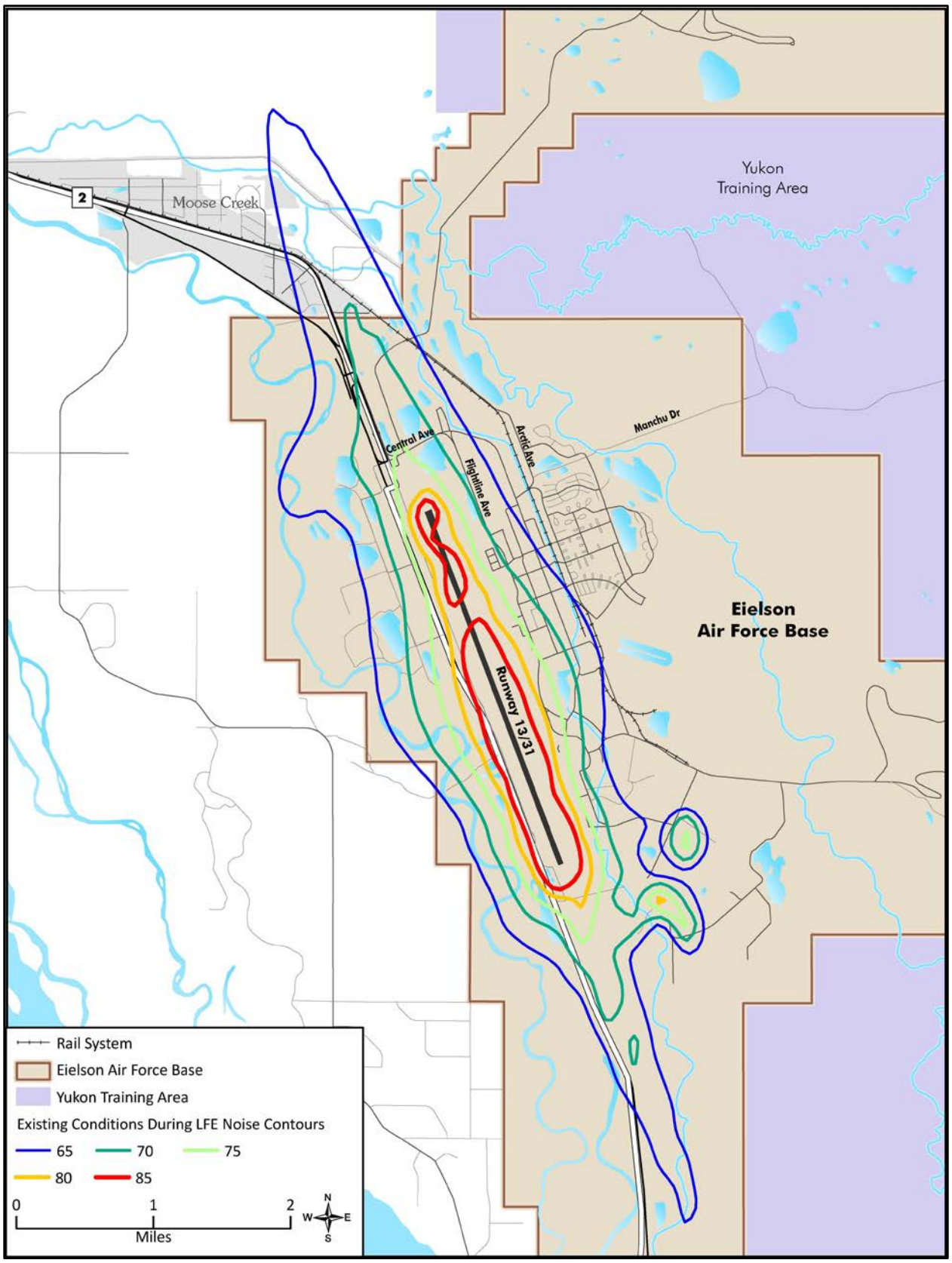

Figure 3.2-4. EAFB LFR Noise Contours

3.2.3 Training Airspace

3.2.3.1 Subsonic Flight

Within MOAs and overlying ATCAAs, subsonic training flights are dispersed and distributed throughout the training airspace. Noise levels in L_{dnmr} were calculated using MRNMAP based on operations counts, time of day of operation, typical aircraft configuration, and typical altitude distribution for each aircraft type. The L_{dnmr} metric is a modified version of the L_{dn} metric used to predict annoyance near airfields. The two metrics predict equivalent levels of annoyance at equivalent noise levels. Noise levels and sonic booms per month are shown in Table 3.2-4 for those airspace units in which operations would be expected to increase under action alternatives. Table 3.2-4 also includes supersonic noise level information, which is referenced in Section 3.2.3.2. Airspace units where operations frequency would not change or where operations would occur only on an incidental basis are not listed. Noise levels below 45 dB L_{dnmr} are presumed to be approximately at ambient levels and are shown in Table 3.2-4 as "<45".

Table 3.2-4. Noise Levels and Sonic Booms Per Month beneath Training Airspace under Existing Conditions

Training Airspace	Existing Conditions		
	L_{dnmr}	CDNL	Booms/Month
Birch MOA [1]	62	N/A	N/A
Buffalo MOA [1]	55	N/A	N/A
Delta MOA/ATCAA [2]	<45	48	13
Eielson MOA/ATCAA [1]	57	N/A	N/A
Fox 1 MOA/ATCAA [3]	<45	53	79
Fox 2 MOA [3]	50	46	79
Fox 3 MOA/ATCAA[3]	<45	54	83
R-2205 [1]	61	N/A	N/A
Stony MOA/ATCAA [4]	<45	51	36
Susitna MOA/ATCAA[5]	<45	47	10
Viper B MOA/ATCAA [1]	50	N/A	N/A
Yukon 1 MOA/ATCAA [3]	49	51	26

Notes:
[1] Supersonic not approved.
[2] Supersonic approved above 30,000 MSL.
[3] Supersonic approved above 12,000 MSL or 5,000 AGL (whichever is higher).
[4] Supersonic approved above 10,000 MSL or 5,000 AGL (whichever is higher).
[5] Supersonic approved ONLY for Functional Check Flights above 12,000 MSL or 5,000 AGL (whichever is higher) on an East-West line south of Denali Reserve.

Although the L_{dnmr} metric provides a very useful indication of overall noise level and is a predictor of annoyance, it does not correlate to noise levels heard at any given time and is therefore not intuitively understood. Maximum noise levels associated with direct overflight of aircraft, which use the training airspace frequently, were calculated using the program SELCALC and are listed in Table 3.2-5.

Table 3.2-5. Maximum Noise Level (L_{max}) under the Flight Track for Aircraft at Various Altitudes in the Primary Airspace[1]

Aircraft Type	Airspeed	Power Setting[2]	300 AGL	500 AGL	1,000 AGL	2,000 AGL	5,000 AGL	10,000 AGL	20,000 AGL
F-15C	520	81% NC	119	114	107	99	86	74	57
F-22	450	70% ETR	120	115	108	100	88	78	66
F-16C	450	87% NC	112	108	101	93	80	67	50
F-18A	500	92% NC	120	116	108	99	85	71	54
B-1B	550	101% RPM	117	112	106	98	86	75	61

Notes:
[1] Level flight, steady, high-speed conditions.
[2] Engine power setting while in a MOA. The type of engine and aircraft determines the power setting.

Key:
AGL=Above Ground Level
ETR=Engine Thrust Request
NC=percent core RPM and ETR
RPM=Rotations Per Minute

Aircraft typically fly at high altitudes while en route to training airspace, but overflight noise is still annoying to some people beneath transit corridors. Transit corridors are defined by a series of waypoints, which facilitate navigation by aircrews and de-confliction of multiple aircraft by ATC. Aircraft flying between JBER and the SUA complex north of JBER normally use a transit corridor following the Mat-Su Valley. The corridor roughly parallels the Susitna River from a point just north of Big Lake until the river turns toward the east at the Alaska Range. The majority of the sorties listed in Table 2.4-6 originate from either JBER or EAFB and the corridor leading from JBER through the Mat-Su Valley is used regularly.

Aircraft usually climb continuously after departing JBER airspace reaching an altitude not less than 6,000 feet MSL by the northern shore of the Knik Arm (surface elevation) and not less than 13,000 feet MSL by just north of Big Lake (surface elevation approximately 250 MSL). Most aircraft are able to climb faster, reaching altitudes well above these minimums. The F-22, for example, typically reaches 20,000 feet MSL by the time it is just north of Big Lake. Noise levels generated by several aircraft that frequently use the transit corridor are listed in Table 3.2-5. Aircraft use relatively high engine power settings during climb-out, which are similar to power settings used in training airspace units.

Aircraft approaching JBER descend using low engine power settings and generate noise levels below those shown in Table 3.2-5. Aircraft approaching JBER follow different flight procedure waypoints from departing aircraft. A frequently-used flight procedure involves crossing a point in the Talkeetna Mountains at not less than 11,000 MSL (surface is approximately 2,000 to 7,000 MSL) and then descending to reach 3,500 MSL at Goose Bay on the northern shore of the Knik Arm (surface elevation).

3.2.3.2 Supersonic Flight

The majority of supersonic flight in SUAs affected by the action alternatives is conducted by F-22 aircraft based at JBER and transient F-15 and F-16 aircraft. In these airspace units, supersonic flight is typically conducted as part of Air Combat Training under specific altitude restrictions. In Susitna MOA, supersonic flight is only permitted during functional check flights and is not permitted above an east-west line south of Denali Park and Reserve. Supersonic flight generates an air pressure wave with amplitude of the wave being determined by the aircraft's size, geometry, speed, and altitude. The air pressure wave is sometimes refracted upward resulting from changing air temperatures at different altitudes such that it never reaches the ground (Plotkin *et al*. 1989). When the pressure wave does reach the ground, it is heard as a sonic boom. Table 3.2-6 shows sonic boom overpressures for the F-15E, F-16C, and F-22 aircraft in level flight at various altitudes. The biggest single condition affecting overpressure is altitude, but

maneuvers can also affect boom pounds per square foot (psf), increasing, or decreasing overpressures from those shown in Table 3.2-6 (Air Force 2012a).

Table 3.2-6. Sonic Boom Peak Overpressures (psf) for F-22, F-16C, and F-15E Aircraft at Mach 1.2 Level Flight

Aircraft	Altitude (feet)		
	10,000	20,000	30,000
F-22	6.2	3.2	2.1
F-16C	4.9	2.5	1.6
F-15E	6.4	3.3	2.2

Note: Calculated using CABOOM; focusing can result in overpressures increased by 2 to 5 times the steady state boom levels; boom levels diminish toward 0.1 psf as the lateral distance increases.

Sonic booms from air combat training activity tends to be concentrated within elliptical boundaries fitting within the MOA/ATCAA. Aircraft will set up at positions at opposite ends of the MOA before proceeding toward each other for an engagement. Supersonic events can occur as the aircraft accelerate toward each other, during dives in the engagement itself, and during disengagement. The F-22 aircraft has the ability to fly supersonic without engaging the afterburner or diving and spends substantially more time at supersonic speeds during Air Combat Training than fourth generation fighters, such as the 18 AGRS F-16C/D aircraft.

Supersonic noise levels in C-Weighted Day-Night Average Noise Level (CDNL) were calculated using the BOOMAP program and results are shown in Table 3.2-6. The BOOMAP program calculates supersonic noise levels based on multiple measurement studies conducted beneath supersonic training airspace (Frampton *et al.* 1993, Plotkin 1996, Plotkin *et al.* 1989, Plotkin *et al.* 1992, Page *et al.* 1994). Table 3.2-6 lists an average number of sonic booms heard per month estimated using factors derived from data published by Plotkin *et al.* in 1992 and the assumption that F-22 sorties generate 13 times as many sonic booms as fourth generation fighter aircraft. Since Air Combat Training is concentrated near the center of the airspace unit, the number and intensity of sonic booms is less in areas that are not directly beneath the center of the MOA. Sonic booms may propagate horizontally affecting ground areas beyond the training airspace boundaries. CDNL of 62 dB, 65 dB, and 69 dB can be expected to result in about 12%, 22%, and 37% of the affected population being highly annoyed (CHABA 1981).

3.3 Health and Safety

The flight and ground safety ROI includes activities and operations conducted on the base itself, as well as training conducted in Alaskan military training airspace. Flight safety considers aircraft flight risks including the potential for Bird/wildlife Aircraft Strike Hazards (BASH). Ground safety considers issues associated with operations and maintenance activities that support base operations including fire response.

3.3.1 JBER

3.3.1.1 Flight Safety

Aircraft Mishaps - The typical public concern with regard to flight safety is the potential for aircraft accidents. Such mishaps may occur as a result of weather-related accidents, mechanical failure, pilot error, mid-air collisions, collisions with manmade structures or terrain, or bird-aircraft collisions. Flight risks apply to all aircraft and are not limited to the military.

The Air Force defines 4 major categories of aircraft mishaps Classes A, B, C, and E. Class A mishaps result in a loss of life, permanent total disability, a total cost in excess of $2 million, or destruction of an aircraft. Class B mishaps result in total costs of more than $500,000 but less than $2 million, permanent partial disability, or inpatient hospitalization of three or more personnel. Class C mishaps involve reportable damage of more than $50,000 but less than $500,000, an injury resulting in any loss of time from work beyond the day or shift on which it occurred, occupational illness that causes loss of time from work at any time, or an occupational injury or illness resulting in permanent change of job. Class E mishaps are minor. This EIS will focus on Class A mishaps because of their potentially catastrophic results.

Considering all operations at JBER-Elmendorf in more than 25 years, there have been 5 Class A mishaps in the vicinity of the installation. Four mishaps were flight-related and 1was non-flight-related and 2 of the 5 mishaps involved fighter aircraft. The most recent Class A mishap occurred in 2010 when an F-22 crashed during a training mission in the Fox MOAs (Air Force 2011a). The non-flight related Class A mishap was in 1998 and occurred during engine shut down when a foreign object was ingested into the left engine of an F-15C while on the parking ramp.

Based on historical data on mishaps at all installations, and under all conditions of flight, the military calculates Class A mishap rates per 100,000 flying hours for each type of aircraft in the inventory. As the aircraft, the pilots who fly it, and the technicians who maintain it mature over time, mishap rates would be reduced and would then be maintained at a relatively constant level. After eight years of flight, the F-22 (currently operated by JBER-Elmendorf) has an approximate mishap rate of 6.35 for nearly 100,000 flight hours (AFSC 2012).

The F-16 has been operating since 1976 and has logged more than 9.6 million hours of flight time. The latest 10-year average Class A mishap rate for the F-16 is 1.91 mishaps per 100,000 flight hours (AFSC 2012).

Mishap rates are only statistically predictive. The actual probability of an aircraft crashing into a populated area is extremely low, but it cannot be totally discounted. Several factors are relevant in the ROI: the training areas have low population densities, typically less than 0.1 person per square mile; the aircraft train less than 0.5% of the time below 2,000 feet AGL; and the aircraft are over any specific geographic area for a very limited amount of time.

If a mishap occurs, secondary effects of an aircraft crash include the potential for fire. At a crash site, every effort is made to prevent access by unauthorized personnel. The extent of secondary effects is situation dependent and announcements may be made to exclude unauthorized personnel until experts can determine the cause of the accident and collect all materials needed for the investigation and to ensure public safety (Air Force 2011a).

The 3 WG maintains detailed emergency and mishap response plans to react to an aircraft accident. These plans assign agency responsibilities and prescribe functional activities necessary to react to major mishaps, whether on or off base. Response would normally occur in two phases. The initial response focuses on search and rescue, evacuation, fire suppression, safety, elimination of explosive devices, ensuring security of the area, and other actions immediately necessary to prevent loss of life or further

property damage. Subsequently, the second, or investigation phase is accomplished. After all required actions on the site are complete, the aircraft would be removed, and the site cleaned up. Depending on the extent of damage resulting from a Class A mishap, nearly all damaged parts are located and removed from a crash site (Air Force 2011a).

Flight safety includes the potential for interaction between civil aviation and high performance military aircraft. Actions have been implemented by JBER so MFEs are not conducted in MOAs during the September hunting season to reduce the potential for military aircraft being in a MOA while general aviation aircraft are ferrying hunters or fishermen. Past discussions with pilots, hunters, fishermen, and recreationists flying to use the land under the MOAs revealed that, although they occasionally sighted a military aircraft, they generally flew at lower altitudes than the military aircraft and both pilots practiced see-and-avoid measures (Air Force 2011a).

BASH - Bird strikes constitutes a safety concern because they can result in damage to aircraft or injury to aircrews or local human populations if an aircraft crashes. Aircraft may encounter birds at altitudes up to 30,000 feet MSL or higher. However, most birds fly close to the ground. More than 97% of reported bird strikes occur below 3,000 feet AGL. Approximately 30% of bird strikes happen in the airport environment and almost 55% occur during low-altitude flight training. While any bird-aircraft strike has the potential to be serious, many result in little or no damage to the aircraft, and only approximately 0.04% of all reported bird-aircraft strikes result in a Class A mishap (AFSC 2012).

JBER aircraft experience approximately 5 bird-strikes per year in the airfield environment. The most serious of which occurred on 22 September 1995 when an E-3 aircraft crashed after striking a flock of geese. Since that time, 3 WG has developed aggressive procedures designed to minimize the occurrence of bird-aircraft strikes. The unit has documented detailed procedures to monitor and react to heightened risk of bird-strikes, and when risk increases, limits are placed on low altitude flight and some types of training (e.g., multiple approaches, closed pattern work, etc.) in the airport environment. Special briefings are provided to pilots whenever the potential exists for greater bird sightings within the airspace. Training and signs in open areas emphasize individual responsibilities and actions. Bird hazards exist at JBER-Elmendorf year-round, though risk increases during spring and fall migration periods. Species of particular concern include Canada geese, swans, other waterfowl, sandhill cranes, gulls, raptors, Bald eagles, and owls (Air Force 2011a).

Other wildlife of concern to flying operations at JBER-Elmendorf includes moose, wolves, coyotes, fox, bears, and smaller mammals. Aggressive habitat management, fencing, active and passive dispersal techniques, and effective warning techniques serve to reduce the wildlife strike hazard at JBER-Elmendorf (Air Force 2011b). For example, security fencing around the airfield excludes most large mammals.

3.3.1.2 Ground Safety

Ongoing F-22 operations and maintenance activities conducted by 3 WG are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by AFOSH requirements. The 673rd Air Base Wing (673 ABW) fire department provides fire and crash response at JBER-Elmendorf. The unit has a sufficient number of trained and qualified

personnel and the unit possesses all equipment necessary to respond to aircraft accidents and structure fires. There are no response-equipment shortfalls.

3.3.1.3 Aircraft Safety Zones

Clear Zones (CZs), Accident Potential Zones (APZs), and safety zones have been established around the airfield to minimize the results of a potential accident involving aircraft operating from JBER-Elmendorf. These zones are shown in Figure 3.3-1. The Clear Zone (CZ) is an area 3,000 feet wide by 3,000 feet long and is located at the immediate end of the runway. The accident potential in this area is so high that no building is allowed. APZ I is a 3,000-foot wide by 5,000 foot-long area located just beyond the CZ with a high potential for accidents. A portion of the Mountain View community is within APZ 1. Land uses that concentrate people in small areas are not compatible with APZ I (32 CFR 256.8). APZ II is an area 3,000 feet wide by 7,000 feet long beyond APZ I and high density functions such as multistory buildings, places of assembly (e.g., theaters, schools, churches and restaurants), and high density office uses are not considered compatible with APZ II (32 CFR 256.8). Unified Facilities Criteria 3-260-01 also specifies encroachment-free standards along and on either side of the runway (32 CFR 256.8). As of 2011, the JBER-Elmendorf runways were operating under waivers and exemptions to these criteria (Table 3.3-1).

Table 3.3-1. Airfield Waivers and Exemptions

Type	Number For Specified Types		
	Clear Zone	Accident Potential Zone	Other
Waivers	4	0	18
Exemptions	4	0	19
Deviation	0	0	6

Source: Personal communication Dougan 2013.

3.3.1.4 Explosives Safety

All activities associated with the receipt, processing, transportation, storage, maintenance, and loading of munitions items is accomplished by qualified technicians in accordance with DoD and Air Force technical procedures. The 3 WG has sufficient storage facilities and space for the storage and processing of mission-required ordnance items.

There are three “hot cargo” pads on the installation, which is sufficient for handling explosive cargo. The primary pad is located near the eastern end of Runway 06/24. Additionally, there are two secondary pads. One is located toward the western end of Runway 06/24 and the other is located off the extreme eastern end of Runway 06/24. All of the pads are situated north of the runway.

If required, support for explosive ordnance disposal is provided by an active duty Air Force unit stationed at JBER. Adequate capacity exists at JBER to handle munitions that are currently used safely, as well as, the level of proposed use with the F-16 relocation.

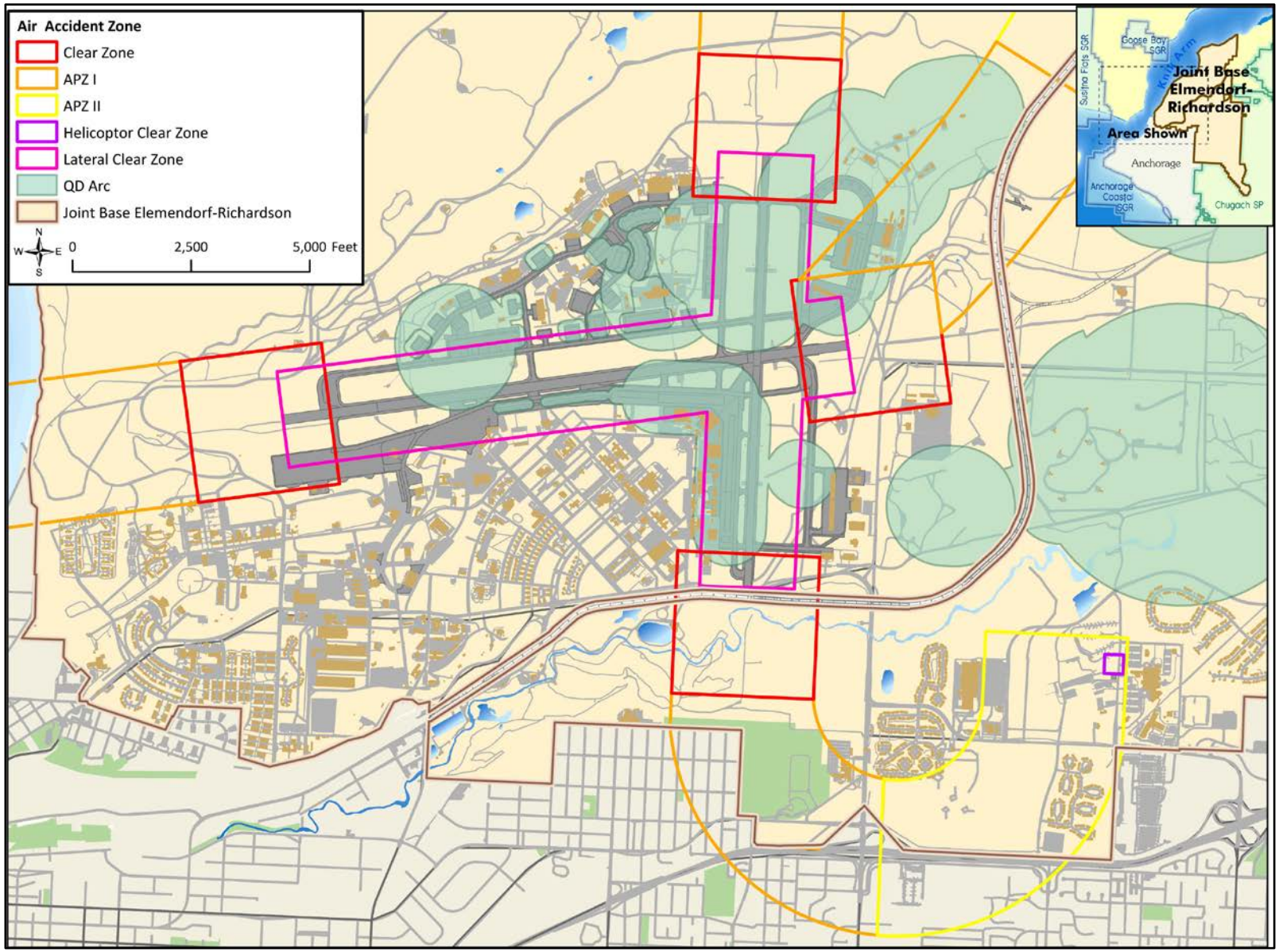

Figure 3.3-1. JBER Accident Potential Zones (APZs)

3.3.2 EAFB

Flight safety, aircraft safety zones, and explosive safety at EAFB have been established in accordance with the EAFB mission. That mission includes aircraft based at EAFB, aircraft TDY at EAFB, and training missions including Red Flag and other exercises.

Performance of day-to-day operations and maintenance activities at EAFB are in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by AFOSH requirements. Contractors working on the installation must prepare appropriate job site safety plans explaining how job safety will occur throughout the life of the project. Contractors must also follow applicable OSHA requirements.

3.3.3 Training Airspace

3.3.3.1 Chaff and Flare Use

F-16 aircrews currently use defensive countermeasures to train to avoid being successfully targeted by weapons such as surface-to-air missiles, air-to-air missiles, or antiaircraft artillery. Effective use of defensive countermeasures in combat requires frequent training by aircrews to master the timing of deployment and the capabilities of the defensive countermeasure and by ground crews to ensure safe and efficient handling of the countermeasures. Defensive countermeasures deployment within Alaska Training Airspace is governed by a series of regulations based on safety, environmental considerations, and defensive countermeasure limitations. The 2 primary countermeasures used by the F-16 Aggressors are RR-188 defensive chaff and M-206 defensive flares. The characteristics of chaff and the characteristics and analysis of flares used in Alaska training airspace are further discussed in the F-22 Plus-Up EA (Air Force 2011a).

3.4 Air Quality

Air Quality emissions relating to the Proposed Action Alternatives will be compared to the borough in which the projects would occur. Actions occurring at JBER would use the Anchorage Borough for its' ROI and the EAFB ROI is FNSB.

The Clean Air Act (CAA) (42 USC 7401–7671q, as amended) provided the authority for the United States Environmental Protection Agency (EPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards known as the National Ambient Air Quality Standards (NAAQS) were developed for 6 criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), both coarse and fine inhalable particulate matter (less than or equal to 10 micrometers in diameter [PM_{10}], and particulate matter less than or equal to 2.5 micrometers in diameter [$PM_{2.5}$]), and lead (Pb). The Act also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of NAAQS. In nonattainment and maintenance areas, CAA requires Federal agencies to determine if their proposed actions conform with the applicable SIP and to demonstrate that their actions will not (1) cause or contribute to a new violation of NAAQS, (2) increase the frequency or severity of any existing violation, or (3) delay timely attainment of any standard, emission reduction, or milestone contained in the SIP. JBER is in attainment for all criteria pollutants and therefore an Air Conformity Review under the CAA Amendments is not required as emissions for air pollutants are below the *de minimis* threshold.

3.4.1 JBER

JBER is located on the outskirts of Anchorage, Alaska. It is adjacent to the northern boundary of the Municipality of Anchorage and is within the Cook Inlet Intrastate Air Quality Control Region (AQCR) of Alaska. This AQCR consists of the territorial area encompassed by the greater Anchorage Area Borough, Kenai Peninsula Borough, and Mat-Su Borough (40 CFR 81.54). JBER is in attainment for all criteria pollutants. The Eagle River area, located north of JBER, is classified as moderate nonattainment for PM_{10} (EPA 2012a). The Municipality of Anchorage was in nonattainment for CO until it was re-designated as a maintenance area on 23 July 2004 (012b) (Appendix D).

The F-16 relocation alternatives will be compared to the Anchorage Borough emissions obtained from the 2008 EPA National Emissions Inventory (NEI), which is provided in Table 3.4-1. The borough data includes emissions data from point sources, area sources, and mobile sources.

- Point sources are stationary sources that can be identified by name and location.
- Area sources are point sources whose emissions are too small to track individually such as a home, small office building, or a diffuse stationary source, such as wildfires or agricultural tilling.
- Mobile sources are any kind of vehicle or equipment with a gasoline or diesel engine, an airplane, or a ship. Two types of mobile sources are considered, on-road and non-road. On-road mobile sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Non-road mobile sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles (EPA 2009).

Military Alaska Greenhouse Gas (GHG) emissions total 1.22 Million Metric Tons (MMT) of Carbon Dioxide equivalents (CO_{2e}) (ADEC 2008).

Table 3.4-1. Baseline Emissions Inventory for Anchorage Borough

Criteria Pollutant (tons/year)					
Carbon Monoxide (CO)	**Nitrogen Oxides (NO_X)**	**PM_{10}**	**PM_{25}**	**Sulfur Dioxide (SO_2)**	**VOC**
73,192	13,139	10,118	2,309	747	12,611
Greenhouse Gases (tons/year)					
Carbon Dioxide (CO_2)	**Methane (CH_4)**	**Nitrous Oxide (N_2O)**	**Carbon Dioxide equivalents (CO_{2e})**		
1,458,819	169	57	1,479,963		

Key:
$PM_{2.5}$=Particulate Matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}=Particulate Matter with an aerodynamic diameter of 10 microns or less
VOC=Volatile Organic Compounds

Source: EPA 2008

3.4.2 EAFB

EAFB is located on the outskirts of Fairbanks, Alaska in the FNSB. FNSB is in attainment for all criteria pollutants except $PM_{2.5}$ (EPA 2010). Based on recommendations from the Alaska Department of Environmental Conservation (ADEC) and the EAFB Commander, EPA in a 22 December 2008 letter to Governor Palin, modified the boundary of the $PM_{2.5}$ nonattainment areas so that it did not include EAFB (EAFB 2009). Thus, EAFB is in attainment for all criteria pollutants. The Proposed Action Alternatives will also be compared to the Anchorage and FNSB emissions obtained from the 2008 EPA NEI, which is presented in Table 3.4-2.

Table 3.4-2. Baseline Emissions Inventory for FNSB

Criteria Pollutant (tons/year)					
Carbon Monoxide (CO)	**Nitrogen Oxides (NO_X)**	**PM_{10}**	**PM_{25}**	**Sulfur Dioxide (SO_2)**	**VOC**
29,800	5,496	18,781	3,090	2,614	4,018
Greenhouse Gases (tons/year)					
Carbon Dioxide (CO_2)	**Methane (CH_4)**	**Nitrous Oxide (N_2O)**		**Carbon Dioxide equivalents (CO_{2e})**	
386,436	501	9		399,733	

Key:
$PM_{2.5}$=Particulate Matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}=Particulate Matter with an aerodynamic diameter of 10 microns or less
VOC=Volatile Organic Compounds

Source: EPA 2013

3.4.3 Training Airspace

Training airspace is primarily in interior Alaskan airspace, which meets both the primary and secondary NAAQS for all criteria pollutants and is therefore in attainment. The use of existing Alaskan airspace is expected to change with decreased use of units located farther north, such as the Eielson, Fox 1, Viper B, and Yukon 1 MOAs, to increased use of airspace units located further south, such as Fox 3, Stony, and Susitna MOAs. The overall number of sorties occurring in Alaskan airspace is not expected to increase from current levels and flight operations would primarily occur at altitudes greater than 3,000 feet AGL (air mixing height); therefore, impacts to air quality would be negligible.

3.5 Physical Resources

3.5.1 JBER

Earth and water resources are not substantially impacted at JBER because the alternatives being considered would not disturb more than one acre of land. Geology, soils, topography, or waters of JBER would not be affected.

3.5.2 EAFB

3.5.2.1 Earth Resources

Earth resources include the geology, soils, and topography of EAFB, which encompasses approximately 19,790 acres. Of this area, 3,408 acres compose the base developed area. EAFB associated lands are isolated from major urban areas and lie on the abandoned floodplain of the Tanana River with elevations ranging from 525 to 550 feet above MSL. Surface relief is generally level and sloping gently downward to the northwest at a gradient of approximately 6 feet per mile.

During the most recent ice age (Wisconsonin), the area in the vicinity of EAFB was not glaciated. The majority of the subsurface geologic formations of the central plateau of Alaska are primarily from the Permian and Devonian periods of the Paleozoic era. The hills to the northeast of the base are composed of Precambrian and Paleozoic-age schists, micaceous quartzites, and subordinate phyllite and marble. Many of these hills support a thick loess mantle.

Soils in the Tanana River Valley consist of unconsolidated silty sands and gravels, organic and sandy silts, and clays. Floodplain soils nearest the active channels are sandy with a thin silt loam layer on the surface. On higher terraces, the soils become predominately silt from the Salchaket series. Along older river terraces, silt loam soils, which contain significant organic components, often dominate. These soils

tend to be cold and wet and are generally underlain by permafrost. Approximately two-thirds of EAFB is covered with soils containing discontinuous permafrost. This preponderance of permafrost soils contributes to the large percentage of vegetated wetlands occurring on undeveloped base lands.

The developed portion of EAFB is composed of fill material deposited atop reclaimed wetlands. Much of this area is over 40 years old. This artificial substrate is composed of quarried Tanana floodplain gravels, cobble, and soil material built up as poorly sorted material to a thickness of between 3 and 8 feet and providing a firm platform for base construction that is devoid of wetlands, above the 100-year floodplain, and insulated from the permafrost layer. A levee system maintains a flood safety margin for residential portions of the installation. As a result of this, the developed portion of EAFB rests, much like an artificial island, above the surrounding forested wetlands and sloughs.

3.5.2.2 Water Resources

3.5.2.2.1 Surface Water

Water bodies within EAFB boundaries include streams, wetlands, and lakes. There are approximately 28 miles of streams, 10,133 acres of wetlands, 12 lakes (Lilly Lake is the only natural lake), 80 ponds (10 naturally occurring and 70 man-made) totaling 560 acres, and 6,770 acres of floodplains on the main base. The man-made lakes and ponds were created during the excavation of gravel deposits for use as fill material for construction projects on the developed portion of the installation and surrounding satellite facilities on the base. Surface drainage on EAFB is generally in a north to northwest direction and parallel to the Tanana River. Five streams flow through the base and discharge into the Tanana River via Piledriver Slough.

Approximately 51%, or 10,133 acres, of EAFB property is classified as wetlands, with 9,391 acres being vegetated wetlands and the remainder being lakes, ponds, and streams. Wetlands and low-gradient alluvial streams compose most of the surface water resources on EAFB, with wetlands dominating the low-lying areas within and surrounding the installation. Most wetland areas were created as a result of surface waters becoming trapped in the thawed layer over the permanently frozen subsurface (permafrost). Flood periods tend to occur during spring snowmelt and during middle to late summer, when heavy rains or warm air quickly brings glacier fed mountain streams to flood capacity. Several lakes and extensive wetlands surround the airfield. Among these are Bear, Polaris, Moose, Hidden, Pike, Rainbow, Scout, Grayling, and Tar Kettle lakes. Creeks that can be found in the vicinity of the airfield include French and Moose creeks.

Piledriver and Garrison sloughs are the 2 largest streams in the vicinity of the airfield. Piledriver Slough, which discharges into the Tanana River, is located along the western edge of EAFB and approximately 4,000 feet west of the airfield and parallel to the runways. Approximately 12 miles of Piledriver Slough occurs on EAFB. The slough receives no runoff from the urban developed area of the base and has good water quality. Garrison Slough (Figure 3.5-1) crosses the developed portion of the installation in a somewhat channelized form. Garrison Slough is the only impaired water body located on EAFB. In 1996, EPA issued a Total Maximum Daily Load for Polychlorinated Biphenyls (PCBs) and the slough is listed by the State of Alaska as a Category 4a on the 2010 list of Impaired Waters for PCBs under Section 303 of the Clean Water Act (EAFB 2012a).

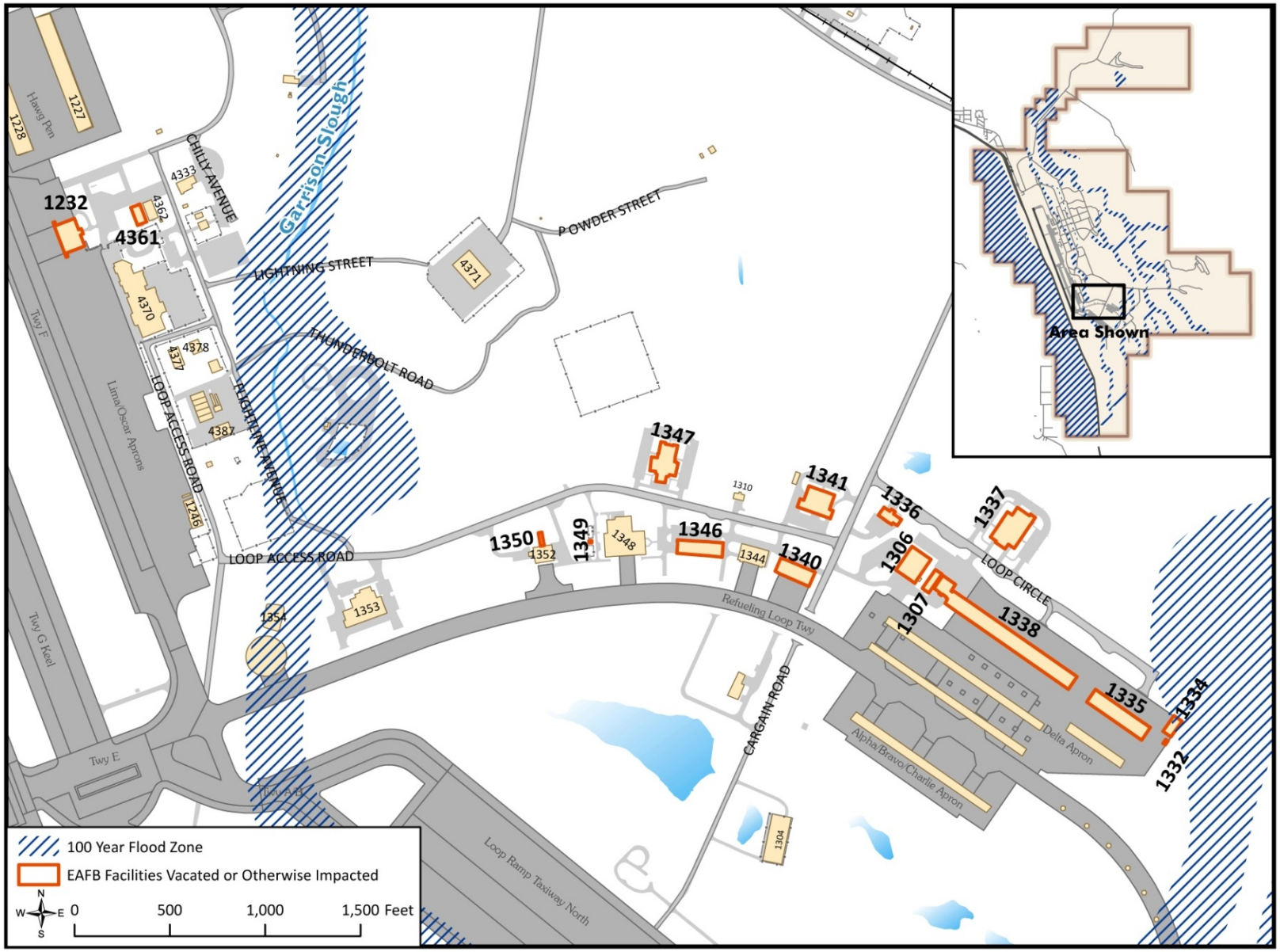

Figure 3.5-1. Zone AE – 100-Year Flood Zone Boundary at EAFB

Portions of the EAFB ROI occur partially within an area identified by the Federal Emergency Management Agency (FEMA) as a 100-year return period flood hazard zone, or floodplain, as defined by EO 11988. Figure 3.5-1 shows the FEMA 100-year flood zone (Zone AE) boundary in the ROI. The potential flood inundation zone characterizes the area that would be inundated during a major storm event. Floodplain management standards of the National Flood Insurance Program apply to Federal actions that occur within Zone AE.

3.5.2.2.2 Ground Water

EAFB is located over a shallow, unconfined aquifer. The aquifer is greater than 250 feet thick, extends to the underlying bedrock, and has a regional gradient of about 5 feet per mile flowing to the north-northwest. The water table varies from the surface in adjacent wetlands to 10 feet below ground level in developed areas. The base uses the local aquifer for its drinking water and monitors groundwater quality in a number of locations as part of its Installation Restoration Program. Localized contamination of the aquifer has been identified in the industrial area of the base, but the overall quality of groundwater at EAFB is good.

3.5.3 Training Airspace

The continuation of 18 AGRS training activities beneath the Alaskan training airspace has no potential to impact earth and water resources and therefore it is not discussed further in this EIS.

3.6 Hazardous Materials and Waste Management

The ROI for Hazardous Materials and Waste Management is the estimated boundary for potential environmental consequences, which are JBER and EAFB.

3.6.1 JBER

3.6.1.1 Hazardous Materials

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

3.6.1.2 Hazardous Waste Management

JBER is a large-quantity hazardous waste generator. Hazardous wastes generated during operations and maintenance activities include combustible solvents from parts washers, inorganic paint chips from lead abatement projects, fuel filters, metal-contaminated spent acids from aircraft corrosion control, painting wastes, battery acid, spent x-ray fixer, corrosive liquids from boiler operations, toxic sludge from wash racks, aviation fuel from tank cleanouts, and pesticides.

Hazardous wastes are managed in accordance with the *JBER OPLAN 19-3* (JBER 2011a). Hazardous wastes are initially stored at approximately 272 satellite accumulation areas. Satellite accumulation areas allow for the accumulation of up to 55 gallons of hazardous waste (or one quart of an acute hazardous waste) to be stored at or near the point of waste generation. There are two 90-day waste accumulation sites on JBER. The base is identified by EPA identification number AK8570028649. In FY11, approximately 100,000 pounds of hazardous waste were removed from JBER and disposed of in off-base permitted disposal facilities.

The JBER Spill Prevention Control and Countermeasures Plan (SPCCP) addresses on-base storage locations and proper handling procedures of all hazardous materials (including JP-8 used by the aircraft) to minimize potential spills and releases (JBER 2012a). The plan further outlines activities to be undertaken to minimize the adverse effects of a spill including notification, containment, decontamination, and cleanup of spilled materials.

3.6.1.3 Environmental Restoration Program (ERP)

DoD developed the ERP to identify, investigate, and remediate potentially hazardous material disposal sites on DoD property. In August 1990, JBER was placed on the National Priorities List bringing it under the Federal facility provisions of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120. Currently JBER has identified 276 contaminated sites from operations. These sites have been placed into three groups: CERCLA sources (166 sites), Compliance Restoration Program sites (74 sites), and Military Munitions Response Program Sites (36 sites) (personal communication Prieksat 2012).

3.6.2 EAFB

3.6.2.1 Hazardous Materials

All hazardous materials used by Air Force and contractor personnel at EAFB are controlled through an Air Force hazardous materials management process called HAZMART, which is the same as described for JBER.

3.6.2.2 Hazardous Waste Management

EAFB is a large-quantity hazardous waste generator (EPA 2001). Typical hazardous wastes generated at EAFB during operations and maintenance activities include abrasive blast media, aerosol cans, anodyne, antifreeze, asbestos brakes, batteries, corrosive preventative compound, filter-chemical warfare masks, fuel and oil filters, filter-paint booth, filter aerosol can crusher, filter-parts washer, glycol, hydrazine, fluorescent lamps, oil water separator sludge, overspray paper, paint/primer wastes, patches/Q-tips with solvent, rags with oil or fuel, rinse water, sealing kits and compounds, used oil and fuels, sludge-vats/tanks/parts washers, and weapons cleaning solution (EAFB 2012a).

Hazardous wastes are managed in accordance with the installation's *Hazardous Waste Management Plan* (EAFB 2012a). Hazardous wastes are initially stored at approximately 26 satellite accumulation areas. Satellite accumulation areas allow for the accumulation of up to 55 gallons of hazardous waste (or one quart of an acute hazardous waste) to be stored at or near the point of waste generation. Once containers

of hazardous waste at a Satellite Accumulation Point (SAP) are full, the SAP has 3 days to transfer the material from SAP to the base hazardous waste 90-day storage facility.

An asbestos management plan provides guidance for the identification of Asbestos-Containing Materials (ACMs) and the management of asbestos. The *Eielson Air Force Base Asbestos Management and Operations Plan* (EAFB 2012b) provides guidance on the management of asbestos. An asbestos facility register is maintained by Civil Engineering. The design of building alteration projects and requests for self-help projects are reviewed to determine if ACMs are present in the proposed work area. ACM wastes are removed by the contractor and disposed of in accordance with state and Federal regulations at EAFB's permitted asbestos and coal ash landfill and remediation site.

EAFB has a hydrazine storage and servicing facility attached to the Fuel Cell Hangar (Building 1344). The hydrazine fuel used by the F-16 aircraft, known as H-70 fuel, is a 70% hydrazine, 30% water mixture that is a listed waste under Resource Conservation and Recovery Act (RCRA). The H-70 tanks are removed from the aircraft when the fuel is depleted below a level specified by the using activity. The tanks are delivered to the servicing facility where any remaining fuel is drained into a closed 55-gallon (210 L) stainless steel drum. The aircraft H-70 tank is filled using a closed system charging unit and is either returned to the aircraft or placed in a handling/storage container for future use. A minimum of 150 gallons of H-70 is held in reserve at the hydrazine storage and servicing facility to handle deployment/safety stock requirements. Hydrazine is managed in accordance with EAFB's *Hazardous Waste Management Plan* (EAFB 2012a) and Air Force guidance for the emergency power system including TO 1F-16C-2-9GS-00-1.

3.6.2.3 Environmental Restoration Program (ERP)

DoD developed the ERP to identify, investigate, and remediate potentially hazardous material disposal sites on DoD property. EAFB currently has approximately 116 ERP/Compliance Restoration sites in various phases (personal communication Beistel 2012).

3.6.3 Training Airspace

Hazardous materials used by F-16s in the Alaskan airspace consist of various components and fluids from the aircraft itself. The plastic and other residual parts of chaff and flares after deployment are inert and non-hazardous. Under normal use, there would be no hazardous materials or waste management requirements associated with the proposed F-16 relocation under the airspace. See also Section 3.3.3 Health and Safety, Training Airspace.

3.7 Biological Resources

3.7.1 JBER

The ROI for biological resources encompasses developed airfield facilities where modifications would occur and portions of JBER and the adjacent waters of Knik Arm that would be overflown by 18 AGRS F-16s at low-altitudes during takeoffs and landings.

The ESA of 1973 (16 USC 1531–1544, as amended) established measures for the protection of plant and animal species that are Federally listed as threatened and endangered, and for the conservation of habitats

that are critical to the continued existence of those species. Compliance with ESA requires communication with the NMFS and the United States Fish and Wildlife Service (USFWS) in cases where a Federal action could affect listed threatened or endangered species, species proposed for listing, or candidates for listing. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation under Section 7 of the Act. The primary focus of this consultation is to request a determination of whether any of these species occur in the proposal area. If any of these species is present, a determination is made as to any potential adverse effects on the species. The appropriate USFWS and NMFS offices and state agencies were contacted to inform them of the proposal and to request data regarding applicable protected species. Informal consultation with NMFS is ongoing regarding the Air Force determination that the proposed 18 AGRS relocation may affect, but is unlikely to adversely affect, the CIBW. Appendix A includes copies of relevant coordination letters.

3.7.1.1 Vegetation

Since there would be no construction or other impacts affecting vegetation at JBER, vegetation is not discussed in this EIS.

3.7.1.2 Fish and Wildlife

JBER is situated across rolling upland plains near the head of Cook Inlet (Knik Arm) in south central Alaska within the Coastal Trough Humid Taiga Province (Bailey 1995). The area is characterized by spruce-hardwood forests, bottomlands of spruce-poplar forests along major drainages, and dense stands of alder (Alnus spp.) and willow (Salix spp.) along riparian corridors. Wet tundra communities bracket the coast.

Moose (*Alces alces*), black bears (*Ursus americanus*), brown bears (*U. arctos*), and wolves (*Canis lupus*) are prevalent on the base and are typical residents of the Alaskan environment. These species have large home ranges that include JBER. Black and brown bears occur on JBER in summer and a small number will spend the winter in dens on JBER. Coyotes (*Canis latrans*) are also common and lynx (*Lynx canadensis*), wolverines (*Gulo gulo*), and red fox (*Vulpes laska*) also occurs (Air Force 2012b). Marine mammals that use habitat offshore of JBER are discussed under Special-Status Species.

At least 103 bird species are known to occur or have the potential to occur at JBER (Air Force 2012b). Waterfowl and shorebirds use the base's ponds, bogs, wetlands, and coastal marshes in summer and during spring and fall migration. Spring waterfowl migration is generally mid-April to mid-May and fall migration is generally August to late October. Raptors that occur on base include osprey (*Pandion haliaetus*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*B. laska*), sharp-shinned hawk (*Accipiter striatus*), northern goshawk (*A. gentils*), merlin (*Falco columbarius*), northern harrier (*Circus cyaneus*), northern saw-whet owl (*Aegolius acadius*), boreal owl (*A. funereus*), great horned owl (*Bubo virginianus*), and bald eagles (*Haliaeetus leucocephalus*). Common breeding birds include alder flycatcher (*Empidonax alnorum),* boreal chickadee (*Poecile hudsonica*), black-capped chickadee (*P. atricapillus*), gray jay (*Perisoreus canadensis*), Swainson's thrush (*Catharus ustulatus*), myrtle warbler (*Dendroica laskak*), American robin (*Turdus laskakss*), slate-colored junco (*Junco hyemalis*), ruby-crowned kinglet (*Regulus calendula*), and white-winged crossbill (*Loxia leucoptera*).

Ten fish species occur at JBER including 5 Pacific salmon (*Onchorhynchus* spp.) species (Air Force 2012b). Ship Creek, Six Mile Creek, and Eagle River are the main spawning creeks for these anadromous fish on JBER.

3.7.1.3 Special-Status Species

There are no Federally-listed threatened or endangered species that inhabit the JBER installation (Table 3.7-1). However, the CIBW (*Delphinapterus leucas)*, which is Federally-listed as endangered, inhabits the waters of Knik Arm of the Cook Inlet adjacent to JBER. Belugas are also known to travel as far as 2.9 river miles up the Eagle River during the late summer/early fall (personal communication Chris Garner). Designated critical habitat for the species includes portions of the Knik Arm (76 FR 20180). Knik Arm is located to the west and north of JBER runways and is overflown by existing aircraft on established approach, departure, and reentry patterns. The heaviest use by CIBW of the Knik Arm near JBER, including the Eagle River and Eagle Bay, is from August-October.

Table 3.7-1. Species Federally Listed, Proposed, and Candidates for Listing as Endangered or Threatened under the ESA that May Occur in the JBER and EAFB Project Region

Common Name	Scientific Name	Status	Occurrence at JBER and/or EAFB
Aleutian Shield Fern	*Polystichum aleuticum*	FE	No
Chinook Salmon (Puget Sound; and Lower Columbia, Snake, and Upper Willamette rivers Evolutionary Significant Units	*Oncorhynchus tshawytscha*	FT (1 ESU is FE)	No
Steelhead (Columbia, Snake, and Willamette rivers populations)	*Onchorhynchus mykiss*	FT	No
Kittlitz's Murrelet	*Brachyramphus brevirostris*	FC, MBTA	No
Eskimo Curlew	*Numenius borealis*	FE, MBTA	No
Spectacled Eider	*Somateria fisheri*	FT, MBTA	No
Steller's Eider (AK breeding population)	*Polysticta stelleri*	FT, MBTA	No
Yellow-billed Loon	*Gavia adamsii*	FC, MBTA	No
Steller Sea Lion	*Eumetopias jubatus*	FT=eastern population, FE=western population, MMPA	No, occurs very infrequently in the Knik Arm
Cook Inlet Beluga Whale (CIBW) (distinct population segment)	*Delphinapterus leucas*	FE, MMPA	No, but occurs in the Knik Arm adjacent to JBER, which would be overflown by F-16s and which are designated critical habitat.
Northern Sea Otter (southwest Alaska distinct population segment)	*Enhydra lutris kenyoni*	FT, MMPA	No, (lower Cook Inlet only)

Key:

FC=Candidate for Federal listing
ESA=Endangered Species Act
ESU=Evolutionary Significant Unit
FE=Listed as endangered under ESA
FT=Listed as threatened under ESA
MMPA=Protected under Marine Mammal Protection Act
MBTA=Protected under Migratory Bird Treaty Act

Sources: ADFG 2011a and 2011b, USFWS 2013, NMFS 2013, Air Force 2012b, MMPA 2004.

Steller sea lion (*Eumetopias jubatus*) is an endangered species that has been documented very infrequently in the Knik Arm near JBER (Table 3.7-1). The northern sea otter (southwest Alaska distinct population segment) is listed as a threatened species. These sea otters occur along the Alaskan Peninsula to the Aleutian Islands with the nearest population to the project area occurring in the lower Cook Inlet.

Marine mammal species, including the ESA-listed species identified above, are all protected under the Marine Mammal Protection Act (MMPA 2004). Non-listed marine mammals include the harbor porpoises (*Phocoena phocoena*) and orca or killer whales (*Orcinus orca*), which are uncommon in upper Cook Inlet but are sighted occasionally. Harbor seals (*Phoca vitulina)* are present in the upper Cook Inlet into the Knik Arm and are becoming increasingly more common (Air Force 2012b).

The bald eagle, which receives protection under the Federal Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668a-668d) and Migratory Bird Treaty Act (MBTA), is common locally, and a 2012 survey recorded 31 nests with 18 active nesting pairs on JBER lands or on adjacent restricted areas (USFWS 2012). MBTA applies to other migratory birds in the project area as well.

3.7.2 EAFB

The ROI for EAFB includes the developed areas on base where facility reuse or demolition may occur. These are primarily located on the taxiway loop (see Figure 2.4-3).

3.7.2.1 Vegetation

EAFB's airfield and developed areas, where facilities modification or demolition would occur, were constructed on fill material deposited in cleared forest wetlands of the river floodplain. The base grounds have been planted with lawns, and ornamental trees and shrubs (EAFB 2007a). Semi-improved grounds around airfields and other facilities support vegetation consisting of a mix of a wide variety of native and introduced plant species that receive annual mowing and brush control to maintain vegetation in an early stage of succession.

3.7.2.2 Fish and Wildlife

EAFB occurs within the Yukon-Tanana Uplands ecoregion that consists of broad, rounded mountains of moderate height supporting vegetation dominated by conifer and deciduous forests with tussock and scrub bogs occurring in valley bottoms. The Tanana River Valley in which EAFB occurs is typical of boreal forest or taiga habitats. Common mammals that use the black spruce and white spruce forests on EAFB include black bear, which are attracted to the freshly sprouted green vegetation in the spring and lowbush cranberries in the late summer and fall (EAFB 2011a). In addition, red squirrels eat the spruce cones and use the twigs, leaves, and moss for nests. Martens use the spruce for cover. Spruce grouse are found on EAFB in the fall eating cranberries and forage on spruce needles in the winter. Moose primarily use the younger birch stands for browse. Mature birch forests are used by raptors for nesting and ruffed grouse (*Bonasa umbellus*), which use the bases of large birch trees for their nests. Ruffed grouse feed on highbush cranberry and rose hips. The snowshoe hare forages on the bark, buds, and twigs of the small birch, willow, and balsam poplar. Beaver, mink, and muskrat are common in the stream habitats. Over 20 species of waterfowl including geese, ducks, loons, grebes, and scoters use the aquatic habitat on EAFB and many of these species are protected under MBTA (EAFB 2011a).

3.7.2.3 Special-Status Species

No listed or proposed threatened or endangered species or critical habitats were found during surveys or are known to occur on lands managed by EAFB (EAFB 2008, 2011a). As for JBER, many bird species protected under MBTA, occur at least seasonally in the EAFB area (Table 3.7-1). Several are considered Central Alaska Priority Species in the Boreal Partners in Flight Landbird Conservation Plan (EAFB 2011a).

3.7.3 Training Airspace

The ROI for training airspace in Alaska includes all lands under the existing MOAs, ATCAAs, and RAs that would be used by the 18 AGRS. Depending on the MOA and overlying ATCAA, training may currently be authorized from 500 feet AGL to above 60,000 feet MSL.

3.7.3.1 Vegetation

Vegetation and wildlife on lands under the training airspace that would be used by 18 AGRS are described in Alaska MOAs Final EIS (Air Force 1997), the Delta MOA EA (Air Force 2010a), and the JPARC Draft EIS (Air Force 2012a).

3.7.3.2 Special-Status Species

Special-status species include species designated as threatened, endangered, or candidate species by state or Federal agencies. No Federally-listed species occur on lands under the existing training airspace, although listed species do occur in marine waters under airspace. Federally-listed as threatened, Steller sea lions have been observed very infrequently in the Knik Arm adjacent to JBER, as described in Section 3.7.1. Other species protected under the MMPA occasionally documented in the Knik Arm include harbor seal, harbor porpoise, and killer whale (MMPA 2004). The killer whale group that was frequently encountered year-round in the 1980s in Prince William Sound (named the AT1 Transient group) consisted of at least 22 whales. However, following the 1989 Exxon Valdez oil spill, this killer whale group was reduced by more than half and in June 2004 NMFS designated the AT1 group as a depleted stock under the MMPA. Many birds protected under MBTA and BGEPA occur as residents or migrants under terrestrial airspace.

3.8 Cultural Resources

For the Proposed Action Alternatives, the ROI for cultural resources is defined as JBER-Elmendorf and its vicinity, EAFB and its vicinity, and the training airspace used by the 18 AGRS F-16s.

DoD Instruction 4715.16, *Cultural Resources Management*, and AFI 32-7065, *Cultural Resources Management*, outline and specify proper procedures for cultural resource management on Air Force installations.

Laws pertinent to the Proposed Action include the National Historic Preservation Act (NHPA) of 1966, as amended; the Antiquities Act of 1906; the Historic Sites Act of 1935; NEPA; the Archaeological and Historic Preservation Act of 1974; the Archaeological Resources Protection Act of 1979; the Native American Graves Protection and Repatriation Act of 1990; and the American Indian Religious Freedom Act of 1978.

Under Section 106 of NHPA, the Air Force is required to consider the effects of its undertakings at each alternative location on historic properties that are listed, or eligible for listing, in the National Register of Historic Places (NRHP) and to consult with the State Historic Preservation Office (SHPO), Tribal Historic Preservation Office (THPO), and others regarding potential effects as per 36 CFR 800. Under AFI 32-7065, recorded cultural resources not evaluated for NRHP eligibility must be managed as eligible. Under Section 110 of NHPA, each base is mandated to maintain an active historic preservation program and provide stewardship of cultural resources that are consistent with the preservation of such properties and the mission of the agency (Section 470 h-2[a]).

Federal regulations governing cultural resource activities include the following: 36 CFR 800, *Protection of Historic Properties* (incorporating amendments effective August 5, 2004); 36 CFR 79, *Curation of Federally Owned and Administered Archaeological Collections*; 43 CFR 7, *Protection of Archaeological Resources*; 36 CFR 60, *National Register of Historic Places*; and 36 CFR 63, *Determinations of Eligibility for Inclusion in the National Register*. Cultural resource-related Executive Orders that may affect the alternative locations include the following: EO 11593, *Protection and Enhancement of the Cultural Environment*; EO 13007, *Indian Sacred Sites*; EO 13175, *Consultation and Coordination with Indian Tribal Governments*; and EO 13287, *Preserve America*.

3.8.1 JBER

3.8.1.1 Archaeological Resources

Since the beginning of cultural resource investigations at JBER-Elmendorf in 1978, most survey work has been concentrated along the northwest border of the base property. Through these survey efforts, 34 archaeological sites have been located at JBER. Twenty-four sites are recommended as ineligible for the NRHP, 8 are unevaluated, and 2 are considered eligible (JBER 2012b, Elmendorf AFB 2010). No NRHP-listed archaeological resources have been located in the project area (JBER 2012b, NRIS 2011). The portion of the ROI where facility modifications would occur is considered to have a low probability for the presence of archaeological resources (Air Force 2011a).

3.8.1.2 Architectural Resources

There are 52 NRHP-eligible buildings or structures on JBER-Elmendorf, most of which are located in one of three NRHP-eligible historic districts. The Flightline Historic District is adjacent to the runway and includes two buildings slated for modification under the Proposed Action Alternatives, Hangar 1 (Building 11551), and Hangar 3 (Building 10571). In the Alaska Air Depot Historic District, Hangar 7 (Building 10286) is slated for modification. The other district in the main cantonment is the Generals' Quad Historic District (Figure 2.4-2).

3.8.1.3 Traditional Cultural Properties and Alaska Native Concerns

Although no traditional cultural properties have yet been identified on JBER-Elmendorf, neighboring Alaska Natives have raised concerns regarding the possibility of Alaska Native burials located on JBER-Elmendorf property (JBER 2012b). The Air Force is consulting with Alaska Natives on this and other issues on a government-to-government basis. The Federally recognized tribes in the nearby area are the Eklutna and Knik Tribes (JBER 2012b).

3.8.2 EAFB

3.8.2.1 Archaeological Resources

A Section 110 survey for prehistoric and historic archaeological resources has been completed for EAFB (Gerlach *et al.* 1996). The identification study consisted of an intensive program of pedestrian survey and a subsurface testing program directed by a probability model. No evidence for prehistoric or non-military land use by Athabaskans or Euroamericans was found in the course of these investigations (EAFB 2006a).

3.8.2.2 Architectural Resources

The EAFB Flightline Historic District consists of 20 buildings and one structure along the flightline (EAFB 2006). This historic district is eligible for listing on the NRHP, based on the central role EAFB played in bomber deployment and arctic observation missions during the Cold War, and specifically the period between 1947 and 1960. These missions were central to U.S. decision-making about worldwide atomic proliferation, national defense, and possible retaliation (EAFB 2006, USACE 2005). Two munitions historic districts have also been delineated at EAFB: the Engineer Hill District (7 munitions igloos and one munitions inspection igloo) and the Quarry Hill District (21 munitions igloos).

No other buildings older than 50 years have been identified as eligible for listing on the NRHP (EAFB 2006). Of the remaining buildings at EAFB dating to the Cold War era that are younger than 50 years, none have the exceptional significance necessary to achieve NRHP eligibility (36 CFR 60.4, USACE 2005). However, a number of buildings will reach 50 years old in the next few years, including three that are part of the Proposed Action Alternatives: Buildings 1232, 1306, and 1307.

3.8.2.3 Traditional Cultural Properties and Alaska Native Concerns

No traditional cultural properties have been identified on EAFB. Ongoing consultation between the Air Force and Alaska Natives on potential issues of concern is conducted on a government-to-government basis. The Air Force is consulting with Alaska Natives on this and other issues on a government-to-government basis. These tribes are represented by the Tanana Chiefs Conference (EAFB 2006).

3.8.3 Training Airspace

Archaeological sites under training airspace include native burial grounds, village and settlement sites, and historic mining sites (Air Force 2006). Architectural resources under the MOAs include structures relating to gold mining, trapping, or the railroad (Air Force 2006). In addition to NRHP-listed sites, there are likely to be additional cultural resources that are either eligible, or potentially eligible, for NRHP listing under airspace.

Federally-recognized Alaska Native villages under or near the airspace units that would experience a change in use if 18 AGRS is relocated to JBER are presented in Table 3.8-1 and illustrated in Figure 3.8-1. More information about the resources beneath the airspace units can be found in the F-22 Plus-Up EA (Air Force 2011a).

Table 3.8-1. Alaska Native Villages Beneath or Near Airspace Units and Installations

Village	Federally-Recognized Tribe or Other Designation	NRHP Properties
Near JBER		
Eklutna	Eklutna Native Village	None
Knik	Knik Tribe	None
Stony A/B Military Operation Area (MOA)		
Crooked Creek	Village of Crooked Creek	None
Georgetown	Native Village of Georgetown	None
Lime Village	Lime Village	None
Red Devil	Village of Red Devil	None
Sleetmute	Sleetmute Traditional Council	Kolmakov Redoubt Site
Stony River	Village of Stony River	None
Naknek ½ MOAs		
Koliganek	New Koliganek Village Council	None
Buffalo MOA		
Dot Lake	Village of Dot Lake	
Healy Lake	Healy Lake Village	11 National Register of Historic Places (NRHP)-listed resources
Yukon MOAs		
Chalkyitsik	Chalkyitsik Village	None
Circle	Circle Native Community	The Coal Creek Historic Mining District
Eagle	Native Village of Eagle	Eagle Historic District, Woodchopper Roadhouse, Frank Slaven Roadhouse, Steele Creek Roadhouse, George McGregor Cabin, Ed Beiderman Fish Camp, Chicken Historic District (66 miles south of Eagle on the Taylor Highway)
Fox MOAs		
None		Tangle Lakes Archaeological District
Birch, Eielson, Viper MOAs		
None		Rapids Roadhouse (also known as Black Rapids Roadhouse), in Delta
Delta MOA		
None		Big Delta Historic District (also known as Big Delta State Historical Park), in Delta Junction; Rika's Landing Roadhouse (also known as Rika's Landing Site), in Big Delta; and Sullivan Roadhouse, in Delta Junction
Galena MOA		
None		None
Susitna MOA		
None		None

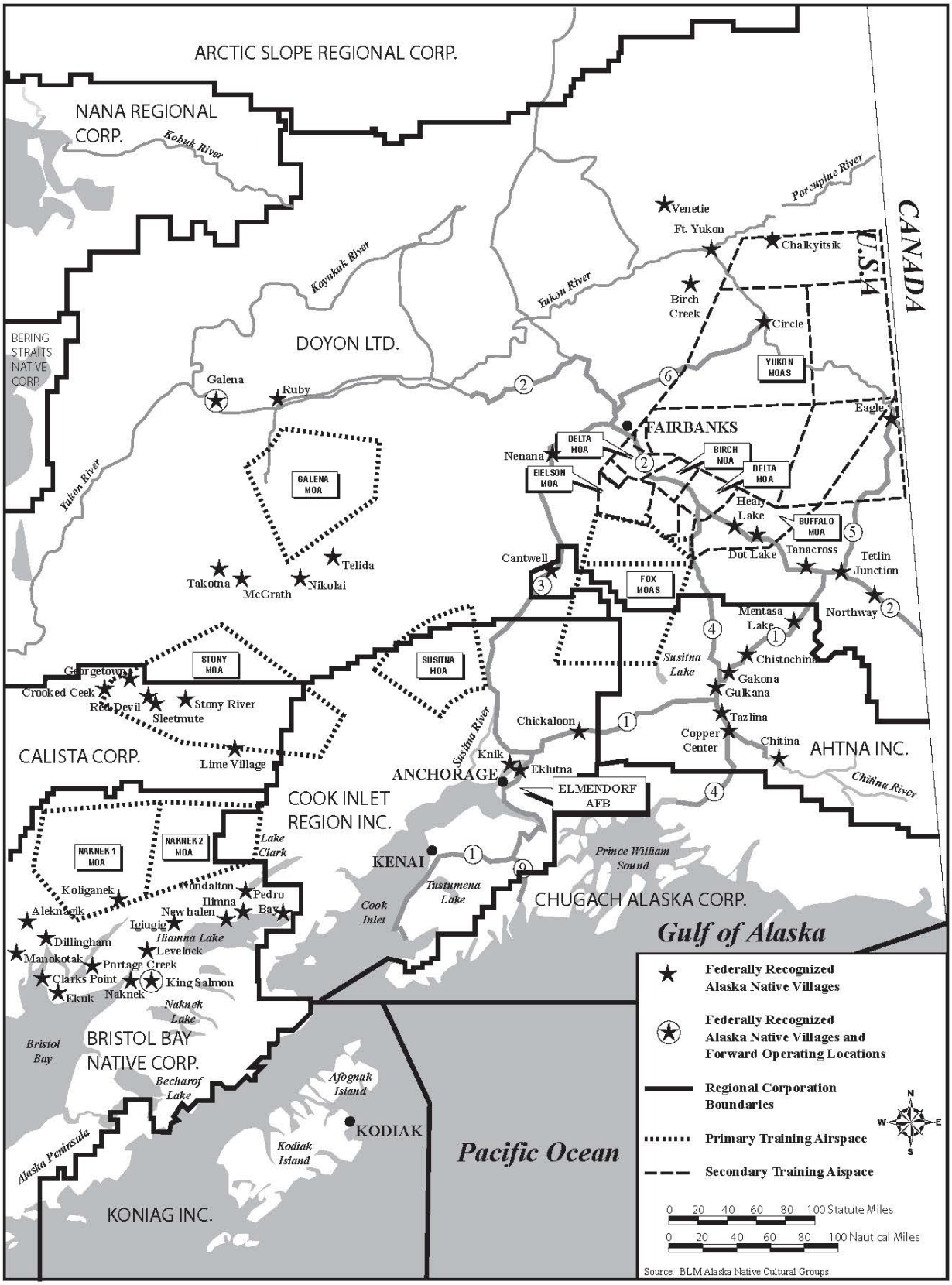

Figure 3.8-1. Alaska Native Villages Beneath or Near Airspace Units and Installations

3.9 Land Use and Recreation

The ROI for the land use and recreation evaluation at JBER and EAFB includes the base and immediate surrounding areas, within the footprint of the largest noise contours, plus a buffer of about a half mile to capture the context of the surrounding land and jurisdictions. For training operations, the ROI includes the land underlying the SUA proposed for use by the F-16 units in Alaska.

3.9.1 JBER

JBER is located at the head of Cook Inlet within the Municipality of Anchorage. JBER-Elmendorf comprises 13,455 acres of JBER's total 84,000 acres of Federal land directly north of the Municipality of Anchorage in the south-central portion of the state of Alaska.

Figure 3.9-1 depicts existing land uses on JBER-Elmendorf. The airfield and related aircraft functional areas are located in the center and southern part of the base. A mixture of land uses (community services and commercial retail, unaccompanied housing, family housing, and administration) is located in the core areas south and west of the two runways. West of this area, a large industrial area forms a boundary between the central mixed-use core of the base and the housing and services area in the base's southwest corner. Between the core areas and the base boundary (south of Arctic Warrior Road and west of Boniface Road), the land is primarily open or used for recreation, with a community park and Eagle Glen Golf Course, a small explosive safety hazard zone, and unaccompanied housing area. East of Boniface Road, medical facilities are located in the southeast corner, along with some housing and recreational areas. There are 6 schools located in the southern portion of JBER-Elmendorf, of which 3 (Mountain View Elementary, Government Hill Elementary, and Bartlett High School) are outside the installation fenceline but are on land leased to the school district. Large recreational areas and open space is located north and south of the airfield (Air Force 2005a). Some areas on the base have land use restrictions that prohibit construction of manned facilities in areas that were previously contaminated.

JBER-Elmendorf is bordered to the east by JBER-Richardson. There are various training ranges within the military installations including maneuver, impact, and training areas. Both sides of JBER (JBER-Richardson and JBER-Elmendorf) have individual General Plans, but no consolidated plan has been adopted. A General Plan presents a comprehensive planning strategy to support military missions assigned to the installation and guide future installation development decisions. The plan presents a summary of existing conditions and provides a framework for programming, design, and construction, as well as resource management for a 50-year timeframe.

Existing base plans and studies present factors affecting both on- and off-base compatible land use and also include recommendations to assist on-base officials and local community leaders in ensuring compatible development in the vicinity of the base. In general, land use recommendations are based on safety factors (refer to Section 3.3, Health and Safety) and aircraft noise (refer to Section 3.2, Noise). As described in Section 3.3.1.2, Ground Safety, areas around the airfield are exposed to varying degrees of accident risks. In the surrounding community, about 146 acres within APZ I and about 35 acres in APZ II are residential.

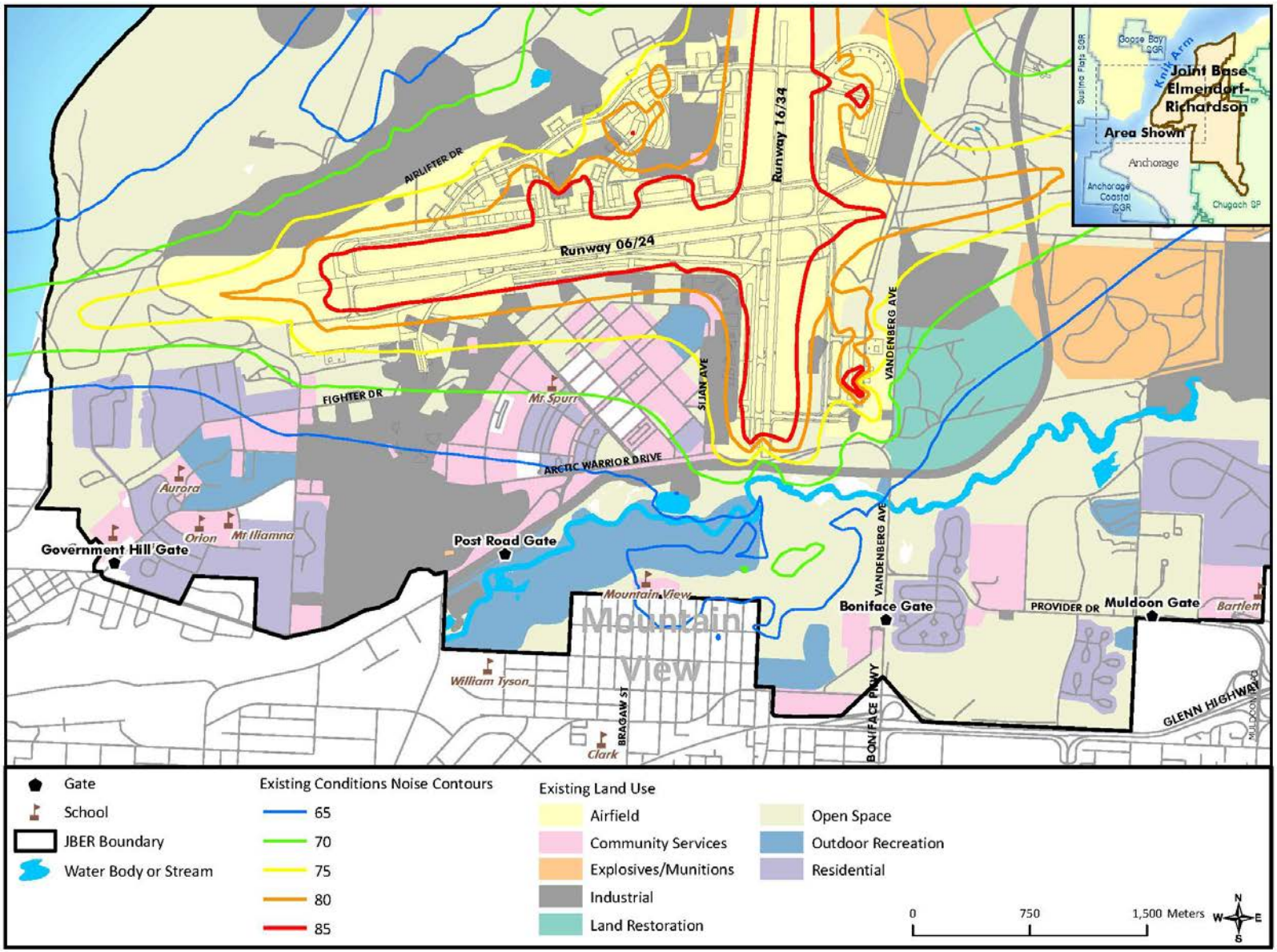

Figure 3.9-1. Existing Land Use on JBER

Noise is one of the major factors used in determining appropriate land uses since elevated sound levels are incompatible with certain land uses. When noise levels exceed an of 65 dB L_{dn}, some uses such as residential land uses are normally considered incompatible (DoDI 4165.57). Residential land uses and schools can be considered compatible so long as they have adequate sound attenuation as noted in the Air Force Air Installation Compatible Use Zone (AICUZ) land use compatibility tables (DoDI 4165.57). Other community uses, such as schools are also considered sensitive to auditory intrusion. Noise exposure levels from existing operations at JBER-Elmendorf are shown on Figure 3.9-1 for on base land uses and Figure 3.9-2 for off base land uses. Two elementary schools (Mount Spurr and Mountain View) experience noise exposure levels between 65 dB L_{dn} and 70 dB L_{dn}. Some family housing areas in the core of the base are also exposed to these levels.

Outside JBER-Elmendorf, there are about 450 acres of land exposed to noise levels of 65 dB L_{dn} and above. Off-base land use is depicted on Figure 3.9-2. To the west of JBER-Elmendorf is the Port of Anchorage and Cook Inlet/Knik Arm. The City of Anchorage borders the base to the south. Much of the land in the vicinity of the base is residential with industrial land further to the southwest. Immediately south of the base boundary, a residential neighborhood known as Mountain View has a combination of single and multi-unit dwellings, and a medium-to-high population density averaging about 46 persons per acre. To the west, surrounded by industrial areas is the Government Hill neighborhood.

Table 3.9-1 summarizes the land acres exposed to noise levels of 65 dB L_{dn} and above outside the installation boundary by land use. A total of 160 acres are exposed to noise levels of 65 dB L_{dn} or greater surrounding JBER, of which the majority is land around the docks to the west of the base, used for transportation and industrial type uses. As shown on Figure 3.9-1, about 12 acres of residential land in Mountain View is exposed to noise levels between 65 and 70 dB, which is not recommended for this land use. However, interior noise levels can be made compatible with the addition of noise attenuation. Figure 3.9-1 and Figure 3.9-2 also show the locations of parks and schools. Four schools, William Tyson Elementary School, Clark Middle School, Pacific Northern Academy, and Wonder Park Elementary are located south of the base, but outside the 65 dB L_{dn} exposure zone. No off-base parks or outdoor recreational facilities are exposed to noise above 65 dB L_{dn}, with the exception of the northwest corner of Davis Park in Mountain View.

Table 3.9-1. Noise Exposure in Areas Surrounding JBER (Acres by Land Use)

Land Use	Existing L_{dn} dB (acres)			Alt A L_{dn} dB (acres)			Alt B L_{dn} dB (acres)		
	65-70	70-75	76-80	65-70	70-75	76-80	65-70	70-75	76-80
Residential	12	0	3	21	0	3	26	0	3
Transportation	89	56	0	93	56	0	95	57	0
Total Acres	**160**			**173**			**181**		

Key:
Alt=Alternative dB=decibels L_{dn}=Day-Night A-Weighted

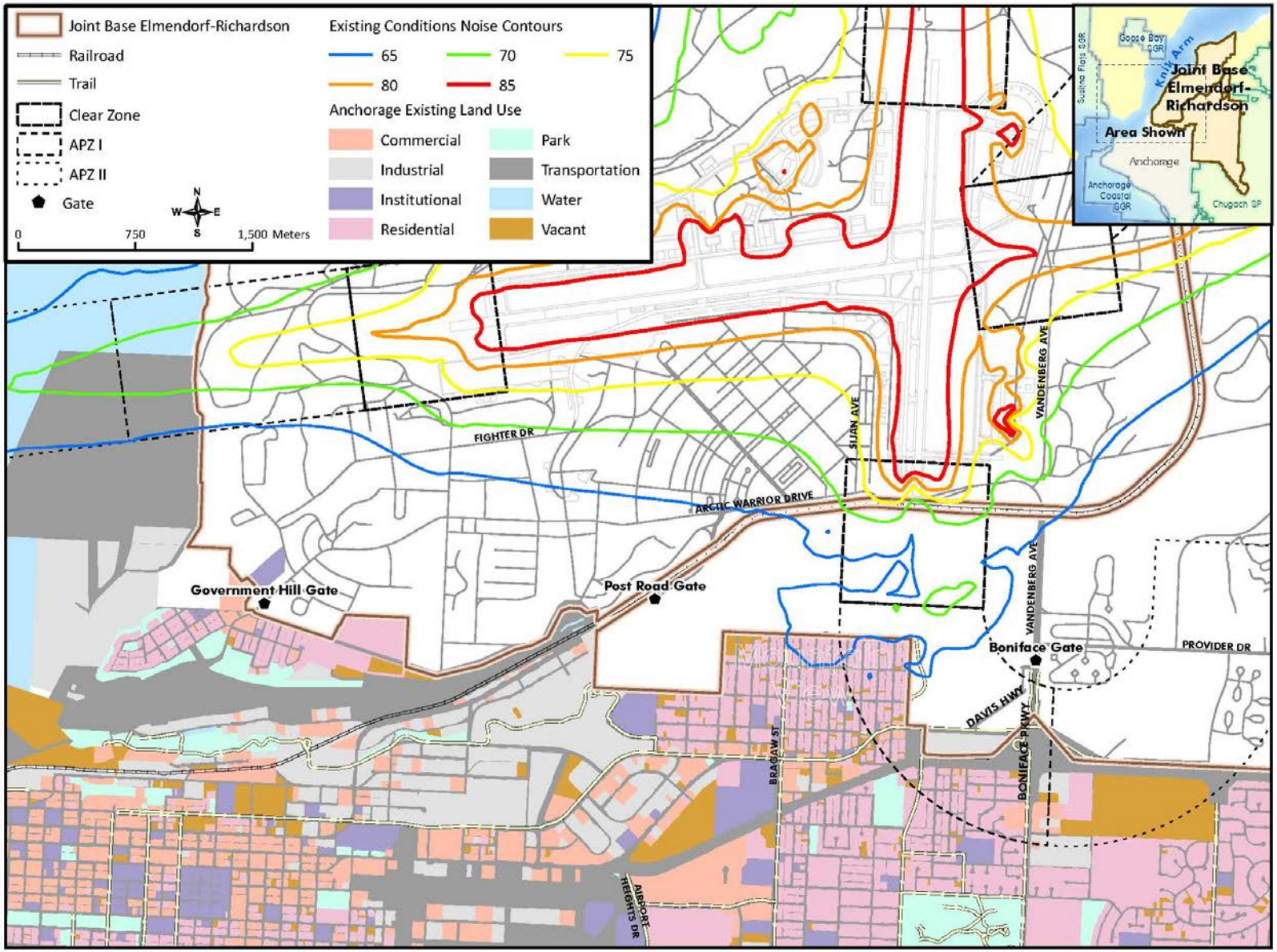

Figure 3.9-2. Land Use and Noise Exposure Levels Surrounding JBER

3.9.2 EAFB

The ROI for land use and recreation is EAFB and surrounding areas. EAFB is located in FNSB, about 26 miles southeast of Fairbanks and 10 miles southeast of North Pole. The installation is approximately 19,790 acres and adjacent to the Army's Yukon Training Area (Figure 2.4-2). The airfield is the dominant land use, with a notably long 14,507-foot runway and associated ramps and taxiways occupying the west side of the base (see Figure 3.2-4). The runway parallels to Richardson Highway, which runs through the base. Most of the aircraft's operational and industrial areas are immediately adjacent to the airfield on the east side, which is on the south end of the base. Land to the west of the airfield and highway is predominantly undeveloped open space with lakes, wetlands, and forests.

Due to the high cost of off-base housing and the extreme climate in Alaska, the base provides a wide range of community facilities including over 930 family housing units and almost 450 rooms for unaccompanied military personnel. The layout of the functional areas of the base provides some separation between the housing areas and the airfield, decreasing the noise exposure in the housing areas. The housing areas on the east side of the base are close to several lakes. Most of the community services are situated in the center of the base between Kobuk Loop Road and north of Arctic Road and Broadway Road. The base has school facilities from kindergarten through high school, a medical center, chapel, commissary, and a selection of commercial businesses. Recreational uses include athletic fields, outdoor track, trails, campgrounds, and lakes, as well as indoor athletic facilities. Much of the base is wetland or floodplain and not suitable for construction. Due east of the base is the Yukon Training Area, which is managed by the U.S. Army. Manchu Road provides vehicular access to this training area heading eastward from the north end of the base. A few miles to the north of the base is the small community of Moose Creek with a population of about 550 persons. Most of the homes in this community are slightly west of the main axis of the runway and the flight paths in and out of the airfield. Richardson Highway runs within the west side of the base. On the west side of the highway, land outside the base is a mixture of undeveloped natural forest and some cultivated agricultural land with associated rural facilities and a small number of homes. Land to the south/southeast of the base is mostly uninhabited. A small airstrip and rural roads provide some access to the area for recreation (predominantly hunting and fishing) and some commercial and subsistence use of resources in the surrounding area.

3.9.3 Training Airspace

The land ownership categories under the SUA include Federal, state, local jurisdiction, Alaska Native corporations, and private landowners. The primary management goals and objectives for Federal lands are described by the managing agency, which may include the USFWS, the U.S. Forest Service, Bureau of Land Management (BLM), or DoD. State of Alaska land under the study area is typically managed by the Departments of Fish and Game or Natural Resources. Land management plans prepared by state and Federal agencies establish goals for current and future uses and development and identify appropriate management priorities. As part of this process, sensitive land use areas are often designated for protection or management that is more rigorous due to particular resource values.

The general land use patterns underlying this airspace may be characterized as mostly undeveloped and natural. Proportionately, most of the land is publicly owned (either state or Federal) or is owned by Native Corporations, with only a very small portion is held privately. There are a number of small towns and

villages throughout the area that occur along roads and highways, as well as in remote areas accessible only by waterways or small planes.

Throughout the region, Federal, state and Native Alaska lands support a spectrum of productive uses mostly through existing leases, claims, and permits. The area is also extensively used for outdoor recreation, hunting, fishing, and eco-tourism. Hunting and fishing in Alaska is also closely tied to subsistence and livelihoods, with special provisions under the Alaska Native Settlement Claims Act.

The extensive area supports diverse recreational opportunities in parks, forests, and open lands, which is ideal for hunting, fishing, and/or solitude or wilderness experience. Figure 3.9-3 shows the locations of specially designated areas under or near 18 AGRS training airspace. Table 3.9-2 provides a list of the areas including total acreage and the percent of each special area that underlies each airspace unit.

Specially designated land and special-use areas include large public land areas such as state or national parks, trails, monuments, wild and scenic rivers, conservation areas, forests, refuges, and reserves. Some of these may have individual campgrounds, trail systems, and visitor centers.

Most notably, a portion of Denali State Park, about 550,000 acres of Denali National Park and about 400,000 acres of Denali National Preserve, underlie the northern portion of the Susitna MOA. Denali National Park, managed by the National Park Service, was established in 1917 as Mount McKinley National Park. In 1980, the Alaska National Interest Lands Conservation Act expanded the boundary by four million acres and renamed it Denali National Park and Preserve. Denali is currently 6 million acres in size. Three distinct units make up Denali National Park and Preserve, Denali Wilderness, Denali National Preserve, and Denali National Park. The Susitna MOA does not overlie the Denali Wilderness.

Segments of the well-known Iditarod National Historic Trail underlie the Susitna MOA (Air Force 1995). The Iditarod Trail is a network of more than 2,300 trails that takes its name from an Athabascan Indian village.

Several National Wild and Scenic River (NWSR) corridors partially underlie the airspace. Forty-Mile and Yukon NWSRs underlie Yukon 1 MOA, Gulkana NWSR underlies Fox 3 MOA, and Delta NWSR underlies Delta and Buffalo MOAs. State-managed specially designated areas also underlie several of the MOAs used for F-16 training as listed in Table 3.9-2. These all support varying levels of visitation and use for recreation, hunting, subsistence harvesting, and other diverse outdoor public uses.

Under the Fox 1, 2, and 3 MOAs, much of the land has special management status including the Tangle Lakes Archaeological District and Tangle River, Gulkana NWSR, and Nelchina Public Use Area. Although there are no large communities within this area, there are scattered remote residences. The Fox MOAs overlie areas frequently used for recreational hunting including BLM-managed recreation areas and trails.

Stony A and B MOAs overlie a number of small communities including Georgetown, Crooked Creek, Red Devil, Sleetmute, and Stony River, and two areas of critical environmental concern.

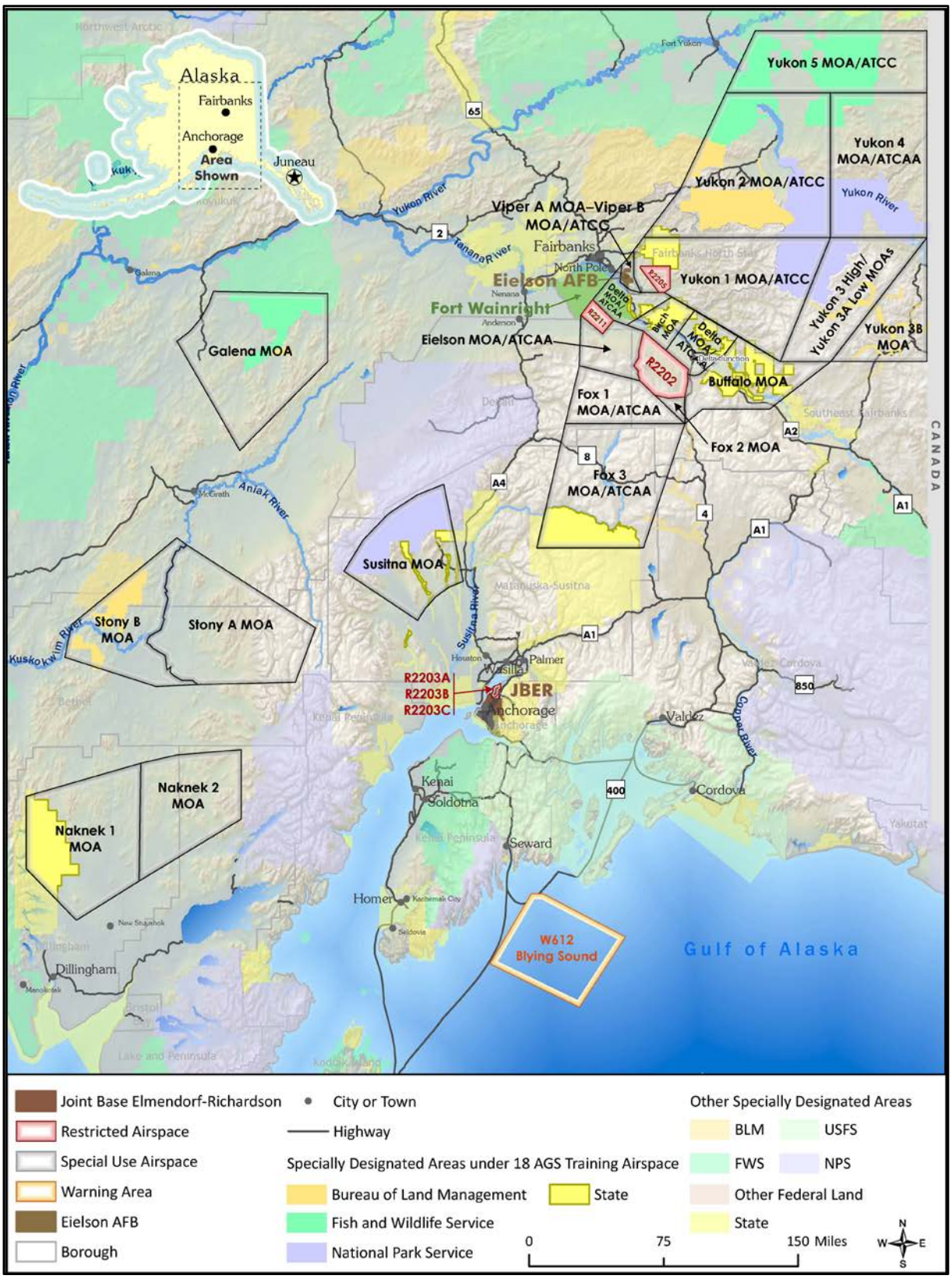

Figure 3.9-3. Federal and State Specially Designated Areas under 18 AGRS Training Airspace

Table 3.9-2. Specially Designated Areas Underlying F-16 Special Use Airspace (SUA)

SUA	Special Area Name	Total Area of SUA (acres)	Specially Designated Area (acres)	Specially Designated Area Within SUA (acres)	% of Specially Designated Area Within SUA	% of SUA overlying Specially-Designated Area	Current Noise Level L_{dnmr} (dB)/CDNL
BIRCH MOA	Tanana Valley SFR	359,928	1,824,725	187,396	10.3%	52.1%	62/49
BUFFALO MOA	Delta Junction Bison Range Area	1,396,533	88,443	88,443	100.0%	6.3%	55/49
BUFFALO MOA	Delta Wild and Scenic River	1,396,533	45,078	506	1.1%	0.0%	55/49
BUFFALO MOA	Tanana Valley SFR	1,396,533	1,824,725	356,888	19.6%	25.6%	55/49
DELTA 1 MOA	Tanana Valley SFR	408,900	1,824,725	37,281	2.0%	9.1%	<45/48
DELTA 2 MOA	Tanana Valley SFR	359,927	1,824,725	187,395	10.3%	52.1%	<45/48
DELTA 3 MOA	Tanana Valley SFR	544,681	1,824,725	137,404	7.5%	25.2%	<45/48
DELTA 4 MOA	Delta Junction Bison Range Area	1,317,155	88,443	88,443	100.0%	6.7%	<45/48
DELTA 4 MOA	Delta Wild and Scenic River	1,317,155	45,078	506	1.1%	0.0%	<45/48
DELTA 4 MOA	Tanana Valley SFR	1,317,155	1,824,725	356,889	19.6%	27.1%	<45/48
EIELSON MOA	None present	N/A	N/A	N/A	N/A	N/A	57/54
Fox 1 MOA	None present	N/A	N/A	N/A	N/A	N/A	<45/54
Fox 2 MOA	None present	N/A	N/A	N/A	N/A	N/A	50/54
FOX 3 MOA	Gulkana Wild and Scenic River	3,142,714	96,122	5,266	5.5%	0.2%	<45/55
FOX 3 MOA	Nelchina PUA	3,142,714	2,334,790	659,401	28.2%	21.0%	<45/55
STONY B MOA	George River ACEC	2,028,032	766,077	357,306	46.6%	17.6%	<45/51
STONY B MOA	Oskawalik River ACEC	2,028,032	111,444	104,008	93.3%	5.1%	<45/51
R-2205	Chena River SRA	116,176	252,813	9,486	3.8%	8.2%	61/51
SUSITNA MOA	Denali National Park	2,098,041	6,030,930	946,931	15.7%	45.1%	<45/47
SUSITNA MOA	Denali State Park	2,098,041	323,425	42,462	13.1%	2.0%	<45/47
SUSITNA MOA	Kroto Creek And Moose Creek SRR	2,098,041	74,628	27,574	36.9%	1.3%	<45/47
SUSITNA MOA	Lake Creek SRR	2,098,041	64,011	56,326	88.0%	2.7%	<45/47
SUSITNA MOA	Petersville RMA	2,098,041	487	487	100.0%	0.0%	<45/47
VIPER A MOA	Tanana Valley SFR	89,063	1,824,725	2,583	0.1%	2.9%	50/51
VIPER B MOA	Tanana Valley SFR	89,063	1,824,725	2,583	0.1%	2.9%	50/51
YUKON 1 MOA	Chena River SRA	3,177,170	252,813	208,996	82.7%	6.6%	49/51
YUKON 1 MOA	Fortymile Wild and Scenic River	3,177,170	238,156	477	0.2%	0.0%	49/51
YUKON 1 MOA	Tanana Valley SFR	3,177,170	1,824,725	30,848	1.7%	1.0%	49/51
YUKON 1 MOA	Yukon-Charley Rivers National Preserve	3,177,170	2,521,297	502,220	19.9%	15.8%	49/51

Key:

ACEC=Area of Critical Environmental Concern (BLM)
BLM=Bureau of Land Management
CDNL=C-weighted Day-Night Average Noise Level
dB=decibel
MOA=Military Operation Area
L_{dnmr}=Onset-Rate Adjusted Monthly Day-Night Average Sound Level
NA=Not applicable
PUA=Public Use Area
RMA=Recreation Management Area
SFR=State Forest Reserve
SRA=State Recreation Area
SRR=State Recreation River

Yukon 1 MOA overlies remote residences or parcels along the Salcha River, as well as the community of Healy Lake. SUAs under Yukon 1 MOA include the Yukon-Charley Rivers National Preserve; Tanana Valley State Forest Reserve; Chena River State Recreation Area (SRA); and Fortymile National Wild, Scenic, and Recreational River. It is common practice for the managing agencies to provide written notices at frequently used recreational sites that explain the military use of the overlying airspace to recreationists. This measure has met with success in managing peoples' expectations and negative reactions to noise.

No special land use areas occur under R-2205, with the exception of a small portion of Chena River SRA along the southern edge of the airspace.

3.10 Infrastructure

3.10.1 JBER

The infrastructure elements at JBER include transportation and utility systems that service all areas of the base. Transportation refers to roadway and street systems. Utilities include electrical distribution, water, and wastewater systems.

3.10.1.1 Utilities

Utilities on JBER (water distribution, sanitary sewer, storm drainage, heating and cooling and the electrical distribution system) are sufficient to accommodate the addition of personnel and equipment associated with the proposed relocation of the 18 AGRS (personal communication Turpin 2013).

3.10.1.2 Transportation

Figure 2.4-2 shows the primary roads on JBER-Elmendorf, the access gates, and the primary surrounding road network. Regional access to JBER-Elmendorf is provided from Glenn Highway to the south of JBER. Access on and off the base occurs through four gates on the south side (Boniface, Muldoon, Post Road, and Government Hill). From Glenn Highway, two major arterials, Boniface Parkway and Muldoon Road, provide access through Boniface and Muldoon Gates, respectively. At the base boundary, Boniface Parkway becomes Vandenberg Avenue and Muldoon Road leads into Provider Drive. The Muldoon route also serves as family housing and the base hospital. Commuters arriving from residential areas in the City of Anchorage can also use Post Road Gate and Government Hill Gate.

Table 3.10-1 provides the peak hour ingress traffic count for the 4 gates for the years 2007 and 2010. The data shows that the Boniface Gate (the main gate) has the highest throughput onto the base during peak morning commuting hours with 890 ingressing vehicles in 2007 and 771 in 2010 (Dowl 2007, Air Force 2010a).

Table 3.10-1. Peak Hour Ingress Gate Counts for JBER

Gate	2007 AM Peak Hour Ingress	2010 AM Peak Hour Ingress
Boniface	890	771
Post Road	438	No Data Available
Government Hill	420	332
Muldoon	482	623

Sources: Dowl 2007, Air Force 2010a

Roads on JBER-Elmendorf form an internal network independent from vicinity roads (Figure 2.4-3). Vandenberg Avenue extends northward from Boniface Gate about 1.5 miles before intersecting Davis Highway, which extends eastward directly to JBER-Richardson providing internal connection between the two major cantonments. Secondary roadways serving the core area of JBER-Elmendorf include Provider Drive, Airlifter Drive, Fighter Drive, and Arctic Warrior Drive. A 2011 traffic study indicates that two locations have significant traffic congestion during morning and evening commuting periods on JBER; (1) Sijan Avenue and Arctic Warrior Drive (mostly traffic from Boniface Gate) and (2) Vandenberg Avenue and Davis Highway (from traffic transiting between JBER-Elmendorf and JBER-Richardson) (JBER 2011b).

Off base, other modes of transport are available to access and move around JBER-Elmendorf. People Mover is the municipal bus service of the City of Anchorage. It provides service to the installation via Boniface Gate and Government Hill Gate. Glenn Highway has a multi-purpose trail that runs along its north side, accessing Boniface Gate (Dowl 2007). However, bicycle and pedestrian use is uncommon on the installation and vehicles are used for most trips (Weston and Kinney 2009).

A rail line is located in the south and east portions of JBER-Elmendorf (Figure 2.4-3). This line only supports freight operations. The tracks have been relocated to the east to avoid security and safety hazards. The tracks are within the right of way and belong to the Alaska Railroad Company. All other tracks on the base are owned by the Air Force (JBER 2011a).

Several intersections along the Glenn Highway corridor experience high volumes of traffic and impaired level of service during peak commuting periods (particularly in the afternoon). Of note are Airport Heights Drive, Bragaw Street, and Boniface Parkway (AMATS 2012).

3.10.1.3 Solid Waste

AFI 32-7042, *Waste Management,* incorporates the requirements of Subtitle D, 40 CFR 240 to 244, 257, and 258, applicable Federal regulations, AFIs, and DoD directives. It also establishes the requirement for installations to have a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record keeping and reporting; and pollution prevention.

JBER-Elmendorf developed a *Solid Waste Management Plan* (Air Force 2010b) to guide and direct the management of solid wastes. Additionally, JBER-Elmendorf is required to comply with Alaska Administrative Code (AAC) Title 18 Chapter 60, *Solid Waste Management* (AAC 2012). ADEC does not require permitting for a reuse, recycling, or the resource recovery facility, and has no reporting requirements for a Qualified Recycling Program (QRP).

Solid waste and the QRP at Elmendorf are managed in accordance with the base's *Solid Waste Management Plan* (Air Force 2010b). Solid waste is collected by contract and disposed in the Anchorage Regional Landfill. JBER uses the following primary organizations for diversion and disposal of solid waste:

- Defense Reutilization and Marketing Office (DRMO) for management of the disposal or recycling of specialty waste streams and some recyclables;
- Chenega Corporation (Chenega) for solid waste collection and recycling;

- Alaska Metals Recycling (via Chenega or DRMO) for metals;
- Shred Alaska for paper;
- Alaska Waste for used cooking grease (bio-fuels) from select base facilities;
- Aurora (owned by Alaska Waste) for solid waste collection at housing (includes a voluntary recycling program);
- Battery Specialists for batteries;
- Emerald Alaska for used oils (fuels); and
- The local landfill drop-off area for aluminum cans, paper, and plastic bottles.

In addition, the base hospital is recycling cardboard, paper, bottles, cans, plastic, and some scrap metal through Alaska Waste. Based on the estimated annual waste flow and the permitted capacity of the landfill, the closure date for the Anchorage Regional Landfill (ARL) is 2043.

The Mat-Su Borough central landfill and the Kenai Peninsula landfill are alternative offsite solid waste disposal facilities. The Mat-Su Borough central landfill received 68,653 tons of waste in 2010. Using an average estimated capacity consumed of 1,000 pounds per cubic yard, it is estimated that 137,306 cubic yards were filled in 2010 (waste and cover). The *Landfill Master Plan* estimates that capacity is available through 2071. The Mat-Su Borough central landfill does not get permitted based on capacity. The available capacity volume (cubic yards) was calculated using 137,306 cubic yards received in 2010 and multiplying by 60 years (estimated lifespan) to get the remaining capacity of the landfill. For the Kenai Peninsula Landfill, the same approach was taken for permitted capacity. The average waste flow for the past ten years was 102,072 cubic yards. The estimated life span of the landfill is 40 years resulting in a 4,082,880 cubic yards available.

3.10.2 EAFB

The infrastructure elements at EAFB include transportation and utility systems that service all areas of the base. Transportation refers to roadway and street systems. Utilities include electrical distribution, water, and wastewater systems. In addition, EAFB is accessed by a multi-fuel pipeline that provides fuel from a nearby North Pole refinery. Electrical distribution is across 417 miles of overhead and underground power lines. EAFB also has the distinction of having the largest railroad system in the Air Force and the second largest rail system in Alaska. The 10-mile railroad system is a vital link to provide coal to the Central Heat and Power Plant (CHPP) and fuel/armaments for both assigned and visiting aircraft.

3.10.2.1 Utilities

EAFB has an annual temperature variation range in excess of -50 to +90 degrees Fahrenheit. To cope with these extremes, water distribution, sanitary sewer, storm drainage, heating and cooling, and the electrical distribution system, are contained in a 10 foot high above ground utilidor continuous mound throughout EAFB. Water distribution systems within the utilidor must be maintained at design temperatures to prevent damage. Utilities on EAFB are adequate to accommodate the base mission. Improvements to heating plant capabilities and the utilidor distribution system are planned.

3.10.2.2 Water Distribution

Water is supplied to the installation through a system of 6 on base wells connected to a 3.2-MGD filtration plant. This plant was upgraded in the late 1990s to add treatment, storage, and production capacity. A number of small, self-contained systems are located across the base to provide water to facilities where it is impractical to connect to the central system. The water treatment plant discharges filter backwash water into Garrison Slough (state permit).

All water and wastewater treatment services are performed by base personnel or contracted operations, including the base's own water treatment plant.

3.10.2.3 Sanitary Sewer

EAFB treats wastewater collected on base, as well as pumped waste from individual septic systems from outlying areas in its own wastewater treatment plant. The plant was built in 1952, with upgrades in the mid-1990s and ongoing retrofits from 2004 through 2013. Past and current upgrades include laboratory areas, administrative structures, a sludge handling system, new piping, increased capacity to six lagoons, and a retrofit of nearly 70% of the mechanical equipment. The plant provides for secondary effluent treatment, with treated water routed through staged lagoons providing bio-stabilization. The wastewater plant meets Alaska and EPA waste water disposal permit requirements. The wastewater treatment plant (state permit) discharges into an infiltration pond after tertiary treatment is completed. The system experiences an average daily flow of 450,000 gallons with a max permitted flow of 2-MGD.

Two other state effluent permits include a discharge of groundwater from pumping operations in the housing area and seasonal discharge of turbine cooling water into French Creek. Additionally, EAFB has approximately 40 oil/water separators in shops across the base.

3.10.2.4 Storm Drainage

EAFB has relatively flat terrain, porous soils, and is located in a sub-arctic desert. For these reasons, the base storm water collection systems are minimal. There are relatively few traditional catch basin-pipe systems on base and storm runoff is generally directed toward grassy fields and retention ponds where it readily percolates into the ground. Storm drainage is an integral part of all new projects and the base has begun phased efforts to remove storm runoff from the main base streets and intersections and limit the use of underground injection wells.

3.10.2.5 Heating and Cooling

The distribution of heat in the form of steam from CHPP to the various areas of the base is tied closely to the utilidor (utility corridors) system on base. This system consists of enclosed channels that house major utility systems such as water, steam, and wastewater. The steam distribution system keeps the other pipes from freezing during the harsh arctic winters. This utilidor system is old and needs constant upgrades and maintenance; however, it is still the appropriate system for the climatic extremes and high groundwater issues of the area. Approximately 80% of the old pre-1950s utility systems have been repaired or renovated as part of a renovation and modernization plan.

3.10.2.6 Electrical Distribution System

The installation receives power from CHPP, with a small amount of power purchased from Golden Valley Electric Association (GVEA). The steam produced is used by 5 steam turbines to produce up to 25 megawatts of electricity, with the extracted steam distributed through the base utilidor system to provide heat for the majority of facilities on base. CHPP also has backup diesel generators, which when combined with the support from GVEA, allows CHPP to remain operational in the event the plant should ever suffer a complete shutdown.

3.10.2.7 Liquid Fuels

The base has the storage capacity for 28 million gallons of fuel and a direct connection to a refinery located in North Pole, further strengthening its ability to support air traffic across the region. EAFB has approximately 113 above ground storage tanks and 53 underground storage tanks, all of which have a capacity of 500 gallons or more. Both the North Pole to Eielson pipeline and the Trans-Alaska oil pipeline pass through the base.

3.10.2.8 Airfield Pavements

EAFB's runway is oriented north to south and is 14,507 feet long. It was extended to its present length in the 1950s to accommodate B-36 aircraft. Ongoing yearly airfield projects include painting, rubber removal, and paint removal. Additional projects include repair to taxiway's Golf and Foxtrot and a two-phase project to replace the south loop taxiway.

3.10.2.9 Solid Waste

AFI 32-7042, *Waste Management,* incorporates the requirements of Subtitle D, 40 CFR 240 to 244, 257, and 258, applicable Federal regulations, AFIs, and DoD directives. It also establishes the requirement for installations to have a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record keeping and reporting; and pollution prevention.

Municipal solid waste at EAFB is collected and managed by a private contractor. Once collected, the waste is then transferred to the Borough Landfill in Fairbanks. Working with a local refuse contractor, EAFB has begun implementation of a viable recycling program for collection of recyclable materials. As part of this program, paper, cardboard, plastics, and glass will be diverted from the waste stream and used for energy recovery or other uses. Aluminum cans, tin cans, and scrap metal will be shipped out for recycling. Additionally, EAFB maintains and manages 3 solid waste permits and landfill areas. These areas include:

- The Quarry Hill coal-ash landfill site, which has been expanded to include areas outside of the restricted area and the area within the restricted area closed for any new dumping.
- The asbestos landfill located on Powder Street.
- Permitted area for application of bio-solids around the north area of the runway.

Bio-solids are applied in various permitted locations annually. Hazardous, universal, and miscellaneous waste generated on base is stored at numerous SAPs. Wastes collected from SAPs are transferred to an EAFB-operated 90-day accumulation point. The hazardous waste is collected by a Defense Logistics Agency Disposition Services (previously DRMO) contractor. Due to the amount of waste shipped off

base, EAFB is considered a large quantity generator, which results in additional compliance requirements. Solid waste generated at EAFB is collected and disposed of by a private contractor who transfers it to an approved off-base disposal site. Hazardous waste materials are also disposed of off base by a private contractor as part a joint –partnership with DRMO, the Army, and EAFB. Hazardous waste management practices are discussed further in Section 3.6.

3.10.2.10 Transportation

EAFB is serviced by a roadway network comprised of approximately 45 miles of paved road. The roadway system is primarily utilized by military and civilian employees of EAFB. A newly constructed base entrance gate and visitor's center is located on the north end of the base and leads vehicular traffic along the Old Richardson Highway to Flight Line and Central Avenues. Flight Line and Central Avenues are the main north-south traffic routes within the base developed area. EAFB is accessed by the Alaska Railroad. The existing rail system on EAFB consists of 9.86 miles of railroad track, some of which is in disrepair. The primary function of the rail system is to carry coal to CHPP and deliver munitions on a limited basis. Main base roads are generally in fair-to-good condition. Sustainment, restoration, and modernization efforts have restored a number of roads that were previously in poor condition. A road survey was completed in the summer of 2010. Additional roads have been added to the required projects list and are now part of a 10-year pavements plan.

3.10.3 Training Airspace

Current or proposed use of military training airspace would not affect infrastructure resources.

3.11 Socioeconomics

Socioeconomics refers to features or characteristics of the social and economic environment. Socioeconomics includes employment, earnings, population, housing, education, and community services. The most recently published data were used to identify the affected environment. The majority of impacts associated with implementation of the Proposed Action Alternatives would be expected to occur within two distinct geographical areas: (1) the area associated with JBER and (2) the area associated with EAFB. Socioeconomic activities associated with JBER are concentrated in the Municipality of Anchorage and Mat-Su Valley, which comprises the ROI for the analysis of the proposed personnel transfer to JBER (Figure 3.11-1). EAFB is located in Alaska's Interior in the FNSB, east of the City of Fairbanks (Figure 3.11-2). FNSB comprises the ROI for the analysis of personnel reductions at EAFB for Alternative A and Alternative B. The affected environment for socioeconomic resources is presented for each geographic area.

Table 3.11-1 presents population and unemployment for Alaska, the JBER ROI, which includes Anchorage and Mat-Su, and the EAFB ROI comprised of FNSB. Table 3.11-1 also includes two of the FNSB areas of particular interest to public commenters, the North Pole area comprised of Zip Code 99705 and the EAFB area comprised of Zip Code 99702.

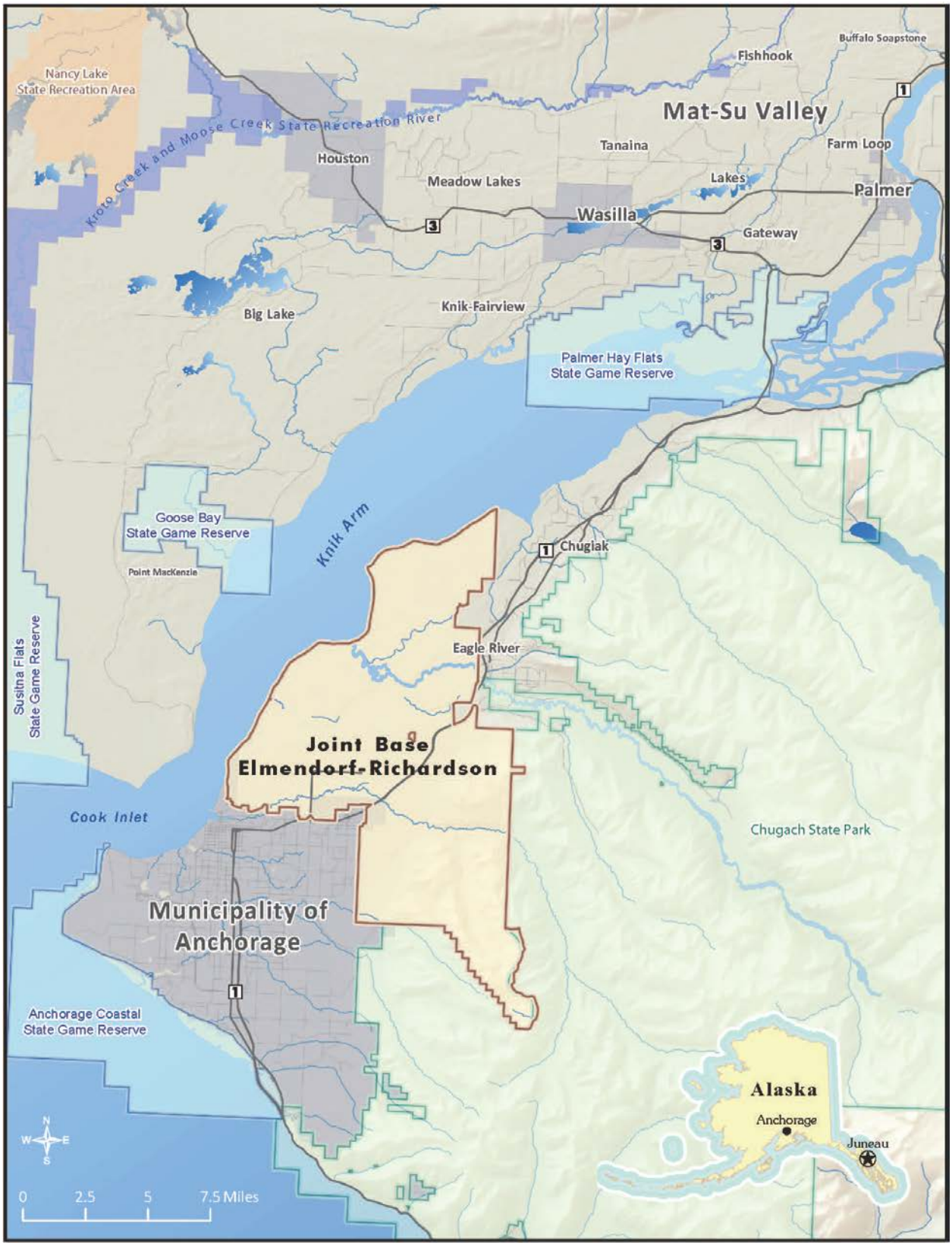

Figure 3.11-1. JBER and Vicinity Including the Municipality of Anchorage and Communities within Mat-Su Valley

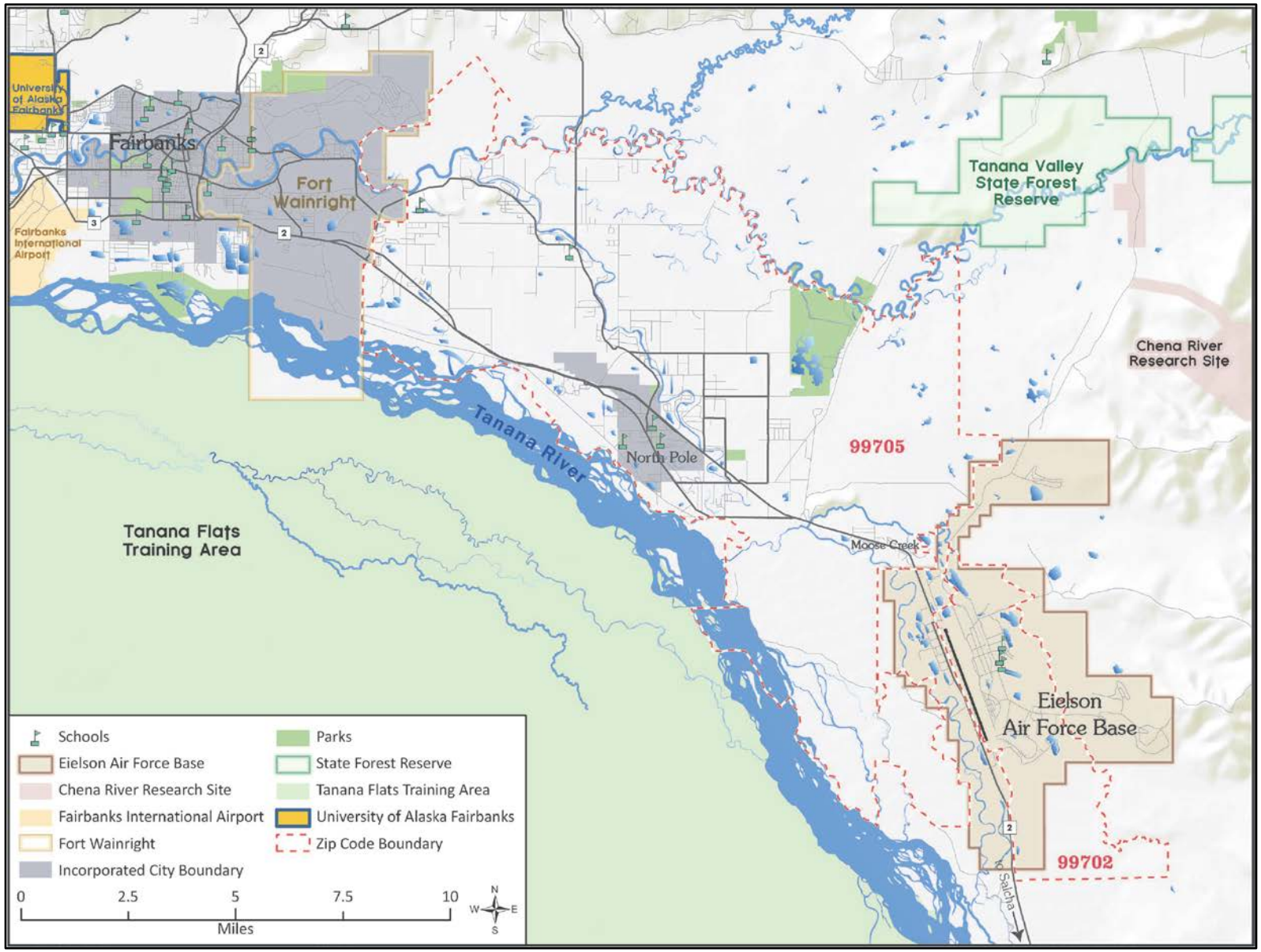

Figure 3.11-2. Fairbanks, North Pole, and EAFB Portion of FNSB

Table 3.11-1. Population and Employment

	2000	2010	2012
Alaska			
Population	626,932	710,231	723,136
Civilian Employment	281,532	305,105	304,851
% Unemployed	9.0	8.0	7.6
Armed Forces Active Duty	17,574	23,195	20,914
Anchorage including Matanuska-Susitna (Mat-Su[1]) Borough			
Population	319,605	380,821	387,881
Civilian Employment	159,828	165,739	166,056
% Unemployed	7.4	7.3	6.7
Armed Forces Active Duty	8,630	12,787	12,699
Fairbanks North Star Borough (FNSB)			
Population	82,840	97,581	100,343
Civilian Employment	35,258	37,952	39,600
% Unemployed	6.0	7.1	6.2
Armed Forces Active Duty	6,861	8,166	5,998
North Pole (Zip 99705)			
Population	16,452	22,544	ND
Civilian Employment	8,208	10,489	ND
% Unemployed	5.9	6.5	ND
Armed Forces Active Duty	ND	ND	ND
EAFB (Zip 99702)			
Population	5,388	2,647	ND
Civilian Employment	ND	ND	ND
% Unemployed	ND	ND	ND
Armed Forces Active Duty	2,748	1,856	ND

Note(s):
[1] 2012 data from 2011
Key: ND=No available data
Source(s): ALARI 2010a, 2010b, 2011a, 2012b, 2013b, Census 2010a, ZIP 99702 and ZIP 99705.

Existing employment at JBER and EAFB can be understood in terms of authorizations, actual personnel on-base, deployed personnel, active duty personnel, appropriated fund civilians (civil servants), Non Appropriated Fund (NAF) civilians, personnel under contract to perform ongoing services, personnel employed in specific projects, and seasonal part-time employees. Socioeconomic information was obtained from a variety of sources, including the U.S. Bureau of the Census (Census), the U.S. Bureau of Economic Analysis, the Alaska Departments of Commerce and Labor, FNSB, the Municipality of Anchorage, the Air Force, and other local data sources.

3.11.1 JBER

3.11.1.1 Population

The JBER ROI 2010 population was 291,826 persons in the Municipality of Anchorage and 88,995 persons in Mat-Su Borough (Census 2010a). Mat-Su Borough is one of the fastest growing areas in the state of Alaska. Between 2000 and 2010, the population increased at an average annual rate of 4.1% with a total increase of nearly 30,000 persons. Annual growth within the Municipality of Anchorage was at an average of 1.2%, which is comparable to the population growth in the state of Alaska overall (Census 2000a, 2000b, 2000c).

The combination of Elmendorf AFB with Fort Richardson in 2009 resulted in JBER. In 2012, JBER had approximately 16,155 military personnel including Air Force, Army, Marine Corps, Navy, Coast Guard, Air Force Reserve, and Air National Guard members, 2,200 appropriated fund civilian employees, and 840 NAF civilian employees (JBER 2012c). There are approximately 28,000 family members of active duty personnel. Approximately 10,000 persons comprised of military personnel and their family members are on base in military housing, including privatized housing and dorms. The majority of JBER military personnel, civilian personnel, and their families reside off base within the Municipality of Anchorage including the communities of Chugiak and Eagle River, with some personnel choosing to commute from Mat-Su Borough (Figure 3.11-1).

3.11.1.2 Employment

Anchorage is the center of commerce for the state of Alaska, an economy driven by four major sectors: oil/gas, military, transportation, and tourism. These sectors have provided a level of stability to the region during the national economic downturn experienced over the end of the last decade. A number of Alaska industries are headquartered in Anchorage including oil and gas enterprises, finance and real estate, transportation, communications, and government agencies.

JBER is an important contributor to the Anchorage economy through employment of military and civilian personnel and expenditures for goods and services. The 2011 payroll for military, appropriated fund civilians, and NAF civilians was $1.289 billion. A portion of this payroll consumed regional goods and services. Approximately $115 million worth of base construction also occurred in 2011 (JBER 2011c).

The largest employment sectors in the Municipality of Anchorage are government (22.2%), retail trade (10.1%), and health care and social services (11.7%). Military and Federal civilian employment accounted for nearly 24,000 jobs in Anchorage, which represented approximately 12% of total employment (BEA 2012). Employment in Mat-Su Borough in 2010 was 33,337 jobs, of which government comprised nearly 15% of the total employment. Most of the government employment was related to state and local governments. Retail trade (14.5%) and health care and social services (12.6%), were also large employment sectors for Mat-Su Borough. In 2011, the unemployment rate in the Anchorage/Mat-Su area was 6.7%. The unemployment rate in Anchorage has been lower than that of Mat-Su Borough.

3.11.1.3 Housing

Table 3.11-2 presents census-derived housing data for Alaska, the Anchorage-Mat-Su area, and FNSB. The Municipality of Anchorage and the surrounding areas of Mat-Su Borough are two of the most populous areas in Alaska, comprising nearly 54% of Alaska's total population (Table 3.11-1). The geography of the Municipality of Anchorage is such that development within the city is constrained by the Chugach Mountains, the Turnagain Arm, the Knik Arm, and JBER (Figure 3.11-1). Development has grown outside the city into the communities north of JBER and beyond and into Mat-Su Borough. The Municipality of Anchorage has 113,032 housing units of which 5,700 were vacant at the time of the 2010 Census (Census 2010b). Of the vacant housing units, nearly 1,500 (approximately 26%) were for seasonal or occasional use only. Mat-Su Borough had 41,329 total housing units, 9,505 units were vacant. A majority of the vacant housing units were for seasonal or recreational use (Census 2010c).

Table 3.11-2. Census Housing Data for Alaska, Mat-Su, and FNSB

	2000	2010
Alaska		
Total	260,978	306,967
Occupied	221,600	258,058
Not Occupied	39,378	48,909
Seasonal	21,474	27,901
Owner % Vacant	1.9	1.7
Rental % Vacant	7.8	6.6
Anchorage + Matanuska-Susitna (Mat-Su1) Borough		
Total	127,697	154,361
Occupied	115,438	139,156
Not Occupied	12,259	15,205
Seasonal	6,351	8,322
Owner % Vacant	1.6	2.1
Rental % Vacant	9.3	7.1
Fairbanks North Star Borough (FNSB)		
Total	33,291	41,783
Occupied	29,777	36,441
Not Occupied	3,514	5,342
Seasonal	993	1,676
Owner % Vacant	1.6	2.3
Rental % Vacant	9.3	9.0

Source: Census 2000a, 2000b, 2010a, 2010b, 2010c, 2010d.

Two Anchorage housing studies were conducted in 2012. These studies demonstrated that housing availability had tightened since the 2010 census. The Municipality of Anchorage Housing Market Analysis (HMA) assessed the available regional land supply and housing capacity, as well as projected housing demand from 2010 to 2030. The Anchorage study determined that Anchorage had land capacity for an estimated 11,000 new housing units and had a projected 20-year demand for 18,184 new housing units. The study identified several optional approaches in the development patterns, density, and land use policies to address the 20-year projected housing shortfall in the Anchorage Bowl. Regional growth in Mat-Su Borough was identified as a potential result of increased housing demand in the Anchorage Bowl (Anchorage 2012).

The second HMA was prepared by the Air Force to address available rental units that met specific Air Force cost, quality, and commute parameters. HMA for JBER (Air Force 2012c) addressed 4 market area scenarios defined by 2 commute distances from the JBER main gate and the headquarters building. Surveys conducted in 2007 and 2011 resulted in an estimate that approximately 35% of JBER military families own their own homes. HMA assumed that JBER military households in owner-occupied housing were suitably housed and HMA focused on the rental housing market and assessed changes in supply and demand between 2012 and 2014. Rental vacancies for the defined market area were estimated in 2012 to be approximately 2.6%, as compared with the 2010 census rental vacancy rate for the Municipality of Anchorage of 3.8%. Rental vacancies for Anchorage plus Mat-Su were 7.1% (ALARI 2011)

The Air Force HMA concluded that an estimated 299 to 332 rental units that were deemed suitable as to quality, size, commute distance, and cost, would be available in the 2012-2014 period (Air Force 2012c).

Table 3.11-3 presents single-family residential sales for the housing market in Anchorage and assessed changes in supply and demand between 2011 and 2013. The average number of Days on the Market (DOM) indicates if the location is in a buyer's market (high DOM) or a seller's market (low DOM). A high pending ratio indicates listings are in demand and quickly going to contract; a low ratio indicates there are not enough qualified buyers for the existing supply (Madden 2010a). Over the past several years, DOM has decreased and the average list price and average sold price have increased. As of April 2013, the most recent data available, there were 613 sales pending in the Anchorage Municipality real estate market with the majority in the $250,000 to $300,000 range (Madden 2013a). Between October 2012 and April 2013, 1,162 contracts closed with an average sold price of $335,066 and 63 DOM. The thirty days prior to April 14, 2013 had a DOM of 58 days, which is less than the 6-month DOM, indicating a seller's market with high demand for housing.

Table 3.11-3. Real Estate Market Profile for Anchorage Municipality

Dates	Homes For Sale			Market Pending Ratio	Homes Sold in the Last 6 months				Absorption Rate (Months)
	Total Number	Average DOM	Average List Price		Total Number	Average DOM	Average Original List Price	Average Sold Price	
9/25/2011 to 3/25/2012	632	109	$420,375	37.5%	1,053	78	$334,471	$318,215	3.6
3/25/2012 to 9/23/2012	922	83	$408,150	35.9%	1,483	56	$356,886	$340,104	3.7
9/23/2012 to 3/24/2013	531	83	$445,039	51.5%	1,201	62	$349,551	$333,521	2.7

Source: Madden 2012a, 2013a

3.11.1.4 Education

Five elementary schools associated with the Anchorage School District are located on JBER: Aurora Elementary School, Orion Elementary School, Ursa Major Elementary School, Ursa Minor Elementary School, and Mount Spurr Elementary School. Combined, these schools include kindergarten through sixth grade classes for a total enrollment of 1,887 students in the 2012-2013 school years (ASD 2011a). The 5 elementary schools had a capacity of 2,190 students. Middle school and high school students living on JBER would attend one of the middle schools and high schools within the Anchorage municipality. In close proximity to JBER, there are 5 middle schools, 3e high schools, and several charter schools. As of September 2011, Central Middle School was operating at 96% of program capacity and Begich Middle School was operating at 95% of program capacity. Clark Middle School was at overcapacity at 107%. Wendler and Romig Middle Schools are further from the JBER installation but they were operating at 72% and 92% of program capacity, respectively. For the high schools nearest to JBER, Bartlett High School had the most capacity operating at 80% of program capacity. East High School was operating at 92% capacity and West High School was well over capacity at 111% (ASD 2011b).

As of April 2013, voters in the Anchorage School District (ASD) approved a $54.8 million bond package, which will provide funds for construction, extension, and renovations to improve 27 school buildings in the community (ASD 2013a). The bond package is eligible for 60% to 70% reimbursement from the state. As of August 2012, ASD paid off $247 million in bond debt and will be paying off an additional $279 million in the next 5 years (ASD 2013a). Since 1992, the legislature has funded 100% of the state's debt obligation, thereby significantly reducing the costs to local taxpayers (ASD 2013b).

3.11.1.5 Public Services

Daily operation of JBER and furnishing of services and support to base personnel and family members is the responsibility of the 673 ABW, the base host unit. Off base public services are provided by a number

of public and private entities. Police and fire protection services are provided by the Anchorage police and fire departments, respectively. In Mat-Su Borough, police and fire services are also provided by the borough or the local communities. Anchorage Regional Hospital Providence Medical Center and various medical care providers offer health services in the area. The 673rd Medical Group, in collaboration with the Veterans Administration, provides JBER with hospital and medical care. The 673rd Medical Group is comprised of approximately 1,300 personnel who provide preventive, emergency, and acute care services for approximately 166,000 beneficiaries (Air Force 2013a). The group also provides services to over 10,300 retirees and their dependents. One fifth of the population of Anchorage is eligible for care in the JBER facility (Air Force 2013a).

3.11.2 EAFB

3.11.2.1 Population

EAFB is located in FNSB, east of the City of Fairbanks (Figure 3.11-2). Table 3.11-1 summarizes census data for 2000 and 2010 for the FNSB and for the local areas of North Pole and EAFB. Table 3.11-4 presents data on the FNSB and the two areas with the most potential for socioeconomic impact, EAFB and North Pole Zip Code areas. North Pole and nearby communities are located in Zip Code 99705 and EAFB is in Zip Code 99702. The state of Alaska provides substantial population and household data by Zip Code. Data for Zip Code 99702 reflects base Military Family Housing (MFH), which is defined as rental units. In 2010, the FNSB population was 97,581 persons. The City of Fairbanks has a population of 31,535 persons. The communities of Salcha, Moose Creek, and North Pole near EAFB experienced some of the fastest growth within FNSB, with population growth ranging between an average annual rate of 2.5% and 3.3%. Table 3.11-4 includes these communities within Zip Code 99705. The average annual rate of population growth for FNSB between the years 2000 and 2010 was 1.65% (Census 2010a). The projected annual average rate of population growth from 2010 through 2015 is 1.568% (ADLWD 2011).

Table 3.11-4. Socioeconomic Data for FNSB, EAFB, and North Pole

Census Factor	Location		
	FNSB	EAFB – Zip 99702	North Pole – Zip 99705
Population	97,581	2,647	22,544
Ages 5-19 years	20,061	691	5,246
Children/Population	0.2056	0.2611	0.2327
Households	36,441	639	8,067
Household Size	2.7	3.5	2.9
Housing Units	41,191	0	8,866
Vacant	601	0	168
Vacancy %	2.3	0	1.9
Rental Household Size	2.4	3.5	2.5
Rental Units (Estimated)	16,533	639	2,500
Vacant	1,502	209	240
Vacancy Percent	9.0	7.0	9.7

Source: ALARI 2012a, 2012b, ZIP 99702, ZIP 99705, Census 2010a

In FY11, 2,164 active duty Air Force personnel were assigned to EAFB with 2,331 dependents (EAFB 2012b). In May 2012, the SATAF report identified 1,931 active duty Air Force personnel assigned to EAFB (PACAF 2012). There are 348 full-time Alaska Air National Guard (AKANG) members year round. The *FY11 EAFB Economic Impact Statement* included 487 civil servants or appropriated fund civilian authorizations as well as 336 NAF and 104 Base Exchange employees. The

May 2012 SATAF Report identified 389 appropriated fund civilian authorizations. NAF and exchange personnel are funded by purchases of goods and services on EAFB. The total base-related population is 5,770 persons (EAFB 2012b).

FNSB is also home to the Army's Fort Wainwright. In FY11, there were 7,453 soldiers assigned to Fort Wainwright as well as 1,731 civilian workers, 722 contractors, and 8,275 military dependents for a total post-related population of 18,181 persons (Fort Wainwright 2011). Fort Wainwright is located within the City of Fairbanks so it is expected that most of the soldiers who live in off base housing would be located in the City of Fairbanks.

Public scoping commenters expressed concern about retiree access to EAFB services. FNSB has a number of military retirees who use the provided Air Force or Army services such as the base or post exchange, commissary, and medical care facilities. EAFB estimates there were approximately 1,988 Air Force retirees in the FNSB in FY12 and Fort Wainwright estimates there were 805 Army retirees in FY11 (EAFB 2012b).

3.11.2.2 Employment

FNSB provides extensive goods and services to interior Alaska. FNSB employment is driven by the Federal government (including military), state government, tourism, education, energy, and mining. Civilian employment in FNSB in 2010 was 37,952 jobs (Table 3.11-1). Government employment comprised a much higher percentage of total employment (34.6%) as compared to Anchorage or Mat-Su Borough. Military and Federal civilian employment comprised nearly 21% of total employment in FNSB while state and local government comprised nearly 14% of total employment. Retail trade (9.9%), and health care and social services (9.5%) were also important industries for employment (ALARI 2010c).

In FNSB, the unemployment rate in 2012 was 6.2%. There are seasonal fluctuations in employment related to resource usage including tourism, hunting, fishing, and military training. The 6.2% unemployment rate reflects seasonal adjustment (ALARI 2013a, 2013b, 2013c, 2013d).

Civil servants are appropriated fund personnel funded by the Air Force mission. NAF and Base Exchange positions are support or service industry positions, which are funded by purchases of goods and services made by the base or by persons with access to EAFB including the MFE visiting personnel. Table 3.11-5 includes active duty, civilian, NAF, and exchange personnel associated with EAFB as of 2012 (EAFB 2012b).

Table 3.11-5. EAFB Regional Economic Activity

	2000		2010		2011	
	Personnel	$ Million	Personnel	$ Million	Personnel	$ Million
Active Duty	2,748	107.43	1,856	131.72	2,164	153.58
Civil Service	428	23.73	501	34.37	487	30.20
NAF	340	3.37	329	4.31	336	4.63
Exchange	128	2.52	115	2.00	104	2.90
Alaska Air National Guard	500	40.77	346	42.38	348	42.68
Local Contracts		59.43		65.63		98.77
Construction		21.00		39.03		79.37
Services		37.60		14.58		8.10
Health		0.25		5.67		6.15
Total	**4,144**	**296.10**	**3,147**	**339.69**	**3,439**	**426.38**

Sources: EAFB Economic Impact Statements 2001 through 2012 (EAFB 2002, 2003, 2004, 2005, 2006b, 2007b, 2008, 2009, 2010, 2011b, 2012c, 2013)

EAFB contributes to the FNSB regional employment. The Fairbanks Economic Development Corporation (FEDC) published a summary of an economic model with an overview of the FNSB economy in 2009 (FEDC 2012). The FEDC economic model summary concluded that when military active duty members are included, the 15,058 military direct jobs create 5,691 indirect local jobs, for a total of 20,749 military direct or indirect jobs. This is estimated to represent 39% of the jobs in FNSB.

Table 3.11-5 presents the EAFB estimated direct contribution to the FNSB economy for the census years 2000 and 2010 as well as for 2011, when the most recent comparable data were available (EAFB 2001, 2010, 2011). This table demonstrates the variability of EAFB active duty assigned personnel, other personnel, and contracts. EAFB declined by 892 active duty personnel between the years 2000 and 2010. Between 2010 and 2011, over 308 additional active duty personnel were assigned. In 2013, the estimated number of active duty authorizations is 1,450. The annual number of active duty and other personnel assigned to any base can vary substantially.

During the 2000 through 2010 period, EAFB contracted an average of approximately $90 million per year in service, construction, and other contracts. During that period, missions changed at EAFB and Air Force active duty authorizations declined. Table 3.11-5 demonstrates the variability of contracts, with 2000 and 2010 contracts around $60-65 million and 2011 contracts at nearly $99 million.

During scoping for this EIS, public commenters expressed concerns that the Proposed Action Alternatives would result in a reduced number of military construction contracts at EAFB. The EAFB annual economic impact statements between 2000 and 2011 demonstrate that military-related contracts issued per year can vary from $30 million to $195 million in current year dollars. As depicted on Table 3.11-5, construction contracts contribute to the year-to-year contract variability. Under any alternative, EAFB would continue to support multiple missions on base as well as Red Flag and other training exercises using Alaskan airspace. Continued ongoing contracts would be anticipated to support services, health, and construction including renovation and maintenance. Specific projects can increase contracting in any single year. Overall, budget constraints are expected to reduce Air Force available funding for construction projects over the next 10 years substantially. For the purpose of this analysis, annual contracts totaling $45 million in current year dollars are assumed to continue. These annual contracts are projected to be $15 million for services, including food and health services, $10 million for maintenance

and related, and $20 million for construction. This $45 million of projected annual contracting is one-half of the annual average of $90 million in contracts from EAFB for the past decade.

Seasonal and part-time employees are part of the normal pattern of EAFB activity. Seasonal employment regularly occurs with the increased activity associated with MFEs, including Red Flag. *The FNSB Joint Land Use Study* (FNSB 2006) explains that RFA hosts an annual average of 2,050 visiting personnel. The Air Force supports Red Flag exercises and has an annual $10 million (current dollars) operation and maintenance contract with 80 permanent employees and an additional 10 to 20 temporary seasonal hires (FNSB 2006). Table 3.11-6 summarizes the deployment of personnel participating in EAFB FY12 military training exercises.

Table 3.11-6. Personnel Deployment for Military Training Exercises from EAFB FY12

Description	
Participants (Red Flag-AK/NE/DF/WTD)	10,207
Deployed Participants	7,407
EAFB Participants	2,800
Participants Housed off-base	1,313
Rental Car Funding	476,000

Key:
AK=Alaska NE=Northern Edge WTD=Weapons Training Deployment
DF=Distant Frontier
Source: EAFB 2012b

3.11.2.3 Housing

Table 3.11-2 presents 2000 and 2010 census data on FNSB housing. FNSB is an area isolated from other parts of Alaska. Within FNSB, the primary City of Fairbanks is surrounded by a few rural communities. The primary source of EAFB off-base housing is within FNSB communities east of Fairbanks. As presented in Table 3.11-4, there were 41,191 housing units in the FNSB in 2010, of which 2.3% were vacant and available for occupancy (Census 2010d). Other vacant housing units were for seasonal or recreational use only. Approximately one-third of the total housing units in FNSB were within the City of Fairbanks. In 2010, the North Pole Zip Code, 99705, including Salcha and Moose Creek, had 8,866 housing units with a vacancy rate of 1.9%. There were an estimated 2,500 rental units in Zip Code 99705, of which 9.7% were vacant (Census 2010e, 2010f, and 2010g).

Of the active duty Air Force personnel and dependents assigned to EAFB, 2,082 of them in 2011 were living in on-base MFH including Section 801 housing, which is leased by EAFB from a private entity. There were 698 occupied family housing units in February 2011. The remaining 2,761 active duty Air Force accompanied and unaccompanied personnel and dependents were living in owner-occupied or rental housing in the local communities (EAFB 2011b). Other civil servants, AKANG, NAF, and exchange personnel live in FNSB. The majority of EAFB personnel off base live in the FNSB communities located closest to EAFB, which includes North Pole, Salcha, and Moose Creek.

Between 2007 and 2011, housing prices in FNSB remained relatively constant although housing sales fluctuated during this period. The number of units sold dipped by nearly 300 units in 2011 from 2010 levels. The decline in number of houses sold during this time could be partially attributed to the deployment of Fort Wainwright's 1st Stryker Brigade Team, 25th Infantry Division, which also caused high vacancy rates in the rental market. Similar to other parts of the country, FNSB experienced an

increase in notices of default and foreclosure over the last five years, peaking in 2009 with 180 per year. The number of foreclosures decreased in 2010 and 2011 from 2009 peak levels (FNSB 2012a). However, foreclosures increased 13% during the first nine months of 2012 from the same period in 2011 according to *FNSB Community Research Quarterly Summer 2012 Edition* (Fairbanks 2013a).

Table 3.11-7 focuses on single-family residential sales for the housing market in North Pole and assessed changes in supply and demand between 2010 and 2013. The average DOM indicates if the location is in a buyer's market (high DOM) or a seller's market (low DOM). A high pending ratio indicates listings are in demand and quickly going to contract, a low ratio indicates there are not enough qualified buyers for the existing supply (Madden 2010a). The market pending ratio has fluctuated over the past several years in North Pole, but has dropped since 2010 levels indicating a surplus from lack of demand and the number of qualified buyers. Although housing has typically become more affordable in the last several years due to falling interest rates and lower prices, it is also more difficult to get a mortgage due to tighter access to credit and larger down payments required as a result of the mortgage crisis. The absorption rate is an estimate used to determine how long it would take the current inventory of listings to sell, assuming the conditions remain the same. The absorption rate does not take into consideration new construction. As of February 2013, it is expected to take approximately five months for the current inventory of homes on the market to sell.

Table 3.11-7. Real Estate Market Profile for North Pole

Dates	Homes For Sale			Market Pending Ratio	Homes Sold in the Last 6 months				Absorption Rate (Months)
	Total Number	Average DOM	Average List Price		Total Number	Average DOM	Average Original List Price	Average Sold Price	
1/31/2010 to 8/2/2010	157	79	$235,484	29.3%	140	76	$229,869	$222,232	6.7
8/1/2010 to 1/31/2011	95	119	$207,666	25.8%	166	74	$229,983	$222,798	3.4
1/31/2011 to 8/1/2011	160	114	$235,847	22.0%	148	92	$228,662	$219,190	6.5
8/8/2011 to 2/6/2012	94	110	$218,005	28.2%	138	87	$217,578	$207,036	4.1
2/5/2012 to 8/5/2012	209	111	$232,527	18.0%	167	80	$226,014	$218,876	7.5
8/5/2012 to 2/3/2013	108	129	$212,139	20.0%	138	86	$235,076	$224,351	4.7

Source: Madden 2010b, 2011a, 2011b, 2012b, 2012c, 2013b.

As of April 1, 2013, the average sold price of those properties over the preceding 6 months totaled $215,520 with an average of 100 DOM. Demand for housing is highly dependent on various factors such as shifting interest rates, economic changes, seasonal changes, and other factors. In FNSB, high energy costs and the desirability of energy efficient units are also factors influencing the housing market (Brehmer 2013).

Table 3.11-8 focuses on single-family residential sales for the housing market in Fairbanks and changes in supply and demand between 2010 and 2013. The average sold house prices in Fairbanks between November 2012 and April 2013 have remained fairly stable, averaging in the $220,000 price range. The average DOM for homes that have sold in the last 6 months has increased overall from approximately 80 DOM in November 2012 to approximately 110 DOM in April 2013. The average DOM for those homes that were for sale were higher during the August to February time-frame each year as compared to during the January to August timeframe each year, which could be attributed to a seasonal factor. Higher average sold prices imply that there has been a continuing demand for FNSB owner-occupied housing although higher priced housing takes longer to sell.

Table 3.11-8. Real Estate Market Profile for Fairbanks

Dates	Homes For Sale			Market Pending Ratio	Homes Sold in the Last 6 months				Absorption Rate (Months)
	Total Number	Average DOM	Average List Price		Total Number	Average DOM	Average Original List Price	Average Sold Price	
1/31/2010 to 8/2/2010	260	105	$247,313	25.3%	237	69	$229,927	$222,188	6.6
8/1/2010 to 1/31/2011	95	119	$207,666	25.8%	166	74	$229,983	$222,798	3.4
1/31/2011 to 8/1/2011	255	118	$246,971	22.7%	215	103	$243,910	$237,356	7.1
8/8/2011 to 2/6/2012	107	164	$246,776	28.2%	239	92	$238,003	$225,443	2.7
2/5/2012 to 8/5/2012	295	99	$246,512	27.9%	232	96	$243,428	$232,794	7.6
8/5/2012 to 2/3/2013	133	146	$238,168	26.1%	269	75	$231,974	$218,466	3.0

Source: Madden 2010c, 2011c, 2011d, 2012d, 2012e, 2013c.

The state of Alaska, overall, has a high percentage of rentals in part due to a relatively young population, high population turnover, a large number of military personnel, and high costs of home ownership (ADLWD 2011). In 2011, the largest increase in three-bedroom single family rental homes median adjusted rent and the highest rental cost in the state was in FNSB at $1,938 per month. This represented an average increase of $164 over the year, or an average increase of over 9%. In comparison, the median adjusted rent for the Municipality of Anchorage was $1,781 per month during the same year. FNSB experienced a lower median adjusted rent for a two-bedroom apartment ($996 per month) than Anchorage ($1,202) (ADLWD 2011). Areas with high prices tend to have low vacancy. The vacancy rate in FNSB was 8.2% in 2011 compared to 2.3% in Anchorage. As mentioned earlier, the high vacancy rates in FNSB during 2011 could partially be attributed to the deployment of Fort Wainwrights' 1st Stryker Brigade Team, 25th Infantry Division.

During EIS scoping in FNSB, commenters referred to housing costs in the Anchorage/Mat-Su area and expressed the opinion that comparable housing is less expensive in the FNSB area. The FNSB-prepared *Survey of Housing Impacts on Eielson AFB Personnel* notes that the higher costs make the ability to purchase a house in Anchorage slightly less accessible than in Fairbanks (FNSB 2012a). Despite the price differential, approximately 35% of JBER families live in owner-occupied housing in Anchorage or the Mat-Su Valley. For FNSB, the *2009 Eielson Air Force Base Housing Requirements and Market Analysis* found that EAFB active duty families living in owner-occupied housing declined from approximately 10% in 2005 to 5% in 2009. The most recent 5% active duty family owner-occupied housing figure is used in this analysis for out-migrating active duty personnel and their families. Rental costs between the two areas vary depending on the unit type as noted above (Air Force 2009a, 2012b).

Another cost factor discussed in the FNSB 2012 survey was the difference between housing allowances between EAFB and JBER. The Basic Allowance for Housing (BAH) is designed to reflect costs in the community to house military personnel adequately off-base. BAH for Anchorage is different than from Fairbanks because BAH is designed to reflect the cost of living in an off base area. Some Air Force personnel transferred from EAFB to JBER would see a reduction in BAH and others would see an increase. BAH is taken into consideration by the Air Force HMA in determining adequacy of housing. Where BAH adjustments lag local housing conditions, BAH may be below or, possibly, above housing community costs. BAH is adjusted periodically to reflect changes in housing costs within a region.

3.11.2.4 Education

The FNSB School District (District) is responsible for education throughout the FNSB. The District's responsibilities include schools located on EAFB, within the North Pole area, and within the City of Fairbanks. The majority of EAFB military associated students attend schools on EAFB or in North Pole. Figure 3.11-2 includes school locations in the immediate region.

The extent of military personnel within the District results in benefits and challenges. In general, military-related children are encouraged to be high achievers and to bring experience from multiple duty stations to the classroom. The dynamics of student relocations can challenge teachers and administrators as they attempt to plan and budget for the student population. The District's student enrollment in 2000-2001 was 15,553, down from a high of 16,431 in 1997-1998. The lowest recent enrollment was 14,103 in the 2007-2008 academic years. Year-to-year enrollment can vary from a student enrollment reduction of 554 students between 2003 and 2004 and between 2004 and 2005 academic years to an increase of 262 students between 2008 and 2009 and between 2009 and 2010 academic years. District student enrollment in 2011-2012 was 14,267 and 2012-2013 District enrollment was projected to be 14,344 (FNSBSD 2012, 2012c).

The District budget is primarily based on enrollments and, in 2012-2013, included $12.8 million in Federal impact aid and approximately $0.5 million impact aid add-on for all military associated students within the District. The dominant revenue source for the District is the enrollment-based state revenue. The 2013-2014 proposed District budget estimates a total of $160.86 million from state sources and $14.76 million from the Federal government, including military impact aid and other Federal sources (FNSBSD 2012a, 2012b).

The enrolled students in EAFB on-base schools as of the 2012-2013 academic years were: Anderson Elementary, 288; Crawford Elementary, 303; and Ben Eielson Junior/Senior High, 383 for a total of 974 students. 417 of these students live off base and commute onto the base to attend the on base schools. Of these, 195 students are not military affiliated. Teachers and administrators associated with the on-base schools are: Anderson Elementary, 25; Crawford Elementary, 27; and Ben Eielson Junior/Senior High, 52. In addition to the academic staff, support personnel are associated with each school (FNSBSD 2012).

The average class size for Anderson Elementary is 21.9 and Crawford Elementary is 25.1, which are comparable to the District elementary school average class size of 23.3. The average class size for Ben Eielson Junior High is 16.3 and Ben Eielson Senior High is13.6, which are low for the District with an average junior and senior high school class size of 21.2 (FNSBSD 2012).

A concern expressed during the EIS scoping meetings related to the potential financial impacts to the debt levels (i.e. bonded debt for new schools, school maintenance, and other educational needs) incurred by the community from their commitment to the military presence.

The FNSB debt situation was recently reviewed by bond experts and found to be in good financial condition. Both Fitch Ratings and Standard & Poor's Ratings Services have assigned the municipal bond rating of "AA" to a number of bonds issued by the FNSB. The key rating drivers include a strong financial profile reflected in robust reserves, stable economy concentrated in natural resources and government, steady property value growth, low debt levels with rapid amortization, and underfunded

pensions (Business Wire 2013). The strong bond rating has allowed the borough to refinance several bonds saving thousands of dollars and will likely have a positive impact on future bond sales (Buxton 2012). Bonds are paid off with property taxes, proceeds from voter-approved temporary sales tax increase and/or revenue from use of the facility they fund. In the case of school bonds, up to 70% of the amount is reimbursed by the state. As of May 2012, total gross direct debt, including outstanding school and library bonds and Series R Bonds, totaled $126 million (FNSB 2012b). Of the borough's bond debt of $126 million, about $86.5 million is expected to be reimbursed by the state under the terms of legislation passed to encourage construction and repair of educational facilities (FNSB 2012b). The total net direct and underlying bonded debt, which applies only to property owners in the cities of Fairbanks and North Pole, is calculated by adding the total gross direct debt with the underlying debt and subtracting the bonds eligible for state reimbursement. The total net direct debt and underlying bonded debt totaled $41,214,047 in FNSB as of May 2012 (FNSB 2012b). The assessed valuation of taxable real property within the Borough, except for oil and gas pipeline related property totaled $8,589,703 in 2011, an increase of 3% from the previous year (FNSB 2012b). The largest taxpayer, with a local assessed value of $669 million, is the Alyeska Pipeline Service Company (FNSB 2012b). In 2011, the ad valorem tax rates in FNSB, Fairbanks, and the North Pole was 11.294 mills, 5.843 mills and 3.0 mills, respectively, for each dollar of taxable property (FNSB 2012a). Thus, property owners in Fairbanks and North Pole will pay about $584 and $300, respectively, for each $100,000 in assessed property value.

As of October 2012, the City of Fairbanks is virtually debt free with no plans to incur debt for capital improvements (Fairbanks 2012). The current debt limit is $364 million with $855,000 in General Obligation (GO) bonds principal outstanding, which is for the construction of a fire station, of which 100% will be reimbursed by the state. Therefore, the legal debt margin is approximately $363 million. The city also received an upgrade in bond ratings from "A-" to "A" in 2009 from Standard & Poor's Rating Service; however, the city has not issued any debt since the upgrade (Fairbanks 2012).

3.11.2.5 Public Services

EAFB has an on-base clinic with a fully credentialed staff of family practice physicians, pediatricians, flight surgeons, and general dentists. Other services available at the Eielson Medical Clinic include optometry, physical therapy, and mental health support. The primary purpose of this clinic is to serve active duty personnel and dependents. Others who access the clinic include ANG personnel, their dependents, and retirees. The clinic does not provide emergency services. EAFB has an agreement with Fort Wainwright for Air Force personnel to access the Bassett Hospital on Fort Wainwright, which serves as the EAFB clinic's primary referral source for specialty and inpatient care. The Bassett Army Community Clinic provides Veteran services. The Fairbanks Memorial Hospital/Denali Center/Tanana Valley Clinic (FMH/DC/TVC) is the largest employer in FNSB, outside of government and education. Banner Health manages and operates the facility and employs approximately 1,600 people in FNSB, generating in excess of $80 million in annual gross salaries (FNSB 2012b).

Police and fire services in FNSB are provided by local borough resources or the resources of individual cities located within the borough, which includes the cities of Fairbanks and North Pole. Other fire departments in FNSB include Chena Goldstream, EAFB, Ester, Fairbanks, Fort Wainwright, Northstar, Steese Area, and the University of Alaska (North Pole 2013). The Alaska State Trooper D Detachment provides patrol and policing services outside the communities with police departments.

The Fairbanks fire department is a fully paid fire department with a staff of 41 persons with a response area of 13.1 square miles, providing support for 10 nearby fire departments including Fort Wainwright Army Base and EAFB (Fairbanks 2013b). The Fairbanks police department has an authorized strength of 50, which includes 47 sworn officers and 3 civilian support personnel with an authorized budget of $6.2 million (Fairbanks 2013c). The Fairbanks Emergency Communications Center (FECC) has an authorized strength of 16 dispatchers and 1 manager. The FECC currently employs 12 dispatchers, 4 shift leads and one manager who provides call answering and dispatch service for the City of Fairbanks and city of North Pole police, fire and EMS agencies as well as 4 dual fire and EMS agencies, 2 fire departments, and 1 emergency management service first responder agency (Fairbanks 2013d). Between 2009 and 2012, the police budget exceeded actual expenditures (Fairbanks 2012). Between 2006 and 2012, with the exception of 2010, the fire department budget exceeded actual expenditures (Fairbanks 2012).

The total general fund for the City of Fairbanks increased slightly from $32,606,771 in 2012 to $33,590,368 in 2013 (Fairbanks 2012). Approximately 20% of the 2013 approved general fund expenditures are allocated to the police department and 19% are allocated to the fire department (Fairbanks 2012). Challenges facing the budget for the City of Fairbanks include rising utility and fuel costs, flat tax revenues due to minimal new construction in the private sector and virtually no growth in sales tax revenues.

The City of North Pole police department is comprised of 14 full-time commissioned and civilian personnel (North Pole 2007) as well as a fire department comprised of 15 career staff, 19 volunteers, and 6 life members (North Pole 2013). In addition, the city has a non-profit volunteer Police Reserve Association that supplements the North Pole police department. The total general fund revenue for the City of North Pole increased by $23,759 from 2012 levels to $5,085,055 for 2013. Approximately 32.6% of the general fund budget is allocated for the police department operating expenses and 37.5% is allocated for the fire department operating expenses (North Pole 2012).

3.11.3 Training Airspace

The training airspace used by the F-16s, the F-22s, and other aircraft assigned to JBER and EAFB primarily overlies the interior of Alaska. There is no proposed change in existing military training airspace associated with the proposed changes at EAFB. Communities are sparse beneath the airspace and the economic activity consists of subsistence hunting, fishing, and activities related to recreation and tourism. Most of the purchases of goods or services by individuals living in these areas occur either in Fairbanks or Anchorage as the individuals travels to one of these cities to make regular purchases including groceries, clothing, and other needed items.

F-16s would continue to train in the available military training airspace. While the use of these existing airspace units would be somewhat redistributed as described in Section 2.4, the areas beneath the airspaces would not be exposed to any new activities that could affect economic activities. Therefore, no further analysis of the socioeconomic impacts beneath the training airspace is required.

Some public commenters at the EIS scoping expressed concern that bringing the JBER fighter aircraft numbers and operations back to what they were in 2008 could increase congestion for civil aviation in the

Anchorage airspace. With few roads, civil aviation, including general aviation, provides access to most of Alaska. As explained in Section 4.1, the number of JBER aircraft and flight operations would not substantially change from the 2008 existing conditions and they would not be expected to place a burden on air traffic control.

3.12 Environmental Justice

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, is designed to ensure that disproportionately high and adverse human health or environmental effects on citizens in either of these categories are identified and addressed, as appropriate. Additionally, potential health and safety impacts that could disproportionately affect children are considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*.

The 2010 census did not collect information on income or poverty levels, therefore, the 2000 Census information was used as a proxy. Low-income populations include persons living below the poverty level ($23,021 for a family of four in 2011) as reported in the 2006–2010 American Community Survey by the U.S. Census Bureau. The percentage of low-income persons is calculated as a percentage of all persons for whom the Census Bureau determines poverty status, which is generally a slightly lower number than the total population as it excludes institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old. For the purpose of this analysis, the proportion of low-income populations in the 2000 Census is evaluated to the census tract level. That percentage is then applied to the affected 2010 population as an estimate of the number of low-income persons affected under the 2010 census. For the purpose of this analysis, children are defined as persons age 17 and younger, as enumerated by the 2010 census.

Analysis of environmental justice determines if there are disproportionately high and adverse human health or environmental effects on minority or low-income populations (EO 12898), and/or environmental health or safety risks that may disproportionately affect children (EO 13045). Since the proposed construction activities would occur within the base boundaries, the only action with the potential to cause adverse impacts is related to the new noise levels generated in the vicinity of JBER following the relocation of the F-16 squadrons. Therefore, the ROI for the environmental justice analysis in this EIS focuses on the Municipality of Anchorage and Mat-Su Borough.

3.12.1 JBER

Noise levels of 65 dB L_{dn} or greater, under baseline conditions, primarily extend over parts of JBER and over parts of the Mountain View residential area adjacent to JBER. Noise levels above 65 dB L_{dn} also extends over the Knik Arm waterway and industrial areas including the Port of Anchorage (see Section 3.2). Environmental justice focuses on the off base populations affected by these noise levels.

Between the 2000 and 2010 Census, the population of Anchorage became more diverse with a large influx of minority populations. In 2010, minority populations comprised over 37% of the total population as compared to only 30% in 2000. The Mat-Su Borough has a smaller minority population comprising only 17% of the total population (Census 2010h).

Under baseline conditions, an estimated 408 residents are affected by noise levels of 65 dB L_{dn} or greater (Table 3.12-1). These residents are primarily within Mountain View located south of JBER (see Section 3.2 Noise). The community of Mountain View includes a higher proportion of minorities than other communities in Anchorage. Approximately 43 persons (11%) of the population affected by the baseline noise contours are below the poverty level, as compared with 7.8% of the population below the poverty level in Anchorage as of the 2010 census. The Mountain View Elementary School and Mount Spurr Elementary school areas are also exposed to noise levels of 65 dB L_{dn} or greater under existing conditions (Section 3.2, Table 3.2-3). During the 2011-2012 school years, Mountain View Elementary in Anchorage had a total enrollment of 359 students in grades pre-kindergarten through fifth grade (Alaska DOE 2012). All 100% of the students at Mountain View Elementary are considered economically disadvantaged (ASD 2011a). During the 2011-2012 school years, Mount Spurr Elementary located on JBER, had a total enrollment of 290 students in grades pre-kindergarten through sixth grade (Alaska DOE 2012). Approximately 121 persons (29.7%) of the current total population residing off-base that are affected by noise levels of 65 dB L_{dn} or greater are children under the age of 18.

Table 3.12-1. Off-Installation Population (Census 2010) Exposed to Noise Levels of 65 dB L_{dn} or Greater under Existing Conditions

Total Population Affected	Minority		Low-Income		Children (under 18)	
	Number	Percent	Number	Percent	Number	Percent
408	302	74.0%	43	10.5%	121	29.7%

3.12.2 EAFB

In 2010, FNSB had approximately 18% minority residents and the North Pole and EAFB Zip Code areas had approximately 6% minority residents. The area around EAFB is not disproportionately minority or disadvantaged. The existing sound environment near EAFB is discussed in Section 3.2.2. Under the Proposed Action, noise levels in the vicinity of EAFB would decrease.

3.12.3 Training Airspace

As discussed in Sections 3.8.3 and 3.11.3, there are few population centers located beneath the training airspace (see Figure 3.8-1). The proposed relocation of the F-16s would result in very minor changes to the level of flight activities conducted in the airspace as compared to current and historical levels. Individuals beneath the airspace are currently exposed to military training overflights. Continued implementation of mitigations contained in the Alaska MOA EIS (Air Force 1995) addresses impacts to communities under the training airspace potentially affected by flight training operations.

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4.0 ENVIRONMENTAL CONSEQUENCES

This chapter analyzes potential environmental consequences from the proposed relocation of the 18 AGRS from EAFB to JBER, Alaska and subsequent EAFB personnel changes. As in Chapter 3.0, the expected geographic scope of potential environmental consequences is identified as the ROI. This chapter considers the direct and indirect effects of the Action Alternatives and the No Action Alternative described in Chapter 2.0. Resource definitions, as well as the regulatory setting and methodology of analysis, are found in Appendix B. Existing conditions (refer to Chapter 3.0) of each relevant environmental resource is described to give the public and agency reviewers a meaningful point from which they can compare potential future environmental, social, and economic effects. Cumulative effects are discussed in Chapter 5.0.

For the purpose of this EIS, the term JBER refers to the entire combined base. The term JBER-Elmendorf refers to the historic Elmendorf AFB, which is primarily affected by proposed relocation of the 18 AGRS from EAFB to JBER, AK. JBER-Richardson refers to the historic Fort Richardson portion of JBER.

4.1 Airspace Management and Use

4.1.1 Alternative A

4.1.1.1 JBER

Alternative A would have little effect on the structure, management, and use of the JBER Class D airspace and the surrounding Anchorage terminal airspace. This airspace is governed by ATC rules/regulations, Standard Operating Procedures, and agreements that govern how all VFR and IFR aircraft operations are to be conducted within this high density environment regardless of the different aircraft types using the airspace. The proposed F-16 relocation would not require any changes to this airspace structure or the procedural stipulations that govern its use. The published arrival/departure procedures and stereo routes currently used by fighter aircraft transiting to/from JBER would also continue to serve the F-16 flights. Use of these canned procedures/routes provides a safe and efficient means for ATC to segregate military aircraft safely from other IFR air traffic in the ROI. Any special training maneuvers that the F-16s (or other fighter aircraft) may perform at JBER (such as an SFO to a JBER runway) would be established, approved, and conducted in accordance with ATC requirements and airfield operating procedures to ensure that such maneuvers do not interfere with other air traffic.

SFOs performed at JBER would be to Runway 06 or Runway 16 and would generally follow the same pattern as currently exists at EAFB where the horizontal boundaries of the JBER Class D would be sufficient to support an SFO maneuver, thus not requiring use of any adjacent airspace sectors. However, the higher initial altitude needed for an SFO would extend above this Class D airspace into airspace controlled by Anchorage Approach Control. This airspace would have to be requested from Anchorage Approach prior to any SFO operations whereas the FAA controllers may approve or deny such request, depending on other air traffic conditions in this area. Procedures for coordinating SFO requests would be outlined in a Letter of Agreement between JBER and the FAA to ensure those maneuvers do not conflict with other air traffic operations and priorities. To the maximum extent possible, SFOs would be requested during lower density air traffic periods when they would have less potential to affect civil aviation activities in this area. If an IFE were declared (i.e., actual flame out), the airspace would be cleared both laterally and vertically to the extent required to protect the aircraft maneuvers while not putting other military and civil aircraft at risk.

The F-16 Ready Aircrew Program requires each pilot conduct a minimum of one SFO every 90 days to maintain currency in those maneuvers. With 25 to 30 pilots assigned to 18 AGRS, this would require at least 25 to 30 SFOs per 90-day period or 122 per year to meet minimum requirements. Additional SFOs may also be conducted in conjunction with other flight arrival operations as traffic conditions and other airspace uses may permit.

Under Alternative A, F-16s would conduct approximately 1,270 routine training sorties annually at JBER while continuing to deploy temporarily to EAFB for periodic MFEs. Each sortie would generate 2 airfield operations (1 take-off and 1 landing) along with any practice touch and go's or low approaches that the F-16s would perform in conjunction with a sortie mission. All such typical VFR maneuvers would be conducted within JBER Class D airspace and traffic patterns where they would not affect other adjacent airspace uses. Aircraft performing any practice TACAN/ILS instrument procedures or other maneuvers that would take them outside Class D airspace would be appropriately separated and sequenced by ATC with other IFR aircraft operating in this area. VFR aircraft may request and receive ATC advisories on the presence of any military and civil aircraft operating within the same airspace areas.

As discussed in Chapter 2, the added F-16 operations at JBER would essentially offset the annual sorties and airfield operations previously associated with the JBER-based F-15 and F-22 aircraft. This offset, coupled with the fact that the F-16s would operate similarly to the F-22s at this airfield, means that Alternative A would have little effect on the manner in which fighter aircraft have typically operated at JBER. Therefore, projected future F-16 operations at JBER would very likely be within those higher annual levels shown in Table 2.4-4. The standing ATC procedures and practices that have historically provided for the compatible use of the JBER/Anchorage airspace environment would continue to support and safely integrate F-16 flight activities with other high density commercial/general aviation air traffic in this area. The Air Force would continue to work closely with FAA Anchorage TRACON, Anchorage Center, and other aviation interests through the Alaska Civil/Military Aviation Council and other means, as appropriate, when considering any actions needed to minimize adverse effects on other airspace users in this region. This will ensure minimal impact to use of the airspace.

Scoping comments expressed concern regarding JBER weather conditions and temperature fluctuations that may affect F-16 training activities differently than it would at EAFB and the potential effects of this proposal on medical flights. In regard to any impacts on medical flights, it is a standing practice for ATC and range control facilities to ensure medical and other such emergency flights are given priority over military flight operations. Weather conditions are always a key factor in planning, scheduling, and conducting training missions at any location so training can be performed safely while meeting pilot qualification requirements. However, weather conditions are operational factors that affect all installations. Therefore, Alternative A would not affect current protocols for scheduling and conducting flight mission activities relative to weather conditions or those priorities given to medical and emergency flight services.

4.1.1.2 EAFB

The proposed F-16 relocation would result in approximately 1,270 fewer sorties being conducted at EAFB. This would be an EAFB reduction of less than 6% of annual sorties. Fewer sorties would reduce the number of airfield operations and associated airspace uses proportionally with each takeoff, landing, and practice approach/landing maneuver generated by a single sortie. This would result in a reduced air

traffic workload at EAFB and within the Fairbanks/EAFB region. Depending on seasonal fluctuations, commercial aviation flight activities in this region, and those periods when Red Flag and other exercises are conducted, the reduced sorties would not have an effect on the manner in which the FAA manages and conducts their ATC operations within this airspace environment. Alternative A would not affect the use and availability of EAFB as an emergency or alternate airfield as deemed necessary by FAA Fairbanks or Anchorage ATC facilities. Under normal procedures, FAA would determine what actions should be considered regarding any beneficial or adverse effects this proposed relocation and other future aviation considerations may have on air traffic system staffing and capabilities.

4.1.1.3 Training Airspace

Alternative A would not require or result in any modifications to existing MOAs/ATCAAs and RAs that are currently used by 18 AGRS (Table 2.4-6). As noted in Table 2.4-6, relocating F-16s to JBER would result in little or no changes to the annual sortie-operations conducted within the different SUAs. Minor changes would occur in those instances when it may be timelier and/or more fuel efficient to train in airspace that is closer to JBER, such as the Fox 3, Stony, and Susitna MOAs. Corresponding reductions in training flights closer to JBER would reduce F-16 operations in Eielson, Fox 1, Fox 2, R-2204, Viper, and Yukon 1 MOAs and in R-2204. The proposed relocation would not require any changes to the instrument and stereo routes currently flown by JBER aircraft while transiting to/from each SUA. Any future need to modify or establish refueling tracks, transit stereo routes, etc., would be implemented by following the standard formal procedures/processes that consider impacts on other airspace uses. Current airspace management policies and procedures, the standing mitigations cited in the 1995 MOA EIS Record of Decision (ROD) (Air Force 1995), and other Air Force initiatives would continue to maintain the safe, compatible use of the Alaska airspace by all military and civil aviation aircraft.

4.1.2 Alternative B

4.1.2.1 JBER

Under Alternative B, 18 AGRS would conduct both routine training and MFE sortie missions at JBER, which would add approximately 1900 annual F-16 sorties. Alternative B would increase JBER airfield operations relative to the number of takeoffs, landings, practice approaches/landings, and SFOs and the overall annual operations would still be within the range of the 2009 and 2010 levels, which occurred when three F-15 squadrons were based at JBER (see Table 2.4-4). Alternative B would have little effect on the overall management and use of JBER Class D airspace, surrounding terminal airspace, and other aircraft operations occurring within this region. Alternative B would not require any changes to this airspace structure, the published existing arrival/departure procedures, or the standards/procedures governing the use of the airspace. As noted in Alternative A, any special training maneuvers to be performed by F-16s at JBER, such as SFOs, would be approved, and then conducted in accordance with standing ATC operating procedures to ensure such maneuvers do not conflict or interfere with other air traffic.

4.1.2.2 EAFB

Alternative B would relocate both F-16 routine training and MFEs to JBER, which would reduce the number of F-16 aircraft sorties and associated airfield operations currently conducted at EAFB by 8.6%. Implementation of this alternative, and any adverse or beneficial effects it may have on airfield and other

airspace uses in this region, would be dependent upon seasonal fluctuations, Red Flag exercise periods, and other factors that can affect airspace uses and operations. Alternative B would not have an effect on the FAA and ATC system capabilities in this region. As noted in Alternative A, the FAA would determine what actions, if any, should be considered relative to this proposed relocation and other future aviation considerations affecting air traffic system staffing and capabilities in this region.

4.1.2.3 Training Airspace

The effects of this alternative on training airspace use would be similar to the effects discussed for Alternative A. Basing both F-16 routine training and MFE mission activities at JBER would result in relatively minor changes to the annual sortie-operations currently conducted within the different MOAs and RAs shown in Table 2.4-6. Those changes relate to transit times/distances and fuel efficiency. This alternative would not require any changes to how the airspace is currently managed. Standing mitigations cited in the 1995 MOA EIS ROD (Air Force 1995) and other Air Force initiatives would continue to provide for the same, compatible use of the Alaska airspace by all military and civil aviation aircraft.

4.1.3 Alternative C, No Action

Under the No Action Alternative, 18 GRS would remain at EAFB and all routine and MFE flight operations would continue to be conducted at this base as it currently occurs. This would not affect the manner in which the EAFB or JBER airspace environments and training airspace areas are managed and used.

4.2 Noise

4.2.1 Alternative A

4.2.1.1 JBER

The 18 AGRS flies about 2,700 sorties per year. Under Alternative A, 1,270 sorties would be flown from JBER, 630 sorties would be flown from EAFB, and approximately 800 sorties would be flown off-station as part of an alert or Mobile Training Team tasking.

4.2.1.1.1 Noise Levels on Land

In general, F-16 aircraft would fly using similar flight procedures and operational patterns followed by F-22 aircraft based at JBER currently. Similar to the F-22, F-16s would use Runway 34 for approximately 76% of departures. During winter months, closures of Runway 16/34 due to heavy snowfall would drive use of the main runway. F-16 aircraft would require the use of afterburner power for 65% of departures whereas the F-22 uses afterburner for a smaller percentage of total departures. F-16 aircraft occasionally conduct functional check flight departures, which involve the aircraft departing normally but then initiating a vertical climb in afterburner power at or near the end of the runway to approximately 10,000 feet MSL (surface is approximately 250 MSL). Another flight procedure conducted by the F-16, but not the F-22, is the SFO. This procedure simulates an un-commanded shutdown of the engine during flight and involves the pilot descending to the runway under idle power. Noise levels were calculated using the same methods used for existing conditions as described in Section 3.2.2 and resulting noise contours are shown in Figure 4.2-1. As shown in Table 4.2-1 the number of off-installation land and water acres exposed to noise levels greater than 65 dB Ldn would

increase from 1,303 (1,037 over water and 266 over land) to 1,328 (1,047 over water and 281 over land) under Alternative A. Additional area affected (net increase of 25 acres) is mostly in the Mountain View neighborhood and increases are due in large part to afterburner departures from Runway 34. The additional area affected is densely populated, and total off-installation population affected would increase from approximately 408 to approximately 831 under Alternative A (Table 4.2-2).

Table 4.2-1. Land and Water Area Exposed to Noise Levels of 65 dB L_{dn} or Greater under Existing Conditions, Alternative A, and Alternative B

Noise Level (dB L_{dn})	Area (In Acres) Exposed to Indicated Noise Levels F-22 Plus-Up EA			
	JBER	Off Installation Over Water	Off Installation Over Land	Total
65 – 69	5,572	3,280	214	9,066
70 – 74	2,557	509	106	3,172
75 – 79	1,059	19	46	1,124
80 – 84	530	0	2	532
≥85	490	0	0	490
TOTAL	**10,208**	**3,808**	**368**	14,384
Noise Level (dB Ldn)	Existing Conditions			
	JBER	Off Installation Over Water	Off Installation Over Land	Total
65 – 69	5,164	1,006	176	6,346
70 – 74	1,953	31	81	2,065
75 – 79	1,091	0	6	1,097
80 – 84	641	0	3	644
≥85	634	0	0	634
TOTAL	**9,483**	**1,037**	**266**	**10,786**
Noise Level (dB Ldn)	Alternative A			
	JBER	Off Installation Over Water	Off Installation Over Land	Total
65 – 69	5,165	1,014	187	6,366
70 – 74	1,987	33	81	2,101
75 – 79	1,109	0	10	1,119
80 – 84	670	0	3	673
≥85	671	0	0	671
TOTAL	**9,602**	**1,047**	**281**	**10,930**
Noise Level (dB Ldn)	Alternative B			
	JBER	Off Installation Over Water	Off Installation Over Land	Total
65 – 69	5,157	1,017	194	6,368
70 – 74	2,007	34	80	2,121
75 – 79	1,117	0	12	1,129
80 – 84	682	0	3	685
≥85	689	0	0	689
TOTAL	**9,652**	**1,051**	**289**	**10,992**

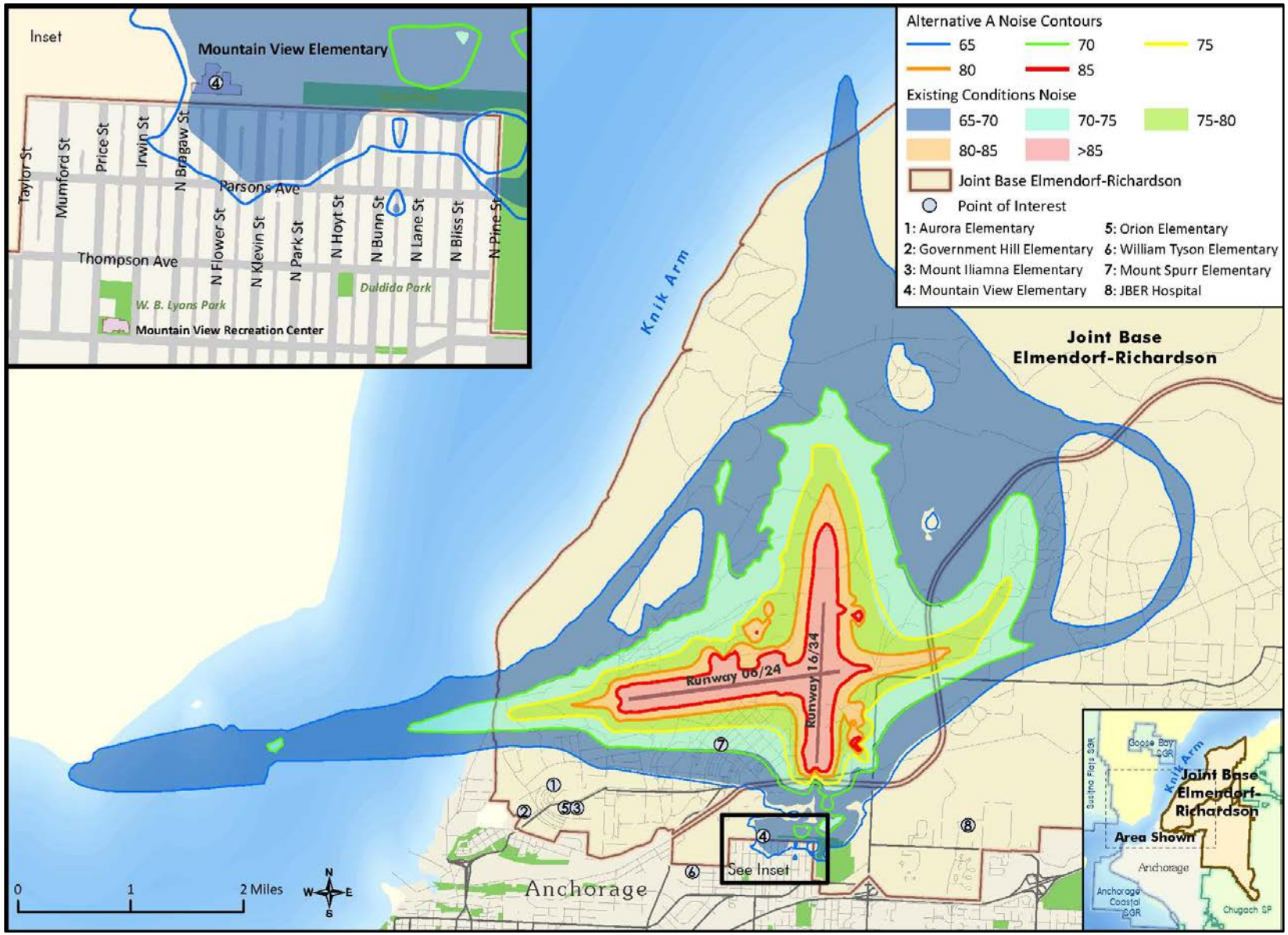

Figure 4.2-1. Noise Contours Under Existing Conditions and Alternative A

Table 4.2-2. Estimated Off-Installation Population Exposed to Noise Levels of 65 dB Ldn or Greater under Existing Conditions, Alternative A, and Alternative B

Noise Level (dB L_{dn})	Off-Installation Population (Census 2010)		
	Existing Conditions	Alternative A	Alternative B
65	406	829	1,077
70	2	2	2
75	0	0	0
80	0	0	0
85	0	0	0
TOTAL	**408**	**831**	**1,079**

As shown in Table 4.2-3, noise levels at the Mountain View Elementary School would increase by 1 dB under Alternative A. Increases in noise levels at all other noise-sensitive locations studied would be less than 1 dB. Under existing conditions and Alternative A, noise levels at Mountain View Elementary School and Mount Spurr Elementary School exceed 65 dB L_{dn}. Installation of noise attenuation could reduce noise to below recommended threshold levels if special noise attenuation measures are not already installed. Although structural noise attenuation does not affect the experience of children while they are outside the school building, core learning experiences typically take place inside.

Table 4.2-3. Noise Levels at Points of Interest under Existing Conditions, Alternative A, and Alternative B

ID	Location Description	Noise Level (dB L_{dn})		
		Existing Conditions	Alternative A	Alternative B
1	Aurora Elementary School	60	60	60
2	Government Hill Elementary School	56	56	56
3	Mount Iliamna Elementary School	59	59	59
4	Mountain View Elementary School	66	67	68
5	Orion Elementary School	58	58	58
6	William Tyson Elementary School	56	56	56
7	Mount Spurr Elementary School	71	71	71
8	JBER Hospital	55	55	55

Research on the effects of noise on children has included studies of noise effects on children's learning and cognitive abilities, as well as the potential for noise-induced health impacts. Numerous studies have shown varying degrees of effects of noise on the reading comprehension, attentiveness, puzzle-solving, and memory/recall ability of children. It is generally accepted that young children are more susceptible than adults to the effects of aircraft and other background noise based on studies by Green *et al.* (1982), Evans and Lepore (1993), Evans *et al.* (1998), Evans and Maxwell (1997), Haines *et al.* (2001a, 2001b), Hygge *et al.* (2002). Noise level recommendations for schools are a direct result of the findings of these and other similar studies. Findings of studies investigating noise-induced hearing loss among children have been mixed, with some studies finding a correlation between noise level and hearing loss and others finding no such correlation (Chen *et al.* 1997, Chen and Chen 1993, Fisch 1977, Andrus *et al.* 1975, Wu *et al.* 1995). Findings with regards to non-auditory noise impacts have also been mixed, such that it is impossible at this time to determine causal or consistent relationships between health disorders and noise exposure.

In keeping with current JBER policies, 18 AGRS operations during the late-night period after 10:00 PM and before 7:00 AM would be rare. Since increased aircraft operations would not occur during the time that most people sleep, there would be minimal impacts on sleep under Alternative A.

Noise is one of the major factors used in determining appropriate land uses, since elevated sound levels are incompatible with certain land uses. When noise levels exceed an L_{dn} of 65 dB, some uses such as residential land uses are normally considered incompatible (Air Force 2012a). The land area in acres on JBER affected by noise levels greater than 65 dB L_{dn} would increase by 4, from 98 to 102 acres residential land; increase by 33, from 677 to 710 for community support land; and increase by 9 from 1,800 to 1,809 acres for administrative/industrial land use. Other land uses on JBER, such as open land, range areas, and airfield pavements, are not as noise-sensitive. Under Alternative A, the number of on-base residential structures exposed to noise greater than 65 dB L_{dn} would increase by 2, from 103 to 105. Increases in noise levels would be expected to result in minor increases in the prevalence of annoyance in affected persons on JBER. However, structural attenuation could reduce the level of impacts to persons indoors. Furthermore, annoyance generated by aircraft noise may be somewhat less likely on a military reservation than in other locations, due to the affected population generally viewing military training as being necessary and important.

Workplace Noise - As per a DoD policy memorandum published in 2009, populations exposed to noise greater than 80 dB L_{dn} are at the greatest risk of population hearing loss (UDATL 2009). No on- or off-base residences are exposed to noise levels greater than 80 dB L_{dn} and, therefore, hearing loss risk for on- or off-installation residents is relatively low. Noise levels in the JBER-Elmendorf flightline exceed 80 dB L_{dn} under baseline conditions and would continue to exceed 80 dB L_{dn} under Alternative A.

Under Alternative A, noise generated by the additional F-16C aircraft would cause the 80 dB L_{dn} contour line to shift outwards from the runway by 50 to 100 feet. This shift would cause two buildings previously exposed to slightly less than 80 dB L_{dn} to be exposed to slightly greater than 80dB L_{dn}, increasing the total on JBER exposed to greater than 80 dB L_{dn} from 67 to 69 buildings. The two buildings newly within the 80 dB L_{dn} contour include administrative and industrial buildings. Some of the newly affected buildings would be occupied for at least a portion of the day.

In accordance with existing policies and regulatory guidance, the JBER Bioenvironmental Engineering Office assesses expected potential for occupational hearing loss risk and conducts health risk assessment, as described in Section 3.2.1.1, where it is deemed necessary. The JBER Bioenvironmental Engineering Office considers several factors, including structural noise attenuation and the amount of time workers spend outside when deciding on the appropriate course of action. Hearing protection devices used to protect worker's hearing would be the same (e.g., earmuffs, earplugs) as are used currently on JBER to protect workers in known high noise environments. The potential hearing loss risk among workers on JBER would be managed according to DoD guidelines. Workers on JBER are protected against possible noise impacts by adherence to DoD noise management guidelines. The JBER Bioenvironmental Engineering Office will review conditions of the additional two buildings exposed to greater than 80 dB L_{dn}, and will implement all protective measures required by Air Force occupational safety regulations.

Proposed building modification/addition projects would result in temporary increases in noise near the work site. Workers would be required to wear hearing protection in accordance with applicable regulations and guidelines.

4.2.1.1.2 Noise Levels in the Knik Arm

During F-16 overflight, calculated noise levels in the Knik Arm increase from ambient levels to up to 127 dB SPL in limited areas during the brief period of overflight. As a point of reference, maximum estimated F-16 noise levels are slightly less than measured F-15 overflight in-water noise levels of 134 dB SPL measured by Blackwell and Greene. These noise levels are well below the threshold for physical harm, but exceed the basement threshold for behavioral harassment. A detailed analysis was conducted on potential effects of F-16 flying operations noise on the CIBW, which is discussed in Section 4.7 (Biological Resources).

4.2.1.2 EAFB

Approximately 1,270 fewer F-16C/D sorties per year would be flown from EAFB under Alternative A. During MFEs, 18 AGRS aircraft would deploy to EAFB and fly about 630 sorties per year. Under this alternative, noise levels near the installation would be reduced relative to existing conditions while MFEs are not under way. While MFEs are under way, noise levels near the installation would be about the same as under current conditions. Noise effects at EAFB under Alternative A would have the potential to be positive and beneficial.

Noise levels at EAFB would be temporarily elevated due to potential demolition of unused buildings on the base (see Section 2.5.1.2). If demolition activities were to occur, noise level increases would be short-term, and localized to the demolition area on the installation. Workers would wear hearing protection, as required, in accordance with applicable regulations and guidelines.

4.2.1.3 Training Airspace

Under Alternative A, some 18 AGRS training operations would shift from airspace units located farther north, such as the Yukon MOA, to airspace units located further south (Table 4.2-4). The total number of sorties flown by 18 AGRS in the Yukon MOAs would decrease and the number flown in JBER-managed SUAs such as Stony and Susitna MOAs and their overlying ATCAAs would increase, but the total number of sorties flown would remain the same.

Table 4.2-4. Noise Levels Beneath Training Airspace under Existing Conditions, Alternative A, and Alternative B

Training Airspace	Existing Conditions			Alternative A			Alternative B		
	L_{dnmr}	CDNL	Booms/ Month	L_{dnmr}	CDNL	Booms/ Month	L_{dnmr}	CDNL	Booms/ Month
Birch MOA [1]	62	N/A	N/A	62	N/A	N/A	62	N/A	N/A
Buffalo MOA [1]	55	N/A	N/A	55	N/A	N/A	55	N/A	N/A
Delta MOA/ATCAA [2]	<45	48	13	<45	48	13	<45	48	13
Eielson MOA/ATCAA [1]	57	N/A	N/A	57	N/A	N/A	57	N/A	N/A
Fox 1 MOA/ATCAA [3]	<45	53	79	<45	53	79	<45	53	79
Fox 2 MOA [3]	50	46	79	50	46	79	50	46	79
Fox 3 MOA/ATCAA[3]	<45	54	83	<45	54	83	<45	54	83
R-2205 [1]	61	N/A	N/A	61	N/A	N/A	61	N/A	N/A
Stony MOA/ATCAA [4]	<45	51	36	<45	51	37	<45	51	37
Susitna MOA/ATCAA[5]	<45	47	10	<45	47	11	<45	47	11
Viper B MOA/ATCAA [1]	50	N/A	N/A	50	N/A	N/A	50	N/A	N/A
Yukon 1 MOA/ATCAA [3]	49	51	26	49	51	26	49	51	26

Notes:

[1] Supersonic not approved.
[2] Supersonic approved above 30,000 MSL.
[3] Supersonic approved above 12,000 MSL or 5,000 AGL (whichever is higher).
[4] Supersonic approved above 10,000 MSL or 5,000 AGL (whichever is higher).
[5] Supersonic approved ONLY for Functional Check Flights above 12,000 MSL or 5,000 AGL (whichever is higher) on an East-West line south of Denali Reserve.

Key:

AGL=Above Ground Level
ATCAA=Air Traffic Controlled Assigned Airspace
CDNL=C-Weighted Day-Night Average Noise Level
L_{dnmr}=Onset-Rate Adjusted Monthly Day-Night Average Sound Level
MOA=Military Operation Area
MSL=Mean Sea Level

4.2.1.3.1 Subsonic Flight

Increased F-16C operations tempo in certain SUAs may be noticed by persons spending substantial amounts of time beneath the airspace units and the noise generated by the additional flights could be considered annoying. However, increases in subsonic noise levels would not be considered significant.

Noise levels under MOA/ATCAA airspace units with increased operations would increase by less than 1 dB under Alternative A (Table 4.2-4). To put these increases in perspective, changes in instantaneous noise levels of 3 dB or less are generally not perceptible to people with normal hearing under non-laboratory conditions. This means that a 1 dB L_{dnmr} change in noise levels would not be discernible to individuals beneath the airspace. Noise levels in MOAs where operations would increase would remain below 55 dB L_{dnmr}. This noise level is equivalent in terms of impacts predicted to 55 dB L_{dn}, the EPA-identified threshold below which impacts to human health and welfare are not expected to occur (EPA 1974). The airspace units in which operations tempo would increase are already used by fighter aircraft such as the F-22, F-15E, and F-16C. Noise levels would decrease very slightly in airspace units in which F-16C operations would decrease (i.e., northern MOAs that are very distant from JBER).

The 18 AGRS would transit to and from the training airspace using the same procedures as the F-22s. Approximately 833 additional sorties would be flown to and from Fox and associated MOAs under Alternative A. The remainder of the sorties flown from JBER-Elmendorf under Alternative A would be flown to other MOAs via other routes. The noise levels from individual F-16s would be less than noise levels generated by individual F-22 aircraft based at JBER. Following departure from JBER, 18 AGRS aircraft en route to northern SUAs would typically climb continuously reaching altitudes of about 20,000

feet MSL by the time they reach Big Lake (surface is approximately 250 MSL). F-16 aircraft returning from northern SUAs would typically transit the area near Palmer and Wasilla at about 10,000 feet MSL (surface is approximately 300 MSL) and then descend to 3,500 feet MSL by the time they reach Goose Bay on the northern shore of the Knik Arm (surface). At altitudes that are typically used while en route, the aircraft would not generate noise levels typically considered a concern (Table 3.2-5). While descending or holding constant altitude, aircraft utilize low engine power settings and noise levels generated would be less than the noise levels shown in Table 3.2-5.

4.2.1.3.2 Supersonic Flight

The types of aircraft conducting supersonic flight and the characteristics of supersonic engagements would not change under Alternative A. As a result, the overpressure (in psf) of individual sonic booms would not be expected to change under this alternative. Minor changes in operations tempo in certain SUAs under Alternative A would result in increases or decreases in CDNL of less than 1 dB (see Table 4.2-4). Changes in the average number of sonic booms heard per month near the center of the training airspace units would be 1 or less. Slightly increased numbers of sonic booms could be noticed, but would not be expected to be considered a significant impact. Supersonic flights in Susitna MOA would continue to be limited to functional check flights and would not be permitted north of an east-west line located south of Denali Park and Reserve.

4.2.2 Alternative B

4.2.2.1 JBER

Under Alternative B, all 1,900 of the 18 AGRS sorties that are not Mobile Training Team or alert sorties would be flown from JBER. MFE sorties would depart from JBER rather than EAFB.

4.2.2.1.1 Noise Levels on Land

Noise levels were calculated for Alternative B using the same methods used for existing conditions as described in Section 3.2.2 and resulting noise contours are shown in **Error! Reference source not found.**. Noise contours reflecting existing conditions, Alternative A and Alternative B are shown in Figure 4.2-3. As shown in Table 4.2-1 the number of off-installation acres exposed to noise levels greater than 65 dB L_{dn} would increase from 1,303 (1,037 over water and 266 over land) to 1,340 (1,051 over water and 289 over land). Additional area affected (net increase of 37 acres) is mostly in the Mountain View neighborhood and increases are due in large part to afterburner departures from Runway 34. The additional area affected is densely populated, and total off-installation population affected would increase from approximately 408 to approximately 1,079 (Table 4.2-2). As shown in Table 4.2-3 noise levels at the Mountain View Elementary School would increase by 2 dB under Alternative B. Increases in noise levels at all other noise-sensitive locations studied would be less than 1 dB. Under existing conditions and Alternatives A and B, noise levels at Mountain View Elementary School and Mount Spurr Elementary School exceed 65 dB L_{dn}.

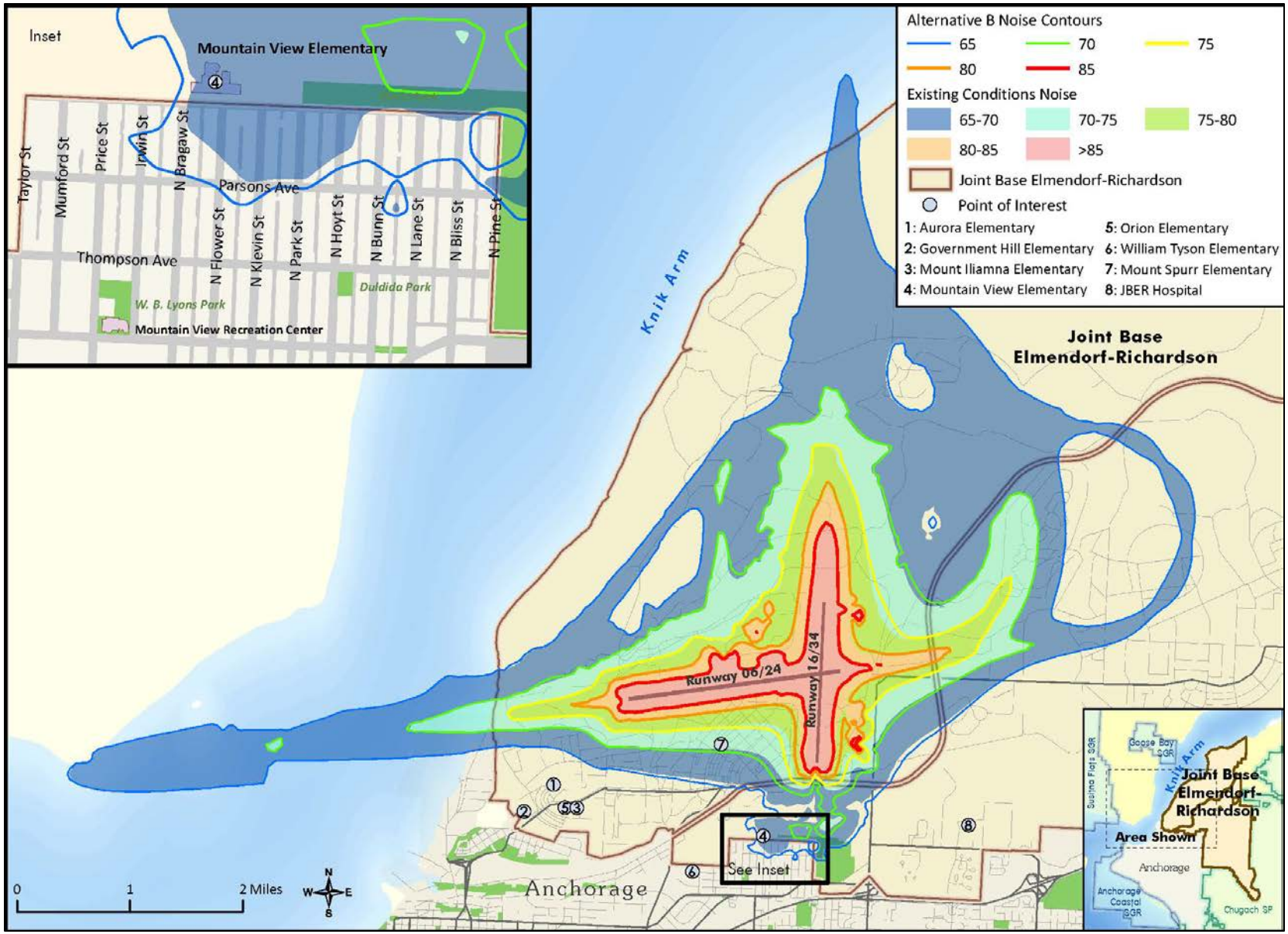

Figure 4.2-2. Noise Contours Under Existing Conditions and Alternative B

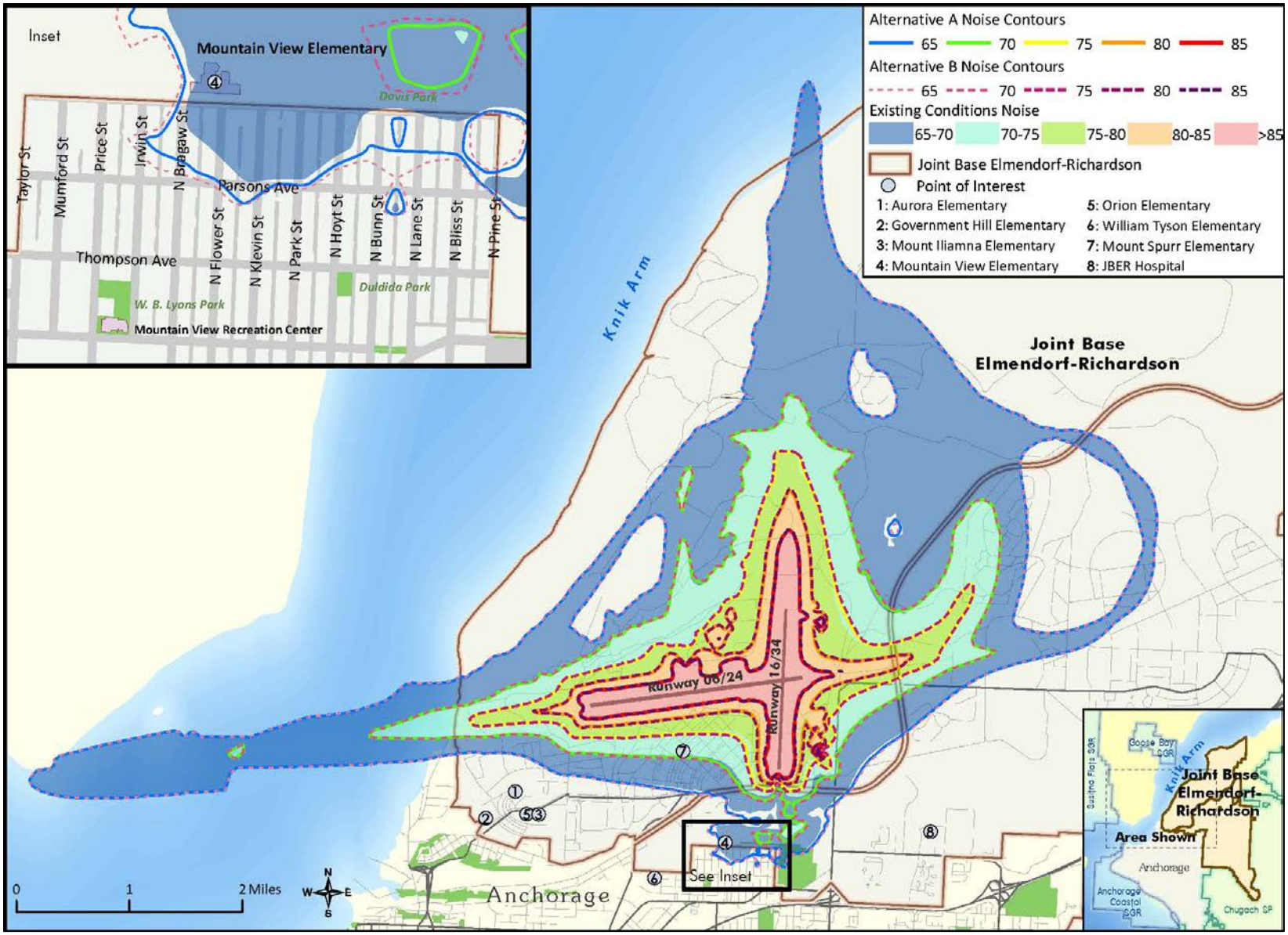

Figure 4.2-3. Noise Contours Under Existing Conditions, Alternative A, and Alternative B

Noise is one of the major factors used in determining appropriate land uses since elevated sound levels are incompatible with certain land uses. When noise levels exceed an Ldn of 65 dB, some uses such as residential land uses are normally considered incompatible (Air Force 2012a). The number of acres of noise-sensitive land uses on JBER affected by noise levels greater than 65 L_{dn} would increase under Alternative B. An additional 5 acres of residential land use, 46 acres of community support, and 15 acres of industrial/administrative land use would be affected at these noise levels. Noise impacts in these areas would be similar to those described for Alternative A.

Noise levels exceeding 80 dB L_{dn} would not extend beyond the boundaries of JBER under Alternative B and hearing loss risk among people off-installation would be expected to be minimal (see Section 4.2.1.1.1). No residential structures on-installation would be affected by noise levels exceeding 80 dB L_{dn}. The number of non-residential structures on JBER affected by this noise level would increase by 7 from 67 to 74 under Alternative B. Structures newly affected would include administrative and industrial buildings. Some of the newly affected buildings would be occupied for at least a portion of the day. Hearing loss risk would be managed as described for Alternative A. Facility modification noise impacts would be the same under Alternative B as under Alternative A.

4.2.2.1.2 Noise Levels in the Knik Arm

Proposed F-16 overflights would result in less than 0.004 CIBW behavioral harassment events per year. Noise levels of individual F-16 overflights would be the same under Alternative B as under Alternative A, but would occur slightly more frequently.

4.2.2.2 EAFB

The 18 AGRS would relocate to JBER and would not conduct MFE sorties from EAFB. In total, about 1,900 fewer F-16C/D sorties would be flown at EAFB. Noise levels near the installation would be reduced relative to the No Action Alternative during day-to-day operations and MFEs. Noise impacts under this alternative would be more positive and beneficial than under Alternative A.

Facility modification noise impacts at EAFB would be approximately the same under Alternative B as under Alternative A. Workers would wear hearing protection, as required, in accordance with applicable regulations and guidelines.

4.2.2.3 Training Airspace

4.2.2.3.1 Subsonic Flight

Under Alternative B, F-16C operations would utilize training airspace in the same manner as under Alternative A as described in Section 4.2.1.3. Noise levels under MOA/ATCAA airspace units with increased operations would increase by less than 1 dB under Alternative B (Table 4.2-4).

Under Alternative B, approximately 1,463 18 AGRS sorties per year would transit the Mat-Su Valley en route to northern SUAs. At the altitudes typically used while en route, the aircraft would not generate noise levels normally considered to be of concern (Table 3.2-5. While descending or holding constant altitude, aircraft utilize low engine power settings and noise levels generated would be less than the noise levels shown in Table 3.2-5.

4.2.2.3.2 Supersonic Flight

The types of aircraft conducting supersonic flight and the characteristics of supersonic engagements would not change from baseline under Alternative B. The overpressure (in psf) of individual sonic booms would also not be expected to change. Minor changes in operations tempo in certain SUAs under Alternative B would result in increases or decreases in CDNL of less than 1 dB. Changes in the average number of sonic booms heard per month near the center of the training airspace units would be 1 or less under Alternative B (see Table 4.2-4). Where increases would occur, slightly increased numbers of sonic booms could be noticed but would not be expected to be considered a significant impact. Supersonic flights in Susitna MOA would continue to be limited to functional check flights and would not be permitted north of an east-west line located south of Denali Park and Reserve.

4.2.3 Alternative C, No Action

Under the No Action Alternative, 18 AGRS would not relocate from EAFB to JBER. Operations at JBER-Elmendorf and in training airspace would continue at their current tempo and following current patterns. There would be no changes to noise levels in the installation vicinity or beneath training airspace (Table 4.2-4).

4.3 Health and Safety

This section addresses potential environmental consequences to flight and ground safety that could occur at or in the vicinity of JBER-Elmendorf or within the training airspace.

4.3.1 Alternative A

4.3.1.1 JBER

4.3.1.1.1 Flight Safety

Aircraft Mishaps – The Air Force calculates Class A mishap rates per 100,000 flying hours for each type of aircraft in the inventory. These Class A mishap rates can be used to compute a statistical projection of anticipated time between mishaps.

Since entering the Air Force inventory in 1975, the F-16 aircraft (all variants) has flown approximately 9,687,778 hours. During this time, F-16 aircraft have experienced 347 Class A mishaps. These data reflect an average lifetime Class A mishap rate of 3.58 mishaps per 100,000 flying hours. Over the last ten years; however, the mishap rate for the F-16 has dropped to 1.91 mishaps per 100,000 flying hours (Air Force 2012d). Under Alternative A, 1,270 sorties would be flown annually by the F-16. Assuming a mishap rate of 1.91 with average sortie duration of 1.5 hours, this would equate to approximately one Class A mishap every 27.5 years for the F-16 aircraft.

Accident potential in the immediate vicinity of the airfield may increase very slightly with additional airfield operations. Although a concern, the increased risk of mishaps over residential areas in APZ I and APZ II is exceedingly low and would not be higher than when three squadrons of F-15 and/or F-22 aircraft were based at JBER-Elmendorf until 2010. The base prioritizes compatible land use planning

with surrounding jurisdictions to manage future incompatible development. However, the majority of the APZs off the installation are already developed incompatibly.

Current safety policies and procedures at the base ensure that the potential for aircraft mishaps is the lowest possible level. These safety policies and procedures would continue under Alternative A. No significant adverse impacts are anticipated.

Bird/Wildlife Aircraft Strike Hazards – The proposed increase in the number of JBER airfield operations due to the proposed 18 AGRS relocation would result in a slightly higher potential for bird/wildlife strikes. All safety actions that are in place for existing F-22 training would continue to be in place for the F-16 aircraft. These actions include briefings during periods of heavy bird migration and, when risk increases, limits would be placed on low altitude flights and some types of training. Overall risk associated with bird/wildlife aircraft strikes would be expected to remain low and no significant adverse impacts are anticipated.

4.3.1.1.2 Ground Safety

Ground operations and maintenance activities at 3 WG would continue to be conducted using the same processes and procedures as under current operations. All actions would be accomplished by technically qualified personnel and would be conducted in accordance with applicable Air Force safety requirements, approved technical data, and AFOSH standards.

No unique construction practices or materials would be required to renovate or expand the buildings under Alternative A. During facility modification, standard industrial and contractual safety standards would be followed. These would include implementing procedures to ensure that guards, housekeeping, and personal protective equipment are in place; establishing programs and procedures for lockout, right-to know, confined space, hearing conservation, forklift operations, etc.; conducting employee safety orientations and performing regular safety inspections; and developing a plan of action for the correction of any identified hazards. No unusual ground safety risks would be expected from these activities.

4.3.1.1.3 Hydrazine Use

The F-16 aircraft uses hydrazine to fuel the aircraft's emergency power unit. Hydrazine is a clear, oily liquid having an ammonia-like odor that is corrosive and highly toxic. Symptoms of acute (short-term) exposure in humans to hydrazine may include irritation of the eyes, nose, and throat, headache, nausea, pulmonary edema, seizures, and coma. Acute exposure can also damage the liver, kidneys, and central nervous system.

To minimize potential risks to personnel, all aircraft maintenance and aircraft fuel systems personnel, as well as all emergency response personnel at the base, would receive familiarization training in the hazards of hydrazine. All unit commanders would ensure that personnel with duties in the proximity of F-16 aircraft or hydrazine also receive specialized training.

Hydrazine would only be stored in a specially designed and constructed facility that meets all handling and storage requirements. The storage facility would be identified by the appropriate chemical agents, signs, and placards mounted to all four sides of the building (fence, if installed) and easily visible from all directions. The two person operational concept would be used any time the building is open and would include full protective clothing and respiratory protection for each person present.

Transportation of hydrazine would be held to a minimum and all containers (either empty or containing any amount of hydrazine) would be transported in a Department of Transportation approved shipping container only. Again, the two person operational concept would be used during all phases of transportation.

In the event of a hydrazine spill at the storage facility or at any other location, the Maintenance Operations Control Center would be notified and the area surrounding the spill would be evacuated. Personnel would remain safely away from the suspected leak until response personnel have given the all clear.

In the case of an F-16 crash, a Hydrazine Response Team, in conjunction with the fire department, would deploy to the crash site. Response personnel would be equipped with protective clothing and respiratory gear and would attempt to control any hydrazine releases using the method most applicable, such as neutralization. Technical Order (TO) 1F16C-2-49GS-00-1, *Organizational Maintenance Emergency Power System, USAF Series F-16C and F-16D Aircraft,* presents detailed hydrazine management and spill response procedures. Implementation of these measures would ensure that no significant impacts would result from the storage or use of hydrazine under Alternative A.

4.3.1.2 EAFB

4.3.1.2.1 Flight Safety

The relocation of F-16 aircraft will minimally reduce any flight safety risks. In general, EAFB is located substantial distance from any off-base developments and has low risk of safety incidents.

4.3.1.2.2 Ground Safety

Ground operations and maintenance activities at EAFB would continue to be conducted using the same processes and procedures as under current operations. All actions would be accomplished by technically qualified personnel and would be conducted in accordance with applicable Air Force safety requirements, approved technical data, and AFOSH standards.

No unique practices or materials would be required to demolish the 17 proposed action buildings. During demolition, standard industrial safety standards and best management practices would be followed. These would include implementing procedures to ensure that guards, housekeeping, and personal protective equipment are in place; establishing programs and procedures for lockout, right-to know, hearing conservation, forklift operations, etc.; conducting employee safety orientations and performing regular safety inspections; and developing a plan of action for the correction of any identified hazards. No unusual ground safety risks would be expected from these activities.

4.3.1.2.3 Hydrazine Use

Hydrazine facilities exist at EAFB and could continue to be used for deployments and exercises.

4.3.1.3 Training Airspace

4.3.1.3.1 Flight Safety

There would be no change in flight safety. The same aircraft would be performing the same missions and operations in the same airspace.

4.3.1.3.2 Ground Safety

The 18 AGRS F-16 aircraft currently use approximately 22,218 bundles of chaff per year and approximately 18,711 M-206 flares annually. They would continue to do so if relocated to JBER under Alternative A. Additional F-16 training would increase chaff or flare use approximately less than 1% over baseline use in MOAs/ATCAAs where chaff and flares are currently deployed.

Chaff and flare deployment during training is the only potential ground safety risk. Under Alternative A, F-16 training activities in the Fox 3, Stony, and Susitna MOAs would increase overall MOA activity an estimated 1 to 10% over baseline use and chaff or flare use would be expected to increase by about the same amount. No safety consequences from continued chaff and flare use are anticipated. See the F-22 Plus-Up EA for more information (Air Force 2011a).

4.3.1.3.3 Hydrazine Use

There would be no change in airspace use, which could affect hydrazine use or safety associated with hydrazine use.

4.3.2 Alternative B

4.3.2.1 JBER

There are no impacts to safety for Alternative B that has not been previously discussed under Alternative A. Since there would be an increase of 1,900 F16 annual sorties from JBER under this alternative, there would be a slightly higher potential for an aircraft mishap or a bird/wildlife aircraft strike. However, the potential for these occurrences would continue to be low and no significant impacts would be expected.

4.3.2.2 EAFB

There are no impacts to safety for Alternative B at EAFB that have not been previously discussed under Alternative A.

4.3.2.3 Training Airspace

There are no impacts to safety for Alternative B in the Training Airspace that has not been previously discussed under Alternative A.

4.3.3 Alternative C, No Action

Under the No Action Alternative, additional F-16 aircraft would not be assigned to JBER. Consequently, no impacts over those associated with current operations would be expected.

4.4 Air Quality

4.4.1 Alternative A

4.4.1.1 JBER

Alternative A requires facility modifications, beddown of additional aircraft, and an increase in personnel at JBER. Air pollutant emissions expected from these actions are compared to the Anchorage Borough emissions and are summarized in Table 4.4-1. Construction and point source emissions would be negligible for all pollutants. Aircraft emissions would be the primary emitter and raising the ambient air emissions. Nitrogen Oxides show the greatest increase of the criteria pollutants to the Borough of 0.63%. Air quality would not be significantly impacted with the implementation of Alternative A.

The addition of the F-16s would increase the CO2e emissions by 2,925 tons per year for Alternative A. This would not be an addition to global or state total of GHGs since the F-16 aircraft are currently contributing the same amount of emissions flying at EAFB. F-22 and F-16 aircraft operations contribute 1.02% of the Alaskan military GHG emissions. Alternative A would not have significant impacts on GHG emissions in the region.

Table 4.4-1. Air Emissions at JBER – Alternative A

Source	Emission (tons per year) Proposed Action JBER						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC	CO_2e
Construction Emissions	0.66	0.06	10.73	0.00	0.00	1.35	357
Point Sources	0.30	0.67	0.03	0.00	0.00	0.02	--
Mobile Sources	4.73	0.56	0.00	0.00	0.00	0.25	2,761
Aircraft Emissions	212.21	81.45	12.56	10.20	3.64	24.74	8,149
Total	**217.90**	**82.73**	**23.32**	**10.20**	**3.64**	**26.35**	**11,266**
Anchorage Borough Emissions	73,192	13,139	10,118	2,309	747	12,611	1,479,963
Percent of Borough Emissions	0.30%	0.63%	0.23%	0.44%	0.49%	0.21%	0.76%

Note: Emission calculation methods, aircraft emission calculations, GHG calculations and model outputs for construction, demolition, and personnel are included in the Appendix D.

Key:

CO=Carbon Monoxide
CO_2e=Carbon Dioxide equivalent
NO_x=Nitrogen Oxides
PM_{10}=Particulate Matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$=Particulate Matter with an aerodynamic diameter of 2.5 microns or less
SO_x=Sulfur dioxide
VOC=Volatile Organic Compounds

4.4.1.2 EAFB

Alternative A would involve the transfer of aircraft and personnel and the potential demolition of buildings that would no longer be used. This air quality analysis assumes that all vacated buildings would be demolished. Under Alternative A, the aircraft would be based at JBER and would deploy to EAFB for Red Flag and Distant Frontier operations. Air pollutant emissions expected from these actions are compared to the FNSB emissions and are summarized in Table 4.4-2 Mobile source emissions show a decrease due to the transfer of personnel due to a reduction in the number of vehicles emitting pollutants. Under Alternative A, aircraft emissions would decrease with 18 AGRS F-16 operations relocated to

JBER. The analysis calculated the emissions of operations from aircraft operated out of EAFB during deployment. Air pollutant emissions would decrease at EAFB and the surrounding area due to fewer people (commuter emissions) and 18 AGRS aircraft operations based from JBER. There would be positive impacts to the regional air quality for Alternative A.

Table 4.4-2. Air Emissions at EAFB – Alternative A

Source	Emission (tons/year) Proposed Action						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC	CO_2e
Construction Emissions	0.00	0.00	3.37	0.00	0.00	-0.01	307
Point Sources	0.00	0.00	0.00	0.00	0.00	0.00	--
Mobile Sources	-6.04	-0.44	0.00	0.00	0.00	-0.30	-7,783
Aircraft – Ongoing	91.55	25.41	4.78	4.33	0.07	11.91	4,042
Aircraft – Leaving	-24.43	-18.97	-1.01	-1.73	-1.90	-6.40	0.00
Total	**61.08**	**6.00**	**7.14**	**2.59**	**-1.83**	**5.21**	**-3433.34**
Borough Emissions	29,800	5,496	18,781	3,090	2,614	4,018	399,733
Percent of Borough Emissions	0.20%	0.11%	0.04%	0.08%	-0.07%	0.13%	-0.86%

Note: Emission calculation methods, aircraft emission calculations, GHG calculations and model outputs for construction, demolition, and personnel are included in the Appendix D.

Key:

CO=Carbon Monoxide
CO_2e=Carbon Dioxide Equivalent
NOx=Nitrogen Oxide
$PM_{2.5}$ =Particulate Matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}=Particulate Matter with an aerodynamic diameter of 10 microns or less
SOx=Sulfur Oxide
VOC=Volatile Organic Compounds

4.4.1.3 Training Airspace

The number of sorties occurring in Alaskan airspace is not expected to increase from current levels and flight operations would primarily occur at altitudes greater than 3,000 feet AGL (air mixing height); therefore, impacts to air quality would be negligible.

4.4.2 Alternative B

4.4.2.1 JBER

Air emissions sources under Alternative B would be the same as under Alternative A except the aircraft would not deploy to EAFB. All MFE staging for 18 AGRS would occur from JBER. Air pollutant emissions expected from these actions are compared to the Anchorage Borough emissions and are summarized in Table 4.4-3. Emissions would be slightly higher at JBER under Alternative B due to increase in aircraft operations. The addition of the F-16s would increase the CO_{2e} emissions by 3,609 tons per year at JBER for Alternative B. This would not be an addition to global or state total of GHGs since the F-16 aircraft are currently contributing the same amount of emissions flying at EAFB. The air quality would not be significantly impacted with implementation of Alternative B.

Table 4.4-3. Air Emissions at JBER – Alternative B

Source	Emission (tons/year) Alternative B JBER						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC	CO_2e
Construction Emissions	0.66	0.06	10.73	0.00	0.00	1.35	357
Point Sources	0.30	0.67	0.03	0.00	0.00	0.02	--
Mobile Sources	4.73	0.56	0.00	0.00	0.00	0.25	2,761
Aircraft Emissions	303.76	106.86	17.34	14.53	3.71	36.65	12,191
Total	**309.45**	**108.15**	**28.10**	**14.53**	**3.71**	**38.27**	**15,308**
Anchorage Borough Emissions	73,192	13,139	10,118	2,309	747	12,611	1,479,963
Percent of Borough Emissions	0.42%	0.82%	0.28%	0.63%	0.50%	0.30%	1.03%

Note: Emission calculation methods, aircraft emission calculations, GHG calculations and model outputs for construction, demolition, and personnel are included in the Appendix D.

Key:

CO=Carbon Monoxide
CO_2e=Carbon Dioxide Equivalent
Nox=Nitrogen Oxide
$PM_{2.5}$ =Particulate Matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}=Particulate Matter with an aerodynamic diameter of 10 microns or less
SOx=Sulfur Oxide
VOC=Volatile Organic Compounds

4.4.2.2 EAFB

Emissions would be the same as shown for Alternative A except the aircraft emissions. Under this alternative, 18 AGRS aircraft would not deploy to EAFB so there would be a positive impact to air quality at EAFB and the surrounding area (Table 4.4-4). Air pollutant emissions would decrease at EAFB and the surrounding area due to fewer people (commuter emissions) and 18 AGRS aircraft operations being based from JBER. There would be greater positive impacts to the regional air quality for Alternative B than Alternative A.

Table 4.4-4. Air Emissions at EAFB – Alternative B

Source	Emission (tons/year) Alternative B EAFB						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC	CO_2e
Construction Emissions	0.00	0.00	3.37	0.00	0.00	-0.01	307
Point Sources	0.00	0.00	0.00	0.00	0.00	0.00	--
Mobile Sources	-6.04	-0.44	0.00	0.00	0.00	-0.30	-7,783
Aircraft	-28.60	-15.00	-1.34	-1.22	-0.05	-8.79	-2,679
Total	**-34.65**	**-15.44**	**2.03**	**-1.22**	**-0.05**	**-9.09**	**-10,154**
Fairbanks North Star Borough Emissions	29,800	5,496	18,781	3,090	2,614	4,018	399,733
Percent of Borough Emissions	-0.12%	-0.28%	0.01%	-0.04%	0.00%	-0.23%	-2.54%

Note: Emission calculation methods, aircraft emission calculations, GHG calculations and model outputs for construction, demolition, and personnel are included in the Appendix D.

Key:

CO=Carbon Monoxide
Nox=Nitrogen Oxide
PM $_{2.5}$ =Particulate Matter with an aerodynamic diameter of 2.5 microns or less
PM10=Particulate Matter with an aerodynamic diameter of 10 microns or less
SOx=Sulfur Oxide
VOC=Volatile Organic Compounds
CO_2e=Carbon Dioxide Equivalent

4.4.2.3 Training Airspace

The overall number of sorties occurring in Alaskan airspace is not expected to increase from current levels and flight operations would primarily occur at altitudes greater than 3,000 feet AGL (air mixing height); therefore, impacts to air quality would be negligible.

4.4.3 Alternative C, No Action

Under the No Action Alternative, ambient air quality in the region would not change as operations and activities would remain at current levels for both installations. Impacts to air quality from the No Action Alternative would be the same as under current conditions.

4.5 Physical Resources

4.5.1 Alternative A

4.5.1.1 JBER

Earth and water resources are not substantially impacted at JBER because the alternatives being considered would not disturb more than 1 acre. Geology, soils, topography, or waters of JBER would not be affected

4.5.1.2 EAFB

Earth Resources – Alternative A would vacate 17 buildings at EAFB and make them available for re-use or demolition. The demolition of the buildings would result in some areas being subject to storm water runoff. The total disturbed area for the demolition projects would be approximately 4.58 acres, not including areas for heavy equipment movements and staging areas. Demolition projects affecting 1 acre or more would require a site-specific SWPPP. The EAFB SWPPP for industrial facilities identifies control practices to be followed for exposed soil surfaces. With proper design and implementation of the SWPPP, impacts from erosion and off-site sedimentation would be negligible during demolition activities (EAFB 2012c). No significant impacts to soil or geologic resources would result from the implementation of Alternative A.

Water Resources – The potential demolition of 17 buildings would result in some areas being subject to storm water runoff. Demolition projects affecting 1 acre or more would require a site specific SWPPP. The plan would identify standard construction practices appropriate for the site and soil type to be implemented during demolition to minimize wind erosion and off-site sedimentation due to water erosion and to keep increases in surface water runoff to a minimum. After demolition has been completed, all disturbed areas would be stabilized with landscaping, which would reduce erosion and improve infiltration of precipitation. Adverse effects from erosion would be avoided. In any demolition contract, the Air Force would specify and provide management oversight to ensure that demolition activities were conducted in accordance with the applicable storm water discharge permit for any areas that result in soil disturbance.

None of the 17 buildings that would be vacated by Alternative A is located within 750 feet of the 303(d) listed water body Garrison Slough (Figure 3.5-1). Adverse effects to the slough from erosion would be avoided.

One of the 17 buildings that would be vacated by Alternative A, Building 1334, occurs partially within an area identified as a FEMA 100-year flood hazard zone, Zone AE (Figure 3.5-1). This area is not considered a floodplain, but rather a zone with the potential for flooding. Floodplain management standards of the National Flood Insurance Program apply to Federal actions that occur within Zone AE.

4.5.1.3 Training Airspace

Relocation of 18 AGRS to JBER will not substantially change airspace use or training above the physical resources, and there would be no impacts to physical resources.

4.5.2 Alternative B

4.5.2.1 JBER

Earth and water resources are not analyzed for JBER because the alternatives being considered will not affect the geology, soils, topography, and waters of JBER.

4.5.2.2 EAFB

The environmental consequences of Alternative B would be the same as for Alternative A, since the building modifications and training activities in training airspace would be the same.

4.5.2.3 Training Airspace

The environmental consequences of Alternative B would be the same as for Alternative A, since the training activities in training airspace would be essentially the same.

4.5.3 Alternative C, No Action

No Action would mean that there would be no movement of 18 AGRS to JBER. No building additions supporting the F-16 program would occur and no ground disturbing activities would take place. Impacts to earth and water resources would be the same as under current conditions at JBER, EAFB, and beneath training airspace.

4.6 Hazardous Materials and Waste Management

4.6.1 Alternative A

4.6.1.1 JBER

Existing procedures for the centralized management of the procurement, handling, storage, and issuance of hazardous materials through HAZMART are adequate to handle the changes anticipated with the addition of 18 primary and 3 backup F-16 aircraft, but would be expanded to meet the increased use. The addition of F-16 aircraft at JBER is expected to increase the daily consumption of JP-8 by approximately 10 % over the quantity currently used by all of the JBER aircraft (personal communication Crowl 2012). However, the increase in fuel consumption is supportable by the current infrastructure at the installation.

F-16s based at JBER would require the use of liquid hydrazine (H-70) to power the aircraft's Emergency Power Unit (EPU). EPU requires periodic refueling, defueling, and purging by fuels personnel. Liquid hydrazine is listed as U133 Hazardous Waste by the EPA. Hydrazine is neutralized in the shop with a bleach and salt mixture. All hydrazine wastes retain the U133 Hazardous Waste designation even after neutralization (EAFB 2012a). The 18 primary and 3 backup F-16 aircraft would use about one 55-gallon drum of hydrazine annually with approximately 3 gallons of liquid hydrazine being kept on hand at any one time (Air Force 2009b).

JBER would continue to generate hazardous wastes during various operations and maintenance activities. Hazardous waste disposal procedures, including off-base disposal procedures, are adequate to handle changes in quantity and would remain the same. The *JBER OPLAN 19-3 Environmental Management Plan* (JBER 2011a) would be updated to include hydrazine handling and storage procedures in accordance with TO 1F-16C-2-49GS-00-1, and to reflect any changes of hazardous waste generators and waste accumulation point monitors, and there would be no adverse impacts anticipated.

Environmental Restoration Program (ERP) – Modifications and/or additions to existing buildings at JBER under Alternative would occur in proximity to existing ERP sites (JBER 2011d). The Air Force will coordinate with the restoration office before any facility modifications are initiated. The Air Force will ensure that construction activities are coordinated with ongoing remediation or investigation activities at any CERCLA site. However, if existing plans and institutional controls/land use controls are followed, there would be no anticipated impacts to these ERP sites.

The movement of F-16s to JBER would require a 22-foot by 32-foot addition to the Aircraft Fuels Maintenance Facility to handle liquid hydrazine. An existing ERP site, ST534, is located approximately 60 feet northeast of the existing Aircraft Fuels Maintenance Facility footprint (Figure 4.6-1). ST534 is a RCRA site with potential diesel, benzene, toluene, ethylbenzene, xylenes (BTEX), and Poly-Aromatic Hydrocarbons (PAHs) contamination. The location of the addition to the Aircraft Fuels Maintenance Facility would be sited to avoid the footprint of ERP site ST534 and related groundwater monitoring wells.

ERP site Operational Unit 5 (OU5) is located under Building 9336, which has been identified to receive a 20-foot by 50-foot addition to meet the needs of the F-16 aircraft. OU5 is a CERCLA site with land use and water use restrictions due to contaminated groundwater. The location of the addition to Building 9336 would be sited to avoid monitoring wells associated with OU5.

Alternative A would require the towlane used to access the Corrosion Control Facility (Building 6263) be repaired to meet airfield pavement standards. The towlane passes over 3 ERP sites: OU5, ST037, and Taxiway North (JBER 2011d). OU5 is a CERCLA site with land use and water use restrictions due to contaminated groundwater. ST037 is a CERCLA site with solvent plumes containing trichloroethene (TCE). Taxiway North is a RCRA site with potential diesel, gasoline, BTEX, and PAHs contamination. Repair of the towlane pavement would require coordination with the JBER ERP Manager to avoid impacting ERP sites. There is the possibility that undocumented contaminated soils from historical fuel spills may be present beneath portions of the base. Any potential impacts associated with unknown contamination would be mitigated through worker awareness and safety training.

4.6.1.2 EAFB

Existing procedures for the centralized management of the procurement, handling, storage, and issuance of hazardous materials through HAZMART are adequate to handle the changes anticipated with the proposed movement of 18 primary and 3 backup F-16 aircraft from EAFB to JBER. The removal of 18 AGRS from EAFB is expected to result in a reduction in daily consumption of JP-8 by approximately 11.9% (personal communication Spilinek 2012). The majority of JP-8 usage at EAFB is in 168th Air Refueling Wing operations.

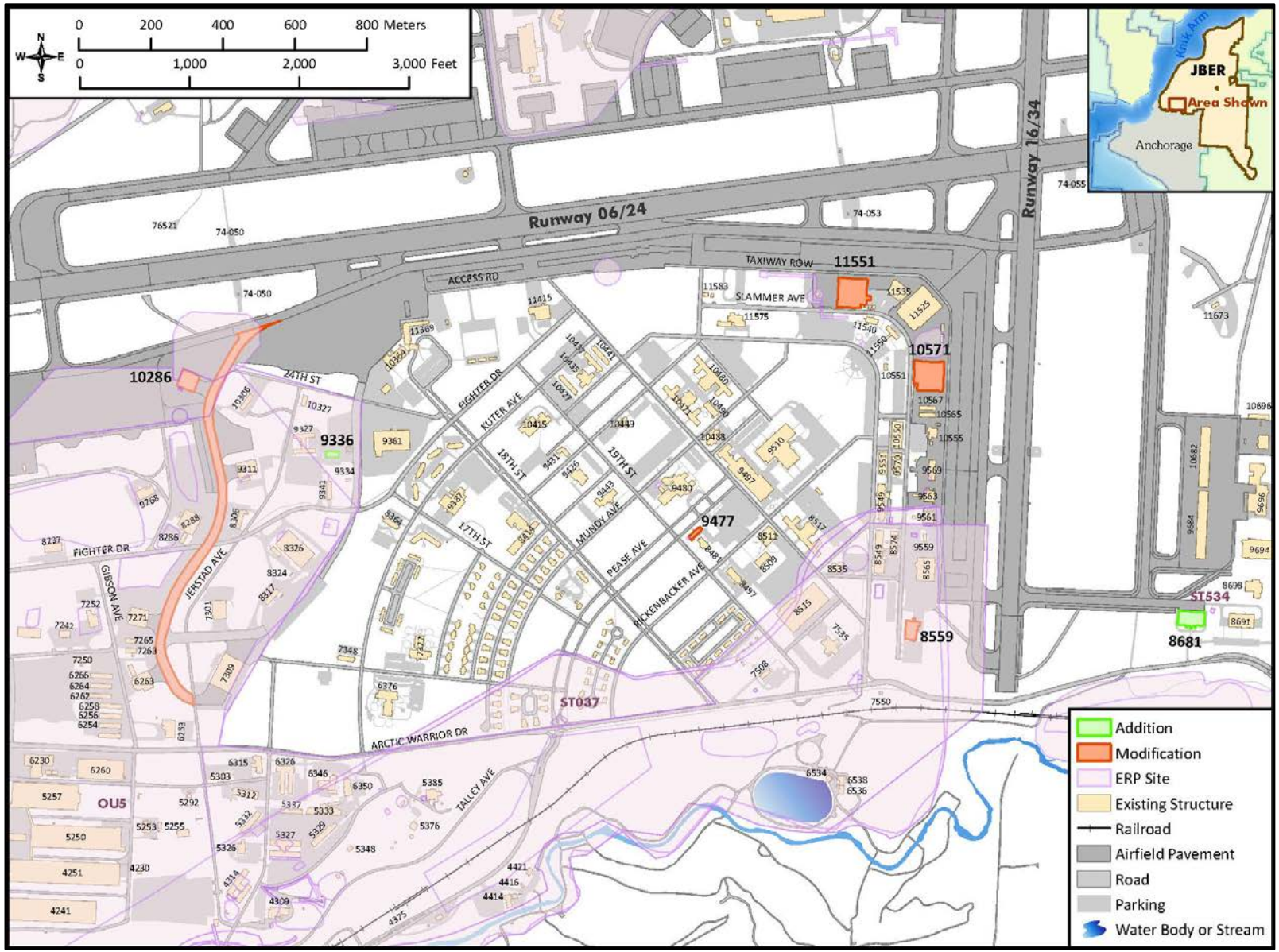

Figure 4.6-1. JBER Existing Environmental Restoration Program (ERP) Sites

Movement of 18 AGRS from EAFB would relocate the hydrazine storage and servicing functions to JBER. However, the hydrazine storage and servicing facility at EAFB would remain in place to support Red Flag, other exercises, and tenant/transient maintenance. During these times, hydrazine handling and storage would continue to be managed in accordance with the installation's *Hazardous Waste Management Plan* (EAFB 2012a) and Air Force guidance for the emergency power system including TO 1F-16C-2-49GS-00-1.

Alternative A would vacate 17 buildings at EAFB and make them available for re-use or demolition. Asbestos maintenance surveys have been conducted at 15 of the 17 buildings (personal communication Cottrell 2012) and two of these buildings (Buildings 1306 and 1307) have been identified as containing ACM (354 CES 2005). The EAFB *Asbestos Management and Operations Plan* (EAFB 2012b) provides guidance for the identification of ACMs during demolition projects and the subsequent management of asbestos wastes. The structures would be sampled/characterized for the presence of ACM to determine the proper disposal method prior to demolition. Disposal of ACM wastes would be conducted as directed by the National Emission Standards for Hazardous Air Pollutants. Only those contractors who are licensed to perform asbestos abatement work in Alaska would be allowed to work on the project. Contractor personnel would have to be trained and certified. Transport and disposal documentation records, including signed manifests, would also be required. Implementation of these management requirements would mitigate any potential significant impacts resulting from asbestos.

Due to their age, at least three of the buildings proposed for re-use or demolition may also have a potential for containing Lead Based Paint (LBP). According to standard operating procedures, LBP surveys are conducted prior to any renovation or demolition activities. Demolition of structures known to contain LBP would be conducted in accordance with applicable regulations. Proper disposal of any resulting lead-containing wastes would also be conducted in accordance with Federal regulations, including the Toxic Substances Control Act and the Occupational Safety and Health Act. Further, these wastes would be accompanied by a waste manifest and disposed of at an approved facility. With the appropriate management of LBP according to regulations, no significant impacts would be expected.

4.6.1.2.1 Environmental Restoration Program (ERP)

Eight of the 17 buildings that would be vacated occur in proximity to existing ERP sites (Figure 4.6-2). In addition, there is the possibility that undocumented contaminated soils from historical fuel spills may be present beneath portions of the base. Any potential impacts associated with unknown contamination would be mitigated through worker awareness and safety training. The Air Force will coordinate with the restoration office before any demolition work is initiated. The Air Force will ensure that demolition activities are coordinated with ongoing remediation or investigation activities at any CERCLA site in compliance with the *Eielson Federal Facilities Agreement* (EAFB 1990). However, if existing plans and institutional controls/land use controls are followed, there would be no impacts to these ERP sites.

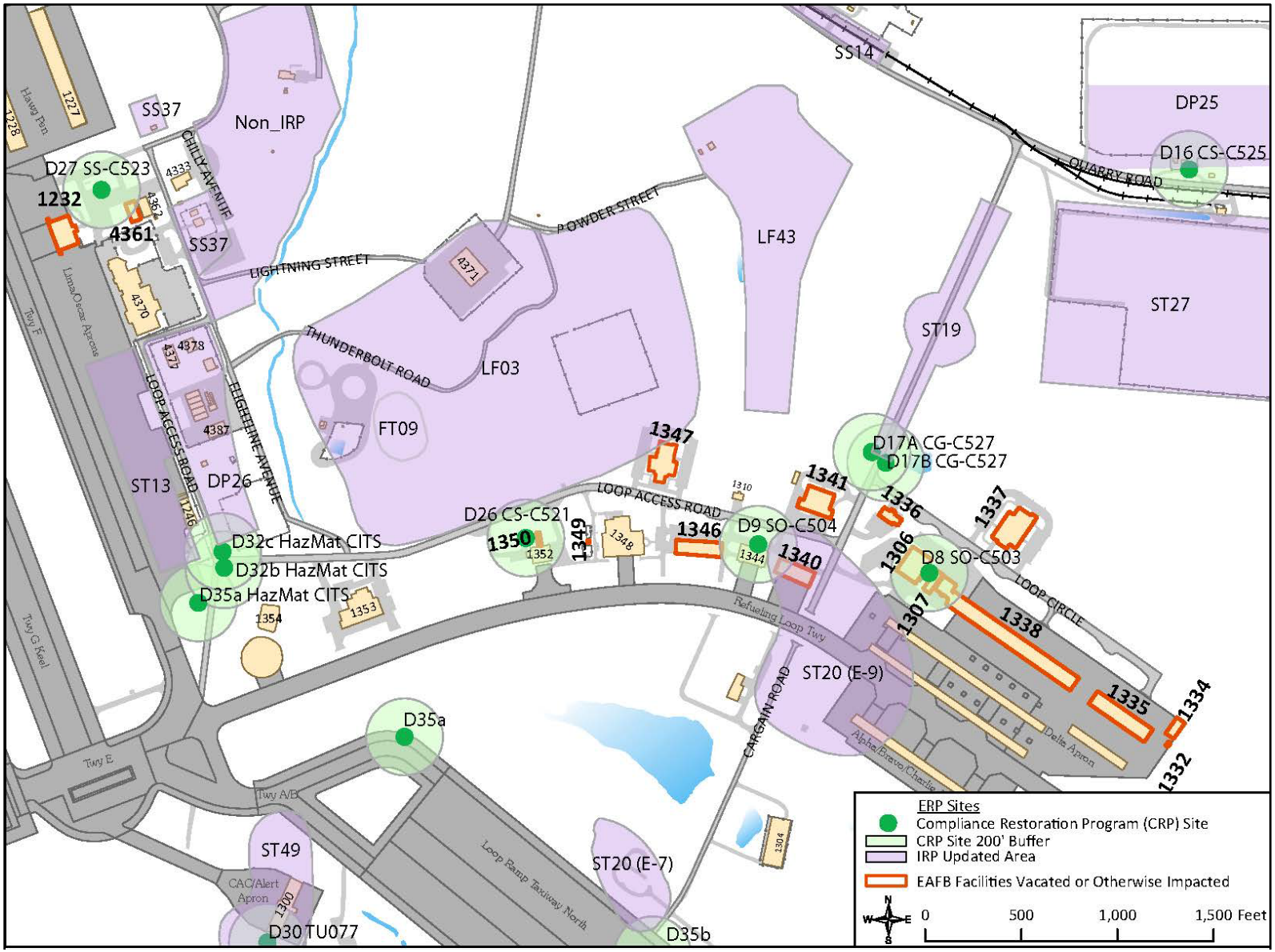

Figure 4.6-2. EAFB Existing ERP Sites

4.6.1.3 Training Airspace

Hazardous materials used by F-16s in the Alaskan airspace consist of various components and fluids of the aircraft itself. The plastic and other residual parts of chaff and flares after deployment are inert and non-hazardous. Under normal use, there would be no hazardous materials or waste management requirements associated with the proposed F-16 relocation under the airspace (see Section 3.3).

4.6.2 Alternative B

4.6.2.1 JBER

The environmental consequences of Alternative B would be the same as for Alternative A at JBER.

4.6.2.2 EAFB

The environmental consequences of Alternative B would be the same as for Alternative A at EAFB.

4.6.2.3 Training Airspace

The environmental consequences of Alternative B would be the same as for Alternative A beneath training airspace.

4.6.3 Alternative C, No Action

Under the No Action Alternative, existing military flight training would continue to originate from EAFB, modifications to buildings at JBER-Elmendorf planned for this action would not occur and hazardous materials and waste would continue to be managed in compliance with state and Federal laws and Air Force regulations.

4.7 Biological Resources

Four areas of consideration are used to identify the potential environmental consequences to wildlife and habitat. These areas are: (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; (2) the proportion of the resource that would be affected relative to its occurrence in the region; (3) the sensitivity of the resource to proposed activities; and (4) the duration of any ecological ramifications. Potential environmental consequences were evaluated by applying the regulations and methodology provided in Appendix B.7 to overlays of the alternatives onto the existing conditions to produce predictions of environmental consequences.

Impacts to resources would be considered significant if special-status species or habitats are adversely affected over relatively large areas or disturbances cause significant reductions in population size or distribution of a special-status species.

4.7.1 Alternative A

4.7.1.1 JBER

This alternative would relocate 18 AGRS F-16 aircraft missions and personnel from EAFB to JBER. The 18 AGRS aircraft and personnel would then temporarily deploy back to EAFB to stage and conduct MFEs, such as Red Flag and Distant Frontier. The 18 AGRS would deploy the squadron's participating

F-16s along with required support personnel to EAFB for the duration of each exercise (typically from two to three weeks each). The remainder of 18 AGRS F-16 flight training would be conducted from JBER.

Some of the existing JBER facilities proposed for use by 18 AGRS and support units would require modification (see Section 2.5.1.1.1). All facility modification would take place within existing structures or in previously disturbed habitat within existing built-up areas, which would result in minimal and non-significant impacts on vegetation and wildlife habitat present on base.

The daily number of commuter trips at JBER would increase with the addition of 542 18 AGRS employees to JBER and base housing being fully occupied. Some of these drivers would likely use Glenn Highway and there may be an increase in potential for animal-vehicle collisions, especially for moose, in this area (see Section 4.10.1.1.2).

Flight training operations under Alternative A would have little measurable effects on current uses of the JBER airfield environment with the addition of 18 AGRS F-16s. The additional F-16s associated with Alternative A would contribute about 1,270 sorties to annual operations originating from JBER. The proposed total sorties for all JBER aircraft would be similar to the number of primary assigned aircraft and annual sorties previously present at JBER prior to the drawdown of the three F-15 squadrons at JBER. The noise environment at JBER would increase somewhat with the addition of the proposed operation of the F-16s at JBER (see Section 4.2, Noise). In the airfield vicinity where low-level overflight associated with approaches, landings, and departures would occur, wildlife, including game animals, waterfowl, bald eagles, other raptors, and songbirds, are regularly exposed to noise and human activity including military aircraft operations and would not be expected to be adversely affected by Alternative A in any perceivable way.

Approaches, departures, and landing patterns for these sorties are established and defined based on patterns currently in use. Some of these flight patterns overfly portions of the Knik Arm of Cook Inlet located to the west and north of JBER runways. The aircraft noise would extend into the Knik Arm where an ESA-listed species, the CIBW, can occur. As such, CIBW could be exposed to noise associated with the F-16 overflights while at the surface or while submerged. A Biological Evaluation (BE) that contains a detailed analysis of potential effects on the CIBW and other federally-listed endangered or threatened wildlife species that could occur on or near JBER is being prepared for submission to the National Marine Fisheries Service (NMFS) to support Section 7 ESA compliance. A brief summary of the CIBW analysis follows.

ESA prohibits the unauthorized take of listed wildlife species. Take includes actions that would harass, harm, or kill a listed species. Potential effects on listed species include possible behavioral responses to overflight of F-16s. Animals may react to the sound of jet aircraft or the visual stimulus of the aircraft being overhead by avoiding the area or altering their natural behavior patterns, which could constitute behavioral harassment. Under current operations, no evidence of listed species harassment has been reported and the 2011 consultation with NMFS for the F-22 Plus-Up at JBER concluded that fighter aircraft overflights “may affect, but would not likely adversely affect” listed species and NMFS concurred (NMFS 2011).

As for all jet aircraft, exposure to the sight and sounds of the F-16 aircraft would be brief (seconds) as an aircraft passes overhead (see Noise Section 4.2). The F-16's closest approach to the water surface of the Knik Arm would range from 635 to 10,000 feet MSL, depending on the flight procedure being conducted. Because of the F-16's altitude, small size, and the rapidity of its overflight there are no predicted adverse behavioral reactions by CIBW in the Knik Arm to the visual aspect of overflight.

A detailed analysis was conducted on potential effects of F-16 flying operations noise on the CIBW. The analysis took into account the following factors, including:

- Area affected by several noise level intervals with potential to negatively affect the CIBW associated with each F-16 flight profile type,
- Estimated average number of CIBW individuals per unit area,
- The probability of behavioral harassment associated with each noise level,
- The frequency of events, and
- The duration of events.

Although CIBW are likely to be present during some proportion of the proposed F-16 overflights, analysis of modeled noise shows that exposure to projected in-water noise levels exceeding in-water background noise levels (approximately 125 dB re. 1 μPa) that may result in behavioral harassment would be exceedingly unlikely to occur. The analysis estimates that the number of CIBW individuals per year that would be exposed to such noise levels from proposed F16 flying operations would approach zero. In other words, overlapping events of an F-16 overflight of the Knik Arm at an elevation low enough to produce in-water noise equaling or exceeding the in-water background noise levels at the same time a CIBW was present in the localized affected area would need to occur to approach a Level B harassment event. This is an extremely unlikely combination of circumstances because of the infrequency of overflights that would generate in-water noise exceeding the background levels, the very localized nature of the elevated in water noise (directly under the flight path) and the low average density of CIBW in the action area. Additionally, there would be no adverse modification of the designated critical habitat for the CIBW from implementation of Alternative A. The Air Force is finalizing the analysis and will provide the analysis to NMFS for their review and concurrence as part of compliance with Section 7 of ESA. The analysis concludes that the proposed project "may affect but is not likely to adversely affect the CIBW or adversely modify its critical habitat". There are no other Federally-listed or proposed species and/or designated or proposed critical habitat that would be adversely affected by Alternative A. Therefore, the relocation of F-16 aircraft would not be expected to have a significant effect upon the CIBW or any Federally-listed, candidate, or proposed species and/or designated or proposed critical habitat

Impacts on all marine mammals are regulated under the MMPA, which prohibits the unauthorized take or harassment of marine mammals. In the context of military aircraft noise examined here, the updated MMPA (2004) defines harassment as "any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment)", or "any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered" (Level B harassment) (16 USC 1362[(18]). Other marine mammal species occasionally documented in the

Knik Arm ROI include Steller sea lion (also listed as endangered under ESA), harbor seal, harbor porpoise, and killer whale. Their occurrences are very infrequent and in much lower abundance in the Knik Arm than the CIBW and therefore adverse effects from implementation of Alternative A would not be expected to these mammal species.

4.7.1.2 EAFB

Under Alternative A, relocation of the 18 AGRS F-16 aircraft and their support units from EAFB to JBER. With the reduction of military and civilian positions and relocation of the 18 AGRS F-16 aircraft from EAFB, the facility re-use, consolidation, or demolition at EAFB would be the same under either alternative A or B and affect biological resources similarly. The primary difference among alternatives is if 18 GRS personnel and aircraft transfer to JBER as under Alternative B, the remaining functions at EAFB could be consolidated even more as a way to reduce energy and sustainment costs further. The transfer from EAFB would vacate 17 facilities and make them available for re-use, consolidation, or demolition (Table 2.4-5). Most of the facilities that would be considered "excess capacity" due to relocation of 18 AGRS are located on EAFB's taxiway loop and their re-use or demolition would not affect vegetation or wildlife habitat. Established construction procedures would be incorporated into any demolition contract to minimize potential effects to local biological resources further.

F-16 operations at EAFB would be reduced to periods of MFEs only (under Alternative A) or eliminated altogether (under Alternative B). Other training and operations at EAFB would continue. There would be no anticipated change to National Guard personnel. Key functions such as security, air traffic control, Army mission support, and other EAFB tenant support would continue at EAFB.

4.7.1.3 Training Airspace

No changes to the existing training airspace would occur under either Alternative A or B. Operational requirements for the Aggressor mission and performance characteristics of the F-16 dictate that most training activity occurs in existing Alaska MOAs, associated ATCAAs, and MTRs. The Air Force expects that the 18 AGRS F-16s would use the existing Alaskan training airspace in the same manner as it is used presently (**Error! Reference source not found.**), with the addition of transit between JBER and the special use airspace, and some increased use of the Fox 3, Stony, and Susitna MOAs with corresponding decreases in sortie-operations at the Yukon MOAs (Table 2.4-3). The addition of F-16 sorties to airspace units that receive regular aircraft activity would not be expected to change the airspace environment. Supersonic operations would be expected to occur in authorized areas and with about the same frequency as at present, with an estimated monthly increase of less than 1 sonic boom under Fox 3, Stony, and Susitna MOAs. Modeling estimates for noise level changes for all MOAs, including airspace units not or rarely used by F-16s previously (Galena, Naknek, Stony, and Susitna), are also so small as to be imperceptible. Section 4.2 (Noise) provides details on aircraft noise associated with the proposed alternatives.

Moose, caribou, and Dall sheep are important game species in Alaska and their critical calving grounds are located under the training airspace. Current flight restrictions over Dall sheep parturition areas limit flights to above 5,000 feet AGL during the lambing season, but restrictions were removed over caribou calving areas (Air Force 2008). The F-16 may fly as low as 500 feet AGL (where authorized) but usually stays at higher altitudes. The regional MOA floor information is provided on Table 2.4-6 and would not

change. Given the relatively unchanged noise levels associated with the proposed F-16 training, noise associated with Alternative A or Alternative B would have similar impacts on wildlife as exist under baseline conditions and changes are unlikely to be detected by most species. Some animals may startle in response to an occasional overflight or a sonic boom. However, most animals under the training airspace have been previously exposed to aircraft noise, visual presence, and sonic booms from F-16s, F-22s and other training aircraft and are likely habituated to the sound.

No Federally-listed threatened or endangered species were identified as occurring under project terrestrial airspace; therefore, no effects to ESA-listed species would occur.

Chaff and flares are regularly used in approved Alaskan SUA. Use of defensive chaff and flares is expected to continue with the use of F-16 aircraft training under either Alternatives A or B where authorized in approved training airspace and in the same manner as under current conditions. There would be no change in the minimum altitude or seasonal restrictions on flare release. The potential environmental consequences and characteristics of chaff and flares include: (1) ingestion of chaff fibers or chaff or flare plastic, nylon, or paper materials; (2) inhalation of chaff fibers; (3) physical external effects from chaff fibers, such as skin irritation, (4) effects on water quality and forage quality; (5) increased fire potential; and (6) potential for being struck by medium hailstone-sized flare debris.

There is no recorded incident of chaff or flare plastic, duct tape-type covering, or paper residual materials being ingested. A study of packrat (notable collectors) nests in arid areas where chaff and flares had been deployed for decades uncovered no residual chaff or flare materials (Air Force 1997). Chaff fibers rapidly break down to silica and aluminum particles chemically indistinguishable from normal dust particles. No effects from inhalation, ingestion, or skin irritation would occur. Flare altitude and seasonal restrictions in Alaska result in little if any potential for any flare-caused fire. There is very little potential of an animal being struck by a plastic flare piece from training, which produces an average estimate of one piece per 1,500 acres per year (see the F-22 Plus-Up EA,) (Air Force 2011a). Therefore, no impacts to biological resources under either alternative would be expected with the continued use of training chaff and defensive flares in the proposed project training airspace.

4.7.2 Alternative B

4.7.2.1 JBER

This alternative is similar to Alternative A and includes relocation of F-16 AGRS aircraft and personnel from EAFB to JBER. The difference is that the F-16s would not be temporarily deployed to EAFB during MFEs. Under Alternative B, 18 AGRS aircraft would stage MFEs from JBER and use tanker aircraft to support MFEs rather than stage at EAFB. The additional F-16s associated with Alternative B would contribute 1,900 annual sorties. Even with additional overflights of Knik Arm associated with Alternative B, potential adverse effects on biological resources would be essentially the same as described above for Alternative A and would be negligible. The facility modification projects at JBER would be the same as under Alternative A and would not adversely affect biological resources on base.

4.7.2.2 EAFB

Under Alternative B, the relocation of 18 AGRS F-16 aircraft from EAFB and reduction of military and civilian positions, facility re-use or demolition at EAFB would be the same as under Alternative A and

effects to biological resources would be the same as described for Alternative A. Re-use or demolition of vacated facilities would not affect vegetation or wildlife habitat. Established procedures and contract specifications would further minimize potential effects to local biological resources.

4.7.2.3 Training Airspace

Under Alternative B, changes to the existing training airspace use would be the same as for Alternative A. Therefore, effects to biological resources would be the same as described for Alternative A.

4.7.3 Alternative C, No Action

Under the No Action Alternative, no relocation of 18 AGRS F-16 aircraft to JBER would occur and no additional F-16 flight activities would occur near JBER or in the Fox 3, Stony, and Susitna MOAs. Airspace training would remain the same as under current conditions. Impacts to biological resources would not change from existing conditions.

4.8 Cultural Resources

4.8.1 Alternative A

4.8.1.1 JBER

Actions associated with Alternative A include modifications or additions to seven existing structures and a towlane. Ground disturbing activities would occur in previously disturbed contexts. Those areas not already beneath previously modified surfaces have been surveyed for the presence of archeological resources; none has been located. It is extremely unlikely that any previously undocumented archaeological resources would be encountered at facility modification locations. There would be no impact to archaeological historic properties. It is still possible that archaeological resources may be deeply buried (Elmendorf AFB 2006). All excavation that extend greater than 6 inches (13 cm) below the ground surface must be reviewed by the 673 CES/CEANC Cultural Resources Manager. In the case of unanticipated or inadvertent discoveries, the Air Force would comply with Section 106 of NHPA as specified in standard operating procedures described in the Integrated Cultural Resources Management Plan (ICRMP) (JBER 2012b).

Three of the seven structures that would be modified are eligible for listing on the NRHP as part of NRHP-eligible historic districts: Hangar 1 (Building 11551) and Hangar 3 (Building 10571) are in the Flightline Historic District, and Hangar 7 (Building 10286) is in the Alaska Air Depot historic district. With the exception of the repairs to Hangar 7 exterior doors, modifications to these historic properties would be confined to the buildings' interiors. There would be no effect to the viewshed of the historic districts, provided the repairs to the outer sections of Hangar 7's exterior doors are performed in accordance with the architectural requirements stipulated in the JBER ICRMP (JBER 2012b). JBER would complete Section 106 consultation with the Alaska SHPO prior to any undertaking that could affect any of these historic properties, resulting in no adverse impact. The remainder of the modifications would be to buildings not eligible for the NRHP, and would have no effect on historic properties.

Modifications to the towlane to Building 6263 and to Building 9336 are within the Alaska Air Depot historic district. These are non-contributing elements of the district and not eligible for listing on the NRHP. Furthermore, due to of the functional nature of the district and the nature of the proposed

modification, the result would be no effect to the historic district or its elements. Similarly, Buildings 9477, 8559 and 8681 lie outside the Flightline Historic District; although they may be visible from the district, the proposed modifications are to existing buildings in a functional environment, and there would be no effect on the viewshed of the historic district.

Impacts to historic buildings on the installation from noise are not expected to result from the basing of the 18 AGRS F-16s. Noise contours remain virtually the same as the baseline noise environment. Furthermore, NRHP eligibility of the historic properties is based, in large part, on their association with an active Air Force installation at which jet aircraft routinely operate, resulting in an elevated noise environment. No historic properties have been identified within the small portion of the 65 dB noise contour that is outside the installation.

The addition of 542 personnel to JBER represents an employment increase of less than 5% and would not be expected to result in any indirect impacts to cultural resources located at JBER-Elmendorf.

4.8.1.2 EAFB

Seventeen facilities would be vacated or otherwise impacted by the relocation of 18 AGRS from EAFB to JBER-Elmendorf. No specific ground-disturbing activities are planned, but demolition of any of these facilities has the potential to encounter previously unknown archaeological resources. In the case of unanticipated or inadvertent discoveries, the Air Force would comply with Section 106 of NHPA, as specified in standard operating procedures described in the ICRMP (EAFB 2006a).

No direct impacts to archaeological or architectural historic properties are anticipated. None of the facilities is within the identified historic districts and all are younger than 50 years. Twelve facilities that are part of Alternative A date to the Cold War era. Of these, nine buildings (1335, 1338, 1340, 1341, 1346, 1347, 1349, 1350, and 4361) were built in the 1980s and have not achieved the exceptional significance necessary for buildings younger than 50 years to be considered eligible for listing on the NRHP (USACE 2005). Three buildings will be 50 years old in the near future: Building 1232 was built in 1966; Buildings 1306 and 1307 were built in 1965. Consultation with Alaska's SHPO is ongoing regarding the eligibility of these buildings and EAFB has plans to evaluate their NRHP eligibility prior to implementing any undertaking. If they are determined to be eligible for listing on the NRHP, the Air Force will comply with Section 106 and continue to consult with the SHPO regarding effects on those buildings.

No indirect impacts to historic properties would occur as a result of Alternative A. The Flightline Historic District, located to the north of the vacated or otherwise impacted buildings, would not be affected by any activity associated with Alternative A. There would be no changes within the Historic District boundaries and no change to its viewshed. The two groupings of historic munitions facilities, Engineer Hill and Quarry Hill historic districts, would also experience no change to their viewshed. The loss of personnel would have no effect on historic properties.

Overall, noise would decrease slightly at EAFB with the relocation of 18 AGRS, with the result that there would be no effect to historic properties at EAFB from Alternative A.

4.8.1.3 Training Airspace

No impacts to historic properties under the airspace are expected as a result of the proposed relocation of 18 AGRS from EAFB to JBER-Elmendorf. The F-16s would conduct similar missions and training programs to those conducted by the F-16s currently based at EAFB. All F-16 activities would take place in the same airspace currently used by EAFB. However, there would be a shift in a small proportion of F-16 sorties from the current distribution toward training airspace closer to JBER (Table 2.4-6). Fox 3 MOA/ATCAA would experience approximately 35 more operations per year Stony and Susitna MOAs/ATCAAs would both experience an increase of approximately 219 operations. This increase of 7% in Stony and 10% increase in Sustina would result in L_{dnmr} and CDNL increases of less than 1 dB. Sonic booms could increase an average of up to 1 additional sonic boom per month under certain approved training airspaces.

In all training airspace units where operations tempo and noise levels would increase, noise level increases would be minor and would remain below 55 dB L_{dnmr}. EPA has identified 55 dB L_{dn}, which is equivalent in terms of impacts to 55 dB L_{dnmr} as the threshold below which impacts to human health and welfare are not expected to occur (EPA 1974). Thus, there would be no impact.

4.8.1.3.1 Traditional Cultural Properties and Alaska Native Concerns

A number of Alaska Native villages and traditional subsistence areas underlie Alaskan SUA (Figure 3.8-1). The figure also includes the boundaries of the private Native Alaska regional corporations. This EIS analysis considers the Alaska Native villages and their local economies, which are based primarily on subsistence hunting and resource extraction for marketable products. Operations would increase slightly in Fox 3, Stony, and Susitna MOAs/ATCAAs. Time-averaged noise levels under the MOAs are expected to change only slightly as a result of moving 18 primary aircraft from EAFB to JBER-Elmendorf. As described in Section 3.2, there would be no change in L_{dnmr} or CDNL in the MOAs between baseline conditions and Alternative A (Table 3.2-4). Under Alternative A, noise levels beneath all training airspace units in which noise would increase, would remain at or below 55 dB L_{dnmr}.

The number of supersonic events is expected to increase slightly in Fox 3 MOA/ATCAA as a result of the shift of more F-16 activity into that airspace. Fox 3 MOA/ATCAA would experience an increase of less than 1 sonic boom per month. If detected, the additional booms per month could annoy residents or long-term users of resources under the MOA. This change could be discernible to Alaska Natives or others residing under or using the land under the airspace for an extended period. As noted in Section 3.7, game and other subsistence species have experienced sonic booms previously and would likely be habituated to them. The increased number of sonic booms as a result of the change in F-16 airspace use is not expected to significantly affect cultural resources or Alaska Native activities. In the unlikely event of any damage claims, the Air Force has established procedures that begin with contacting the JBER Public Affairs Office. Air Force airspace managers currently identify and mitigate, where possible, the use of use of specific airspace during the September hunting seasons for MFEs to avoid impacts to rural inhabitants and Alaska Native subsistence hunting activities as identified in mitigations in the Alaska MOA EIS (Air Force 1995). This practice would continue for the proposed 18 AGRS relocation to JBER-Elmendorf. No significant impacts to traditional cultural properties or Alaska Native activities are anticipated to result from the proposed 18 AGRS relocation.

Although there would be little overall change in airspace use, and no comments were received during EIS scoping on the proposed change in basing, historically Alaska Natives have expressed concern that noise levels and sonic booms could affect game in traditional hunting areas and potentially impact the local economy dependent on these resources (Air Force 2006). No traditional cultural properties have been specifically identified underneath the airspace. However, this does not mean that none are present. As a component of the consultation required by NEPA, Section 106 of the NHPA and other regulations and guidance, all federally recognized Alaska Native Villages beneath the Alaskan F-16 SUA received an IICEP letter in January, inviting them to consult on a government-to-government basis, and participate in the EIAP (Appendix A). The request to participate included an invitation to attend the nearest scoping meeting and communicate directly with the Air Force's NEPA team.

The 673 ABW followed the scoping letter with an additional letter to Alaska Native tribes, as well as Alaska Native Corporations, requesting input on any issues of concern to Alaska Natives. No responses have been received by May 2013. The Air Force will continue to engage the federally recognized Alaska Native tribes, as well as Alaska Native Corporations in consultation throughout the EIS process regarding the Proposed Action and other issues of concern.

4.8.2 Alternative B

4.8.2.1 JBER

Project elements at JBER under Alternative B are identical to Alternative A. There would be no adverse impacts to historic properties.

4.8.2.2 EAFB

Project elements at EAFB under Alternative B are identical to Alternative A. There would be no adverse impacts to historic properties.

4.8.2.3 Training Airspace

Under Alternative B, the noise environment would be similar to that projected for Alternative A. Sonic booms could increase an average of up to 1 additional sonic boom per month under certain approved training airspaces, such as the Fox 3 MOA/ATCAA. Sonic booms would decrease under certain airspaces, such as the Yukon 1 MOA/ATCAA. Under Alternative B, increases in noise levels in any training airspace units would be minor and would be minor, would remain below 55 dB L_{dnmr}. No impact to historic properties would be expected (see Section 4.2).

4.8.2.3.1 Traditional Cultural Properties and Alaska Native Concerns

The affected airspace is the same under Alternative B as under Alternative A, with the slight changes in noise and operations described above. No impacts to traditional cultural properties or issues of Alaska Native concern are anticipated under Alternative B. The Air Force would continue to engage in government-to-government consultation with affected federally recognized Alaska Native tribes, as well as Alaska Native Corporations.

4.8.3 Alternative C, No Action

Under the No Action Alternative, existing military flight training would continue to originate from EAFB and JBER, modifications to historic buildings at JBER-Elmendorf planned for this action would not occur, and cultural resources would continue to be managed in compliance with Federal law and Air Force regulations.

4.9 Land Use and Recreation

4.9.1 Alternative A

As described in Chapter 2.0, the key elements of the proposal are flight activities and personnel changes. Facility modification projects at JBER for the relocation of 18 AGRS are not extensive and are mostly modifications of existing facilities. For land use and recreation, impacts are associated with increases in noise due to an increase in aircraft operations at JBER-Elmendorf and in regional SUAs.

4.9.1.1 JBER

4.9.1.1.1 Land Use

DoD and FAA uses change in noise levels to assess land use compatibility. EPA has reaffirmed these concepts (Air Force 2012a). The FAA has guidelines that establish the best means for determining noise impact in airport communities.

Under Alternative A, the total geographic area exposed to 65 dB L_{dn} or more on JBER-Elmendorf and in the surrounding area is shown on Figure 4.9-1 and Figure 4.9-2. The changes in noise exposure to off-base land uses reported in Table 4.4-2 shows an additional 15 acres off-base exposed to noise levels of 65 dB L_{dn} and greater, representing an increase of about 6% of affected off-base land. This includes 9 additional acres of residential land in an area characterized by medium-to-high-density residential development (see Table 4.2-1 and Table 4.2-2 for affected population and area). These noise levels are generally considered incompatible with residential use unless the structure provides at least 25 dB of outdoor to indoor sound attenuation. About 4 acres of transportation land to the west around the docks would experience a slight increase in noise above 65 dB L_{dn}, but this is not incompatible with industrial type uses.

Some areas on base would also experience higher noise levels directly around the airfield and in open/recreational areas on base. A slight increase in noise could affect some housing in the core areas of the base. Noise exposure at Mount Spurr Elementary School would increase to slightly above 70 dB L_{dn}. Small increases are generally not perceptible; however, for locations that already experience incompatible exposure, any increase is a concern. Noise intrusions can interfere with effective teaching and verbal communication.

The JBER-Elmendorf noise abatement program limits flight operations between 10:00 PM and 7:00 AM, except for national emergency or infrequent large-scale exercises. This program reduces the potential for noise impacts on residents at night and helps define the 65 dB L_{dn} contours. Despite these measures, the proposed F-16 operations at the airfield would cause impacts as described above.

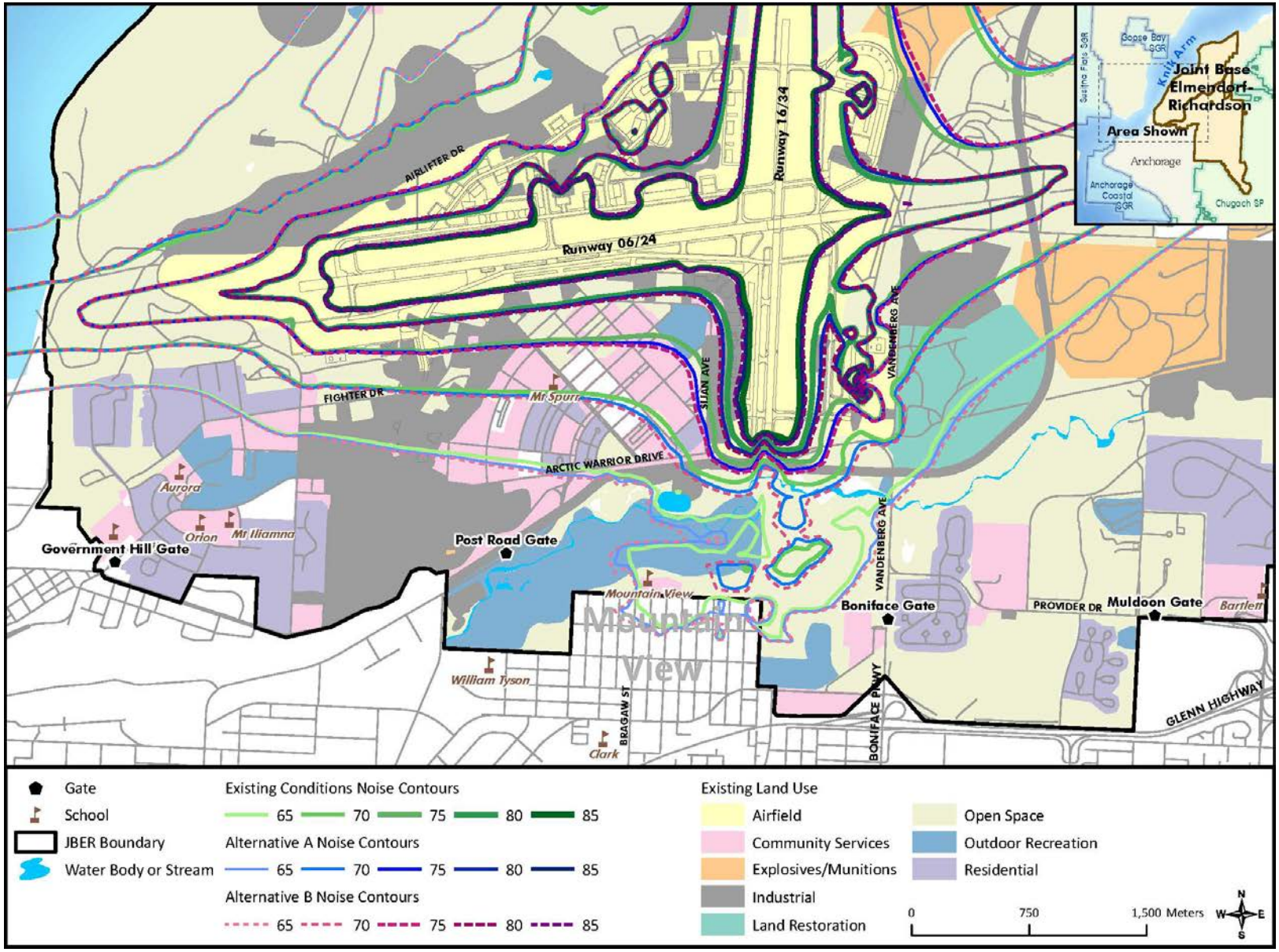

Figure 4.9-1. Existing Land Use on JBER

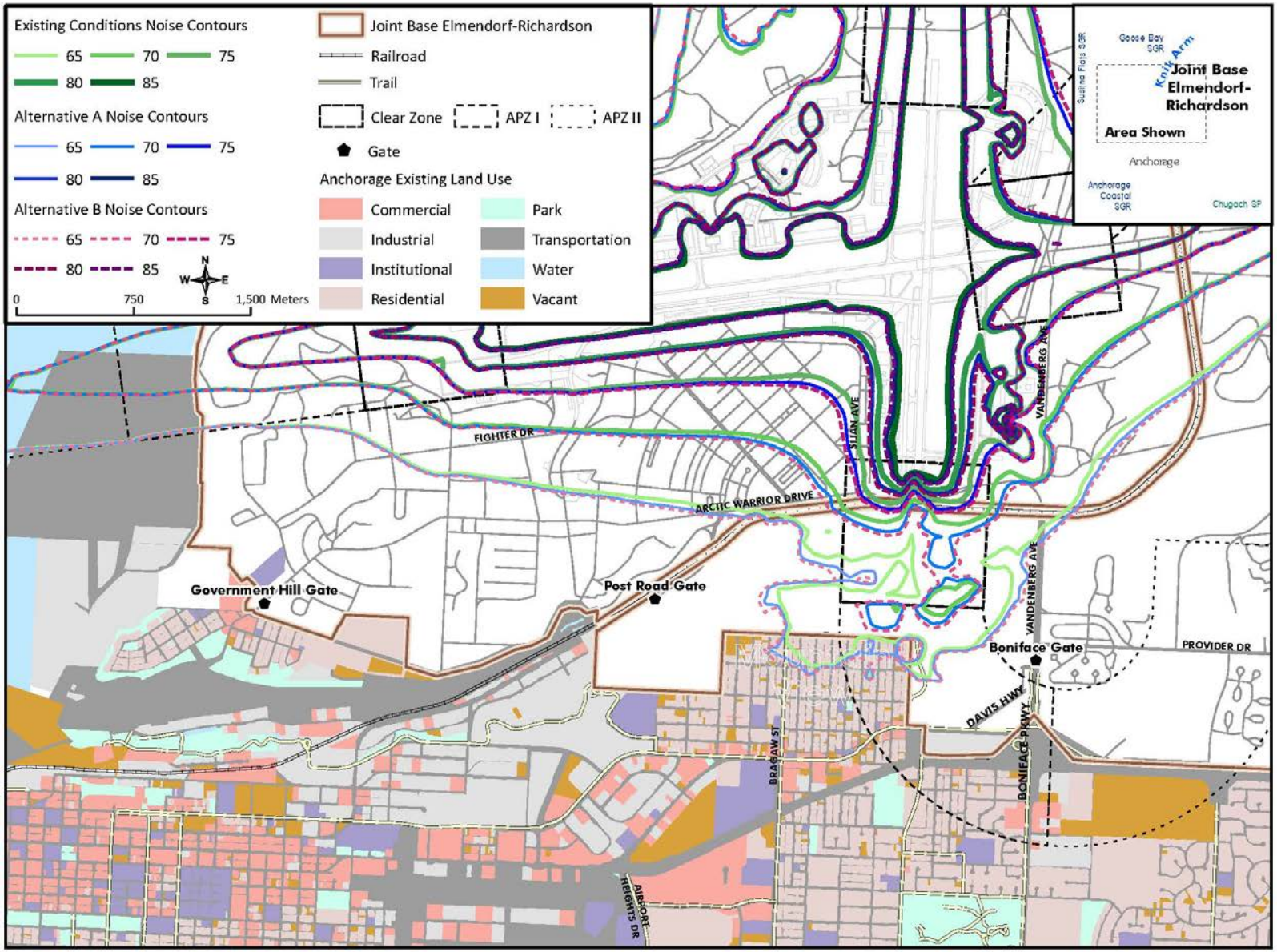

Figure 4.9-2. Land Use and Noise Exposure Levels Surrounding JBER

Facility modifications for the proposed relocation of 18 AGRS would be centered in the core area of the base and would involve upgrades, additions, and renovation to existing facilities and infrastructure. None of these projects would conflict with the designated land uses on the base and could improve some functional conditions. All facility modifications are separated from the surrounding off-base areas by distance and intervening buildings and land and would therefore, not impact these areas.

4.9.1.1.2 Recreation

An estimated increase in JBER associated population by 1,200 personnel and family members could slightly increase the use of local recreational facilities and parks. Military family members would have access to, and likely would make use of, facilities on the base. However, they may also use facilities throughout the City of Anchorage. This increase in population is not expected to affect or exceed the capacity of local recreational amenities. A slight increase in the use of parks and trails in the surrounding area is not expected to alter their character or hinder others from using the amenities. Noise levels would increase slightly (by about one decibel) at parks in the immediate surrounding area to the south of the base. The quality of recreation may be impacted by aircraft noise, but most persons would not perceive this slight increase. In urban settings, parks and most outdoor recreational facilities and activities are compatible with current and projected noise levels.

4.9.1.2 EAFB

The drawdown of aircraft at EAFB would result in less noise at the airfield, and somewhat reduced noise in surrounding areas including the community of Moose Creek. The amount of re-use of vacated facilities under this alternative is not known, but it is likely that any re-use would conform to the current functional uses on the base. Demolition would make space available for redevelopment. New development would serve functions that are similar to the current mission. Demolition would prevent the proliferation of unused and deteriorating conditions on base and consolidation of operations into remaining facilities would maintain similar land use patterns, focused on functional efficiency. During MFEs, the airfield and surrounding areas would experience noise levels more typical of current operations at EAFB. Reduced personnel could result in reduced maintenance of recreational facilities at EAFB, such as reduced trail maintenance.

4.9.1.3 Training Airspace

Under the proposal, F-16 use of airspace is expected to redistribute slightly, with fewer sorties in the northern MOAs, and additional sorties in Fox 3, Susitna, and Stony MOAs. For Birch, Buffalo, Delta, Eielson, Fox, and Viper MOAs, noise levels are expected to stay the same or be slightly lower. Notably, noise levels would decrease slightly under the Yukon 1 MOA, resulting in a slight benefit for underlying specially designated areas and communities.

For Stony and Susitna MOAs, sorties would increase by between 9% and 11% with the proposed 18 AGRS operations. The noise level in these MOAs is currently well below 45 dB L_{dnmr} and would remain below this level under Alternative A. These levels are compatible with most underlying uses and protected areas. The minimum floor altitude of Susitna MOA serves as a flight avoidance over noise sensitive areas (notably, Denali National Park), maintaining aircraft-generated noise at acceptable levels over the park.

Table 4.2-4 shows neither appreciable supersonic noise nor increase in sonic booms per month under the center of these MOAs. Sonic booms could increase an average of up to 1 additional sonic boom per month under certain approved training airspaces, such as the Fox 3 MOA/ATCAA. Detected sonic booms have the potential to cause increased disturbance in recreational, hunting, or fishing areas. Residents or long-term visitors in isolated areas could perceive this increase as an unwanted intrusion and persons could be annoyed. Under Stony MOA, it is unlikely that any occasional visitor or hunter would discern the difference between the current number of sonic booms and the increased number associated with the proposed 18 AGRS sorties. Individuals who spend extensive time subsistence hunting and fishing under some MOAs could discern very slight changes. The increased frequency of sonic booms in areas underlying MOAs would not be expected to affect land use or land use patterns, ownership, or management, but the increase could result in personal annoyance.

EPA has identified a time-averaged noise level of 55 dB L_{dn} as a level to begin assessing the potential for noise impacts. In areas that are remote and frequently used and experienced as quiet environments, an increase in L_{dnmr} may cause a noticeable change. A minimal change in L_{dnmr} projected for Stony and Susitna MOAs of 0.2 and 0.1, respectively, would not be noticeable. Persons using this area for recreation or sport and subsistence fishing and hunting may experience annoyance from loud overflights, but these events would remain very infrequent, with fewer than one additional overflight per day in these two MOAs.

A number of Alaska Native villages and traditional subsistence areas underlie Alaskan SUA. Alaska Natives have expressed concern that existing and projected noise levels and sonic booms could affect recreational uses, as well as traditional hunting activity. In addition to being important social and cultural activities, the local economy is often dependent on subsistence activities. As noted above, average noise level increases under the MOAs are not expected to be discernible. If an increase in sonic booms were detected, it could result in annoyance, but would not be expected to affect land used for subsistence activities.

The continuation of annual exercises staging from EAFB would cause periodic surges in aircraft activity at the Eielson airfield and in training airspace (listed in Table 3.9-2) but would not represent a change from the current pattern of use. Effects on land use and recreation in areas underlying training airspace are as described above.

4.9.2 Alternative B

4.9.2.1 JBER

The impacts to land use at JBER-Elmendorf and surrounding area would be similar to Alternative A, with a slight increase in residential land exposed to 65 dB L_{dn} and greater. As reported in Table 3.9-1 an estimated 26 acres of residential land would fall in the 65 to 70 dB L_{dn} range (9 acres more than under Alternative A and 14 acres more than current conditions). These noise levels are generally considered incompatible with residential use without sound attenuation being incorporated into buildings.

4.9.2.2 EAFB

Under Alternative B, effects on land use and recreation would be effectively the same as those described for Alternative A (Section 4.9.1.2).

4.9.2.3 Training Airspace

Under Alternative B, areas underlying SUA used by the 18 AGRS would experience similar noise levels as under Alternative A.

4.9.3 Alternative C, No Action

Under the No Action Alternative, the Air Force would continue to fly F-16 aircraft at EAFB and no changes would occur at JBER-Elmendorf or in existing Alaska SUA. Conditions affecting areas surrounding the base and for underlying specially designated areas would remain the same they are currently.

4.10 Infrastructure

4.10.1 Alternative A

4.10.1.1 JBER

Previously, JBER-Elmendorf was home to three squadrons of F-15s, and in 2013, is home to two squadrons of F-22s. The last of the F-15s left in 2010 and as a result, many of the facilities and shops required to operate and maintain the F-16 are available. The Air Force has evaluated the available facilities to determine capacity and suitability to support the F-16 requirements. Seven facilities were identified as requiring modification to support the F-16, an additional project to repair a tow lane was also identified in Table 2.4-2.

4.10.1.1.1 Utilities

The existing JBER utility distribution systems for water distribution, sanitary sewer, storm drainage, heating and cooling and the electrical distribution system, which are sufficient to accommodate the addition of personnel and equipment associated with the proposed relocation of the 18 AGRS (personal communication Turpin 2013).

4.10.1.1.2 Transportation

Base and Vicinity – A total of 542 military personnel would transfer to JBER as a result of 18 AGRS relocation to JBER, representing about a 2.8% increase in JBER employment. According to a 2011 JBER Traffic Needs Report, there are traffic concerns on JBER due to joint basing and some major construction projects. As stated in Section 3.10, there are two locations with significant traffic congestion during morning and evening commutes on JBER: 1. Sijan Ave and Arctic Warrior Drive (mostly traffic from Boniface Gate). Vandenberg Avenue and Davis Highway. Improvements are suggested for the primary road network at Elmendorf Air Force Base. These include rerouting the perimeter road, Fairchild Avenue, around the west end of Runway 06 to move it farther away from the arm/de-arm pad. Other suggestions include connecting Fighter Drive and Slammer Avenue, extending Pease Avenue to 22nd Avenue, and eliminating Gott and Johnson Avenues.

Facility modification activities could result in some temporary interruption of utility services and minor hindrance of transportation and circulation at the base along Flight Line. Truck traffic and privately owned vehicle use by commuting project workers would generate minor increases in vehicle trips per day

on base roads and gates (particularly between 6:30 AM and 7:30 AM). Temporary lane closures may be necessary during facility modification activities. Appropriate signage and detours to maintain access would be provided. These effects would be temporary, occurring only for the duration of the facility modifications.

The base currently exhibits traffic delays during peak periods and increased personnel would potentially increase delays. Traffic planning efforts conducted by the Air Force have recommended road projects, which include implementation of signalization, improvement in intersection placement and geometry, and street design capacity improvement projects. These projects can be implemented to support JBER mission changes, thus ameliorating the impact of traffic issues associated with future development.

Glenn Highway – During EIS public scoping, comments were received regarding the concern for increased congestion on the Glenn Highway should a portion of the 542 personnel moving to JBER settle in the Mat-Su Valley. The segment of the Glenn Highway from Wasilla to JBER is a 6-lane divided highway on the National Highway System in Anchorage that was last resurfaced in 2009-2010. Average Daily Traffic (ADT) volumes taken on at the Scalehouse near the Hiland Interchange show an ADT of between 49,000 and 52,000 trips per day during the 2004-2008 study periods. A high of over 56,000 trips per day was recorded near the Muldoon Road interchange in 2008. The highway has been lighted between Boniface Interchange and Hiland Interchange since 1988. Fencing and additional lighting was installed along this segment in 1989. Lighting was extended to the Artillery Interchange in Eagle River in 1993-94.

Historic moose-vehicle crashes on this portion of the Glenn Highway decreased in 1987-1989 when fencing and highway lighting was installed as part of the Glenn Highway 6 lane expansion. Moose-vehicle crashes decreased further when highway lighting was extended north from Hiland to Artillery Interchange in 1994. Since 1994, the number of moose-vehicle crashes has remained relatively flat with slight increases in recent years (ADOT 2013).

During study periods from 2004 to 2008 for which data are available, there were 66 animal-vehicle crashes in the 9.8 miles of the Glenn Highway, averaging over 13 crashes per year. One crash resulted in an incapacitating injury to the occupant, 13 resulted in a non-incapacitating or minor injury to the vehicle occupants, and 52 were property damage only crashes.

Nearly 70% of moose-vehicle crashes are occurring during the 11 hour period of 7:00 PM to 6:00 AM, despite the presence of continuous highway lighting. The ambient light conditions at the time of the crash were dark for 73% of these crashes. Despite the number of nighttime crashes, over 68% occurred under dry pavement conditions indicating that drivers were not able to react to the presence of a moose, even though the roadway was dry. Nearly 44% of these crashes occurred during the period between August to October as the season, daylight conditions and road conditions are changing into wintertime conditions.

Moose or other highway fencing exists along several sections of highway but does not encompass the entire segment between Boniface Interchange and the Eagle River Bridge. The Alaska Department of Transportation proposes the following mitigations in their 2013 construction program for moose-vehicle collision mitigation on the Glenn Highway between Boniface Interchange and Eagle River Bridge:

- Install approximately 11.7 miles of 9-foot high, woven wire mesh moose fencing, installed at various locations on either side of the Glenn Highway between the Boniface Interchange and the Eagle River Overcrossing bridge;
- Install 18 moose gates at selected locations along the Glenn Highway to allow moose inside the fence to escape.
- Provide a 10-foot cleared and grubbed area along new and existing fencing (5 foot. Each side)
- Install Electric Mat at Hiland Interchange, Scalehouse fence opening (both sides), and the north side of the Ft. Richardson Interchange.

Statistics from the *Federal Highway Administration National Household Travel Study* (FHA 2011) report an average of 3.79 Daily Person Trips (DPT) per person. Assuming 100 of the 542 additional personnel at JBER settled in Mat-Su due to housing availability in Anchorage and commuted separately on the Glenn Highway, these 100 people could generate 379 trips. An estimated 379 trips would be less than 1% of the total ADT of the Glenn Highway between Wasilla and JBER. This small number of additional trips when added to the existing overall daily traffic loading should not result in a significant increase in probability of wildlife induced accidents.

Alternative A would not result in significant impacts to solid waste handling capacity. There is expected to be a short-term increase in solid waste during the facility modification phase of Alternative A. In compliance with AFI 32-7042, *Solid and Hazardous Waste Compliance*, it is the responsibility of the contractors to recycle materials to the maximum extent possible, thereby reducing the amount of construction/renovation debris disposed in landfills. Materials not suitable for recycling would be taken to the ARL. The proper management and recycling or disposal of construction and demolition debris would be the responsibility of construction site contractors. Thus, no significant short term impact due to solid waste is expected. In the long-term following facility modification, the increase in solid waste generation by additional personnel would be relatively minor. It is expected that Alternative A would generate approximately 455 tons/year of additional solid waste (based on 4.6 pounds/person/day x 542 additional people). Therefore, Alternative A is not expected to shorten the useful lifespan of the base's primary solid waste facility, ARL. However, with the estimated closure date of ARL in 2043, the use of the alternative landfills may be required in the future.

4.10.1.2 EAFB

Consolidation of the remaining functions is being considered as a way to reduce energy and sustainment costs further. F-16 functions transferring to JBER affect facilities by vacating and making 17 facilities available for re-use or demolition (Table 2.4-5). Most of the facilities considered as excess capacity through the relocation of 18 AGRS is located on EAFB's taxiway loop (Figure 2.4-3).

4.10.1.2.1 Utilities

As described in Section 3.10.2.1, to cope with the extreme annual temperature variations, EAFB's water distribution, sanitary sewer, storm drainage, heating and cooling, and electrical distribution system, are contained in a 10-foot high above ground utilidor continuous mound throughout EAFB. Water distribution systems within the utilidor must be maintained at design temperatures to prevent damage. If water demand is lower than design specifications, the water from the utilidor is pumped out into ponding areas on EAFB to prevent freezing. When the warm water is discharged into the cold ambient temperature, it creates localized ice fog which can be a hazard depending on weather conditions.

Depending upon the extent of water consumption, potential capping of the utilidor where multiple buildings are demolished, and/or water distribution requirements, a reduced EAFB water demand could result in a greater incidence of ice fog in winter months.

Wastewater systems are constructed to specific flow requirements and can be flushed with water to be treated in low flow periods to protect the lines within the utilidor. Design changes could be required to maintain wastewater treatment quality during low flow or high dilution periods.

A reduction in structures combined with a capping of utilidor lines for an area could reduce heating plant coal consumption. Although, if heating systems are required to run in cold weather to avoid risks of system interruption, there would be continuing high energy requirements. Reduced load on electrical systems, reduced demand on roadways, and fewer aircraft on taxiways could result in minor beneficial effects.

4.10.1.2.2 Solid Waste

It is anticipated that the demolition of older buildings may generate ACM and LBP wastes due to of the age of the buildings. Any ACM encountered during demolition activities would be handled in accordance with existing policies and regulations (see Section 4.6). Any LBP encountered during demolition activities would be handled in accordance with Air Force policy (Section 4.6). Structures slated for demolition would generate approximately 50 tons of debris based on EPA estimates of 3.89 pounds per square foot (EPA 1998). These structures and estimated debris are shown in Table 4.10-1.

Table 4.10-1. Building Demolition and Approximate Amount of Construction Debris

Building Number	Square Footage	Estimated Construction Waste/pounds
1232	20,778	80,826
1306	18,710	72,782
1307	4,789	18,629
1332	516	2,007
1334	5,177	20,139
1335	28,062	109,161
1336	6,475	25,188
1337	27,426	106,687
1338	68,063	264,765
1340	17,127	66,624
1341	18,132	70,533
1346	22,453	87,342
1347	18,622	72,440
1349	151	587
1350	445	1,731
1388	5,858	22,788
4361	4,769	18,551
	Total Pounds	**1,040,780**
	Total Tons	**520**

ACM could be disposed of at the Eielson Powder Street Asbestos landfill, diverting those wastes from the private or municipal landfills. In compliance with AFI 32-7042, *Solid and Hazardous Waste Compliance*, it is the responsibility of the contractors to recycle materials to the maximum extent possible, thereby reducing the amount of construction/renovation debris disposed in landfills. Materials not suitable for

recycling would be taken to a landfill permitted to handle construction debris wastes. The proper management and recycling or disposal of construction and demolition debris would be the responsibility of construction site contractors.

Sufficient capacity exists at the North Star Borough Landfill to handle the construction waste. It is projected that the landfill has sufficient capacity until 2055 (FNSB 2012c). Thus, no significant impact due to solid waste is expected from Alternative A.

Structures slated for demolition would generate approximately 520 tons of debris based upon EPA estimates of 3.89 pounds per square foot (EPA 1998). These structures are shown in the Table 4.10-1.

4.10.1.2.3 Transportation

The drawdown in personnel would result in less traffic commuting to and from the base and less traffic on base. Level of service on the regional transportation system would not change, nor would circulation on base. During training exercises, traffic levels would spike, but not higher than current levels. Demolition of facilities could reduce the heating demands and result in slightly fewer railcar deliveries bringing coal to the base.

Demolition activities could result in some temporary interruption of utility services and minor hindrance of transportation and circulation at the base along Flight Line and Central Avenues. Truck traffic and privately owned vehicle use by commuting project workers would generate minor increases in vehicle trips per day on base roads and north gate (particularly between 6:30 AM and 7:30 AM). Temporary lane closures may be necessary during demolition activities. Appropriate signage and detours to maintain access would be provided. These effects would be temporary, occurring only for the duration of the demolition period.

4.10.1.3 Training Airspace

Current or proposed use of military training airspace would not affect infrastructure resources.

4.10.2 Alternative B

4.10.2.1 JBER

Under Alternative B, all project elements with the potential to impact infrastructure resources at JBER would be the same as for Alternative A. Therefore, impacts to infrastructure resources at JBER would be the same as described for Alternative A.

4.10.2.2 EAFB

Under Alternative B, all project elements with the potential to impact infrastructure resources at EAFB would be the same as for Alternative A. Therefore, impacts to infrastructure resources at EAFB would be the same as described for Alternative A.

4.10.2.3 Training Airspace

Current or proposed use of military training airspace would not affect infrastructure resources.

4.10.3 Alternative C, No Action

No immediate change would be anticipated for infrastructure. The SATAF report identified savings in infrastructure upgrades, including heating plant and utilidor upgrades associated with the relocation of the 18 AGRS. Whether these upgrades and associated facility modifications could occur would depend on budgets and resource availability.

4.11 Socioeconomics

Socioeconomic consequences are presented for the two geographic areas described in Section 3.11. Regional employment and expenditures are the drivers for socioeconomic consequences. Employment and expenditures result in either an increase or a decrease in the regional economy, which subsequently affects population, housing, education, and other services. Socioeconomic effects go beyond the direct changes in military personnel and have an extended (or multiplier) effect upon regional employment and economic activity. This socioeconomic consequences section uses the nationally and regionally recognized IMPLAN economic model to estimate the employment and expenditure effects within the two geographic regions. The IMPLAN model uses data from the U.S. Bureau of Labor Statistics and the U.S. Bureau of Economic Analysis to construct a mathematical representation of the local economics using region-specific spending patterns, economic multipliers, and industries (IMPLAN 2012).

Commenters who participated in scoping for this EIS requested that there be a cost-benefit study presenting quantifiable and non-quantifiable benefits and costs as they applied to the two geographic areas. The SATAF report (PACAF 2012) provides the benefits and costs to the Air Force associated with the Proposed Action.

This EIS addresses the potential socioeconomic impacts associated with the proposed changes at EAFB. This EIS is not a cost-benefit study, although the EIS does include considerations that address regional benefits and costs. For example, this consequences section projects regional employment, population, housing, and education consequences and compares those regional effects with the affected environment described in Section 3.11.

4.11.1 Alternative A

4.11.1.1 JBER

Economic impacts are analyzed by introducing a change to a specific industry such as an increase or decrease in employment or spending; the IMPLAN model mathematically calculates the resulting changes in the local economy. In the analysis at JBER, the IMPLAN model estimates the economic effects of the incoming personnel on spending and employment in the combined economy of the municipality of Anchorage and the Mat-Su Borough.

The economic impact analysis separates effects into three components: direct, indirect, and induced. Direct effects are the change in employment and income generated directly by the expenditures of the incoming or outgoing personnel. Indirect effects are generated by any resulting changes in business-to-business expenditures as local businesses adjust their activities in response to changes in the amount of goods and services demanded. An example of an indirect effect would be a store purchasing fewer retail goods from a local producer because of a decrease in demand. Induced effects are the changes in

household spending or employment generated by the direct and indirect effects such as the decrease in the retail supplier's income from the previous example. The IMPLAN model uses extensive data and mathematical calculations to aggregate the successive waves of economic effects. The resultant total effect from the economic impact analysis is the sum of the direct, indirect, and induced effects throughout the ROI.

Typically, the Air Force considers changes in personnel by evaluating changes in personnel authorizations. Since positions have not been filled or personnel have not been transferred, the number of authorizations is often not equal to the number of actual personnel. Authorizations refer to the amount of funds budgeted to employ a particular number of people. The authorizations may only be about 80% filled by military or civilian personnel. For a conservative evaluation of the potential socioeconomics impacts in this EIS, the number of authorizations has been considered equal to personnel.

For the socioeconomic resources at JBER, there would be no discernible distinction between Alternative A and Alternative B. The temporary deployment of 18 AGRS to EAFB for MFEs would not have a large effect on the year-round spending by JBER personnel and their families. Therefore, the effects at JBER would be the same for Alternative A or B.

4.11.1.1.1 Population

As discussed in Section 2.5.1.2, the relocation of 18 AGRS would increase the number of personnel assigned to JBER by 542 total personnel. According to PACAF's SATAF Report, these personnel would be estimated to be comprised of 285 accompanied and 257 unaccompanied personnel (PACAF 2012). As explained in Section 4.11.1.2.4, the 285 personnel would be accompanied by an estimated 306 school-aged children. There would be an additional 350 family members to result in a total population in-migration of approximately 1,200 persons. As compared with the total population of the Municipality of Anchorage, an increase of approximately 1,200 Air Force accompanied, unaccompanied, and family members would result in a 0.3% change in population. This population change would not be noticed in the Anchorage area (ALARI 2010b).

4.11.1.1.2 Employment

The addition of 542 personnel to JBER would increase on-base jobs from 19,195 to 19,737 (JBER 2011c) or an approximate 2.8% increase. The 542 additional personnel would have induced effects on employment and income within the ROI. The IMPLAN model calculates that approximately 338 indirect and induced jobs would be created by the relocation, with most of the jobs being created in industries such as food services, real estate and management, retail trade, health practitioners, and wholesale trade. With a 2012 unemployment rate of 6.2% and 166,056 persons employed, there would be no anticipated in-migration to fill the new indirect and induced jobs (ALARI 2013b).

Construction activities, in general, provide economic benefits to the surrounding areas through the employment of construction workers as well as the purchase of materials and equipment. These construction activities are temporary however, and would only provide a limited amount of economic benefit. An anticipated $2.5 million in renovation expenditures could generate approximately 30 jobs primarily within the construction industry or related industries including architecture, real estate, and food services (IMPLAN 2012). It is expected that the local labor force would be sufficient to fill these new

jobs without a migration of workers into the area. The indirect and induced income is estimated to be approximately $2.0 million. These jobs, and the related income, are temporary during the renovation activity.

The state of Alaska does not have an income tax. The relocation of Air Force personnel within Alaska would not increase revenues but would shift state, local, and Federal tax revenues associated with the relocated personnel to the Anchorage area. Approximately $183,000 in social insurance tax revenues, $2.5 million in indirect business tax revenues, $841,500 in household tax revenues including property tax revenues, and $3.4 million in corporate tax revenues in state and local tax revenues would be shifted to the Anchorage area.

4.11.1.1.3 Housing

Based on the proportion of JBER family owner-occupied residences of approximately 35%, an estimated 65% of the relocating individuals would seek rental housing (Air Force 2012c). This means that an estimated 442 accompanied or unaccompanied relocated Air Force personnel would be seeking rental units. The SATAF report states that an estimated 127 junior enlisted personnel would increase the demand for on-base dormitory rooms. Combined with the current shortfall of dormitory rooms, this would result in a deficit of 162 on-base dormitory rooms. The demand for additional on-base dormitory rooms could establish a requirement for additional dormitory rooms on JBER.

Assuming that on-base JBER housing was full, 542 households, an estimated 285 accompanied and 257 unaccompanied would require off-base housing in either Anchorage or Mat-Su Borough depending on the households' preferences for commuting. An estimated 100 of the accompanied personnel would select owner-occupied housing. As explained in Section 3.11.1.3, recent studies show a decline in available rental housing since the 2010 census documented approximately 4,200 vacant Anchorage housing units.

Between September 25, 2011, and March 24, 2013, the Anchorage Municipality real estate market reported annual sales of 1,053 and 1,201 (see Table 3.11-3). The average DOM for homes sold has decreased from 78 DOM in 2012 to 62 DOM in 2013. The trend toward a lower DOM and increasing average sold price would be expected to continue with increased demand for housing.

The 2012 HMA estimated a 2012 to 2014 availability of 299 to 332 acceptable off-base rental units, depending on the commute distance (Air Force 2012c). The projected number of acceptable rental units in 2012 to 2014 is less than the projected demand for 442 acceptable rental units. Potential demand in excess of projected supply could result in a shortfall by the time any proposed relocation was implemented. The HMA and surveys performed for Anchorage and FNSB, as well as comments at EIS scoping meetings, demonstrate that comparable owner-occupied housing costs more in the Anchorage area than in FNSB. Residents would need to commute to communities in the Mat-Su Valley to find housing comparable in price to that available in the FNSB (Anchorage 2012, FNSB 2012a). The Basic Allowance for Housing (BAH) is designed to reflect off-base costs of living. The BAH is adjusted periodically to reflect regional housing costs. Some Air Force in-migrating personnel could experience a greater cost at JBER as compared with EAFB.

There is the likelihood that some portion of Air Force relocating personnel would be housed in the Mat-Su Valley as well as in Anchorage. During scoping for this EIS, public commenters expressed concern that increased demand for housing in the Mat-Su Valley could affect agricultural land. Local communities are responsible for their land use policies. The State of Alaska-prepared housing market analysis identified Mat-Su Borough as a potential area to be affected by Anchorage growth over the next 20 years.

The proposed relocation of 542 Air Force personnel from EAFB to JBER would not change the State of Alaska-prepared housing market analysis projected 20-year demand for 18,184 new housing units in Anchorage and Mat-Su.

Depending on other market factors, which could increase or reduce available suitable housing up to 150 Air Force personnel would choose to rent units at a greater commute distance or of lower quality than Air Force-defined suitable housing. Housing of personnel in housing that is less than Air Force defined as suitable housing, would be a potential impact to the personnel and dependents.

4.11.1.1.4 Education

The additional 285 Air Force accompanied personnel would be accompanied by an estimated 306 students (from Section 4.11.1.2.4). The students of various ages relocating to an area could add students to local schools that are already operating near or above program capacity. JBER has Ketchikan and Illa School Age Programs with spring 2013 enrollments of 309 and capacities of 387. Additional programs are available at two on-base youth centers. Space available for new enrollments depends on the timing of the relocation and which schools the youths would need to attend. A large influx of students over a short period could result in a wait list for the School Age Programs.

The students potentially entering these schools would be of varying ages and would be expected to live in different parts of Anchorage or some accompanied personnel may locate in the Mat-Su Valley where EIS scoping commenters noted adequate housing and education facilities. Parents and students have options available to send their children to schools outside of their attendance zone under certain circumstances, which could help alleviate some of the capacity concerns at specific schools (see Section 3.11.2.4). Capacity constraints at the potentially affected middle and high schools would not be expected to result in a significant impact to education.

One concern for the Anchorage School District is the potential delay in budgeting decisions and a change in collected tax revenues. Budget and hiring cycles for the school district are typically planned a year in advance. Should a relocation decision be made in late winter, then the increase in personnel and students could occur the following school year. The budget cycle for that year would already be set and the Anchorage School District could potentially have a budget disconnect with more students that year than funding would support. This could result in school crowding and budget shortfalls the initial school year after a decision.

4.11.1.1.5 Public Services

The Municipality of Anchorage and JBER represent a large community with police, fire, and other services. The addition of approximately 1,200 Air Force-related personnel would represent a 0.3% of the existing population. That increase would not be expected to affect police, fire, or other services.

4.11.1.1.6 Summary of JBER Socioeconomic Impacts

Alternative A would not be expected to have significant socioeconomic impacts in the JBER ROI, the Municipality of Anchorage, or in communities in the Mat-Su Valley.

- The relocation of 1,200 persons consisting of 257 unaccompanied and 285 accompanied personnel and families would not stress housing supplies although some of the individuals or families would reside off-base in housing that did not meet Air Force quality, cost, or distance parameters.
- Individuals seeking to purchase homes in most parts of Anchorage, with the possible exception of the Mat-Su Valley, would find them proportionately more expensive than in FNSB.
- The estimated 306 relocating school-aged children would be distributed throughout the community and adequate capacity exists at most ROI schools.
- The relocation of Air Force individuals would not have a noticeable effect on the employment or the population of Anchorage area.

4.11.1.2 EAFB

The IMPLAN economic model described in Section 4.11 was applied to the FNSB area. FNSB has adopted an adjusted IMPLAN economic model to reflect economic conditions within FNSB. The FEDC developed an economic model based on the IMPLAN with localized adjustments using a Social Accounting Matrix (SAM) constructed to determine roles of industries in the FNSB. The SAM was designed to incorporate transactions that are specific to Alaska and to the FNSB. Transactions incorporated into the economic model include economic activities such as government, military, transfer payments to residents; leakages of labor and property type incomes from the FNSB; and payments and impacts on households (FEDC 2012).

Table 4.11-1 provides a comparison of the IMPLAN model and the FEDC adjusted IMPLAN model as applied to two different potential numbers of personnel affected. The number of personnel assigned to EAFB can vary daily. The EIS uses a number of personnel between those in the EAFB FY12 economic impact statement and those in the 2012 SATAF report. Employment multipliers are similar for IMPLAN and the FEDC model. For the purpose of this EIS, the unadjusted higher IMPLAN employment multiplier is applied to calculate indirect and induced employment.

Table 4.11-1. Comparison of Employment Sources and Multiplier Results

Source	Direct Active Duty	Direct Civilian + Non-Appropriated Fund + Exchange	Indirect & Induced	Employment Multiplier	Total Civilian	Summary Total
IMPLAN						
EAFB 2012G	1,605	553	999	0.46292714	1,552	3,157
SATAF FY12	1,372	435	836		1,271	2,643
FEDC[2]						
EAFB 2012G	1,605	553	928	0.43	1,481	3,086
SATAF FY12	1,372	435	777		1,212	2,584
Used in EIS	1,450	435	872	0.46292714	1,307	2,757

Notes:
[1] EAFB Economic Impact Statement FY12.
[2] FEDC Employment from Industry Exports only.

Key:
EAFB= Eielson Air Force Base
EIS=Environmental impact Statement
FEDC=Fairbanks Economic Development Council
FY=Fiscal Year
SATAF=Site Activation Task Force

During the EIS scoping, individuals expressed overall concern about negative socioeconomic impacts from Alternative A upon the North Pole Zip Code area west of EAFB and the FNSB region as a whole. EIS scoping commenters noted that negative economic impacts to housing have already begun to occur in 2013 as personnel newly assigned to EAFB are seeking on-base housing and are not entering the off-base owner-occupied housing market. Commenters stated that this has resulted in a decline in owner-occupied housing sales. In 2009, there were 58 off-base active duty owner-occupied houses, which were down from 150 active duty owner-occupied houses in 2005 (Air Force 2009a). The 58 owner-occupied houses represented 5% of the active duty accompanied families assigned to EAFB.

Commenters at the EIS scoping meetings expressed concern that Alternative A would have a negative impact upon the economic effects and the quality of life of directly and indirectly affected individuals. As demonstrated in the analyses on education (Section 4.2.1.2.4) and housing (Section 4.2.1.2.3), there would be impacts on individuals within FNSB and particularly those residing at EAFB and within the North Pole extended area. Those impacts include potential loss of employment, reduction in demand for off-base owner occupied and rental properties, and extended commute time for students. Overall impacts to FNSB would be discernible with some population, employment, and education impacts for the region.

4.11.1.2.1 Population

The annual variability of active duty personnel can best be understood by comparing the annual data on Table 3.11-5. When the EAFB active duty number is compared for the 2000 and 2010 census, there is a substantial reduction in active duty personnel over the decade. EAFB reported that active duty personnel declined from 2,748 in 2000 to 1,856 in 2010. This means that the active duty personnel declined by 892 active duty personnel between 2000 and 2010. During the same period, census data show that Fort Wainwright declined by approximately 500 active duty personnel (ZIP 99702). Despite the decline in military population at both EAFB and Fort Wainwright, between 2000 and 2010, FNSB employment grew from 35,258 to 37,952 (ALARI 2013c).

Table 4.11-2 compares the estimated population and employment consequences within the JBER ROI and the EAFB ROI. The population at a military base is constantly changing. The SATAF 2012 Report and the FY12 EAFB economic impact statement (both are publicly available) provide different numbers for

EAFB personnel and employment. Table 4.11-2 presents both sets of data and compares those data with the SATAF identified end state (PACAF 2012, EAFB 2012d).

Table 4.11-2. EAFB Employment, End State, and Reduction (Estimated)

Source	Active Duty	App Fund Civilian	AKANG	Non-App Fund Civilian[1]	Base Exchange	Seasonal[3]		Total
						Non-App Fund Civilian[2]	Base Exchange	
EAFB 2012G	2,164	487	348	336	104	67	28	3,439
SATAF FY12 with adjustments	1,931	389	348	336	104	70	30	3,108
EAFB 2012 Employment End State (Estimated)								
EAFB 2012G	559	210	348	125	39	67	28	1,281
SATAF FY12 with adjustments	559	210	348	141	44	70	30	1,301
EAFB 2012 Employment Reduction (Estimated Change to produce End State)								
EAFB 2012G	1,605	277	0	211	65	67	28	2,158
SATAF FY12 with adjustments[4]	1,372	179	0	195	60	70	30	1,807

Notes:

1 NAF and exchange factored based on AD+AF+AKANG.
2 Seasonal from JLUS: 80 full time + 20 part-time for 2050 TDY for 1/3 of a year.
3 JLUS TDY equivalent assumed to include Alternative A TDY.
4 SATAF includes AD and AF Civilian total reduction.

Key:

AD=Active Duty
AF=Air Force
AKANG=Alaska Air National Guard
Econ=EAFB Economic Impact Statement
FY=Fiscal Year
JLUS=Joint Land Use Study
NAF=Non Appropriated Fund
SATAF=Site Activation Task Force
TDY=Temporary Duty

Sources: PACAF 2012, FNSB 2006, EAFB 2012d).

Table 4.11-3 is a comprehensive year-by-year summary of the projected population, employment, and students, which could result from implementing the Proposed Action through Alternative A or Alternative B. A series of conservative assumptions result in the population and employment projections in Table 4.11-3. The assumptions are included in the table. Assumptions include that all active duty personnel out-migrate with family members and all affected civil service, NAF, exchange, and secondary employees remain unemployed in FNSB. The Proposed Action could slow population growth and result in FNSB reaching the projected 2015 population in FY5 (ALARI 2011).

The reduction in EAFB employment has the potential to affect local residents and retirees with access to EAFB who use facilities on EAFB for shopping, medical, dental, recreation, and other services. NAF and exchange personnel are projected to decline proportionate to the reduction in EAFB active duty and civilian personnel. A proportionate decline in NAF and exchange employees would be expected to overstate staff reductions because of demand for, and payment for, NAF and exchange services by retirees and local residents. The decline in employees would have the potential to reduce the hours of availability of shopping, medical, dental, recreation, and other base services. Residents and retirees with access to EAFB would notice the reduction in such services. These residents and retirees would also be expected to have access to Fort Wainwright medical, dental, recreation, and other services (Air Force 2012c). Reduction in personnel at EAFB would be expected to result in an inconvenience to residents and retirees who have been accustomed to accessing EAFB facilities and services during hours of service, but a reduction in hours or some services would not be expected to significantly impact those individuals.

Table 4.11-3. Summary of Estimated Employment, Population, and Student Enrollment Impacts

	Baseline	FY1	FY2	FY3	FY4	FY5
Active Duty	2,009	1,386	1,386	559	559	559
Dependents	2,164	1,493	1,493	602	602	602
Students	1,089	752	752	303	303	303
Dependent Employment[1]	665	459	459	185	185	185
Civil Service	389	389	389	210	210	210
Dependents	743	743	743	743	743	743
Students	263	263	263	263	263	263
Dependent Employment	297	297	297	297	297	297
Total Air Force-Related Students	1,353	1,015	1,015	567	567	567
NAF Employment	336	260	260	141	141	141
Exchange Employment	104	80	80	44	44	44
Indirect/Induced Employment	1,314	979	979	442	442	442
Contract Related Jobs[9]	955	734	557	557	557	557
Total Direct and Indirect	5,107	3,828	3,651	1,953	1,953	1,953
FNSB Employment[4,7]	40,100	40,396	40,242	40,361	40,057	40,353
FNSB Employment Change	-	(1,279)	(177)	(1,699)	-	
Outmigrating Employment[2,3]		829	-	1,101	-	
Adjusted Employment Change		(449)	(177)	(598)	-	
FNSB revised Employment[6]	40,100	39,947	40,065	39,764	40,057	40,353
Estimated Unemployed[8]	2,651	3,100	3,277	3,875	3,875	3,875
Percent Unemployed	6.2	7.2	7.6	8.9	8.8	8.8
FNSB Population Projection[4]	100,343	101,916	102,200	103,803	103,685	105,311
Change in Population	-	(1,294)		(1,718)	-	
Resulting FNSB Population	100,343	100,622	102,200	102,085	103,685	105,311

Notes:

1 Assumes 0.66% labor participation rate, 93.8% initial employment rate.
2 Assumes AD and families out-migrate; civil servants and families do not out-migrate
3 Assumes NAF, Exchange, and Indirect/Induced do not out-migrate from FNSB
4 Assumes 2000-2010 employment growth rate of 0.739%/year; no other external change in FNSB employment or population.
5 Assumes population growth rate of 1.568%/year calculated from ALARI projected population change 2010-20135. .
6 Assumes projected employment minus EAFB changes.
7 Assumes FNSB 2013 employment increases by 500 over 2012.
8 Assumes that no unemployed as a result of EAFB actions become employed in FNSB.
9 Assumes baseline: $90 mil; FY1: $65 mil; FY2: $45 mil steady state comprised of $20 mil non-residential construction, $10 military maintenance and repair, and $15 military food services and related.

Key:

AD=Active Duty
ALARI=Alaska Local and Regional Information
FNSB=Fairbanks North Star Borough
NAF=Non Appropriated Fund

Sources: PACAF 2012, ALARI 2010b, 2011b, 2011d, 2013b.

4.11.1.2.2 Employment

Alternative A for the proposed F-16 relocation would initially relocate 623 active duty personnel from EAFB and move 542 of the military personnel to JBER. The difference, 81 personnel, would relocate in the normal change of station and not be replaced at EAFB or JBER. As presented in Table 4.11-3, there would be a subsequent decrease of EAFB active duty and civilian personnel as part of an overall force structure change to result in 559 Air Force active duty and 210 civil servants by FY3. Supporting NAF and Base Exchange employees were not addressed in the SATAF report. There would be no projected change in AKANG personnel. The temporary deployment of personnel to EAFB for exercises would create additional local expenditures as the number of personnel in the community temporarily increases.

Table 4.11-4 presents the employment numbers for the period Fiscal Year 2008 (FY08) through FY12 and the number of personnel used in this EIS. The numbers are an estimate of a snapshot in time and are expected to provide a reasonable estimate of the employment from which to calculate socioeconomic effects. Contract employment is not included in Table 4.11-4 but is included in Table 4.11-3.

Table 4.11-4. EAFB[1] Active Duty and Civilian Personnel

	FY08	FY09	FY10	FY11	SATAF[2] 2012	Used in EIS
Active Duty	2016	1868	1856	2164	1931	2009
Active Guard and Reserve	631	621	346	348	348	348
Appropriated Fund Civilians	432	495	501	487	389	389
Non-Appropriated Fund Civilians	210	183	329	336	336	336
Base Exchange	133	87	115	104	104	104
Total Base Employment	3422	3254	3149	3439	3108	3186

Notes:
1 Based on EAFB economic impact statements.
2 SATAF addresses only active duty and appropriated fund personnel.
Source: PACAF 2012

Table 4.11-2 includes the reductions in FY1 and FY3 leading to the SATAF projected end state. Active duty personnel would be reassigned and relocate out of the FNSB with their dependents, including students. A proportion of EAFB dependent personnel are employed in FNSB, some on-base and some off-base. Using the census labor participation rate of 0.66 jobs per person, an estimated 658 jobs are filled by dependents of active duty personnel (ALARI 2010c). For the purpose of this analysis, students are not considered part of the labor force. This is a conservative assumption because many students are employed part-time. The net result was that there would be a defined number of out-migrating dependents who are currently employed in FNSB. This number of out-migrating active duty dependent employees not seeking employment in the region is reflected in Table 4.11-3.

Table 4.11-3 assumes that no longer employed civil servants all remain in FNSB. This is also a conservative assumption because civil service employees may have sufficient seniority that they could obtain Federal employment at other locations and could out-migrate from FNSB.

Table 4.11-3 includes the assumption that job growth within FNSB over the period 2013 through 2017 would be at the rate projected by the Alaska Department of Labor/Research and Analysis (ALARI 2013c). The projected time-averaged job growth is less than that experienced in FNSB during the 2000 to 2010 decade when EAFB and Fort Wainwright active duty personnel declined by approximately 1,400 persons. The EIS estimated unemployment rate does not calculate that any FNSB newly created jobs would be filled by individuals unemployed as a result of changes at EAFB. This assumption results in an overstatement of the number of unemployed persons in FNSB between FY1 and FY3 and in succeeding years.

Military personnel who are reassigned would not be replaced at EAFB. Civil service employees, NAF, and exchange employees are assumed in this analysis to remain unemployed in the FNSB. School closures could result in the outmigration of educators and administrators. Depending upon other economic activities, Table 4.11-3 shows that FNSB population growth could slow or marginally decline over the period.

Table 4.11-2 presents the estimated end state reduction in NAF and exchange employment attributable to Alternative A. NAF and Base Exchange positions are generally supported by base and personnel expenditures. The reduction in personnel would be expected to have a proportionate reduction in expenditures and a corresponding reduction in NAF and exchange employment. There are retirees and others who make purchases on base and thereby support NAF and exchange employment. This EIS analysis conservatively estimates the NAF and exchange reduction in employment based on the proportionate reduction of active duty and appropriated fund positions associated with Alternative A.

Combining data on the labor participation rate and the family members, plus assuming school-aged children are not employed, results in an estimate that a reduction in 1,450 active duty members and an estimated 1,562 family members through relocations and non-replacement would also reduce the FNSB labor force by approximately 475 workers. This reduction of out-migrating military families would affect the number of workers in the FNSB. Assuming no other unanticipated major changes were to occur regarding FNSB employment between 2012 and the proposed EAFB readjustment end date, Alternative A would be projected to increase the FNSB unemployment rate from 6.2% in 2013 and peak at an estimated 8.9% (Table 4.11-3). From Table 4.11-3, the difference between the estimated beginning total direct and indirect (including induced) employment of 5,107 and the end state of 1,953 is a reduction of 3,154 direct and indirect (including induced) military and non-military related employment in the FNSB. Out migrating military personnel and dependents would include jobs and workers and would result in a net adjusted employment reduction of 1,224 job opportunities within the FNSB.

The annual surge in activity at EAFB as a result of the Red Flag and other training exercises would occur under either Alternative A or B. This activity would provide economic benefits during the amount of time that the surge is active. For example, base employees often hire temporary services to assist with the increase in people for these MFEs while the deployed personnel also spend money in the local economy for items such as rental cars, food, and entertainment. The MFE economic activity described in Section 3.11.2.2 would be expected to continue.

Seasonal and part-time employment is projected to continue with the continued Red Flag and related exercises. For the purpose of this impact analysis, the 2006 JLUS 80 permanent and 10 to 20 temporary seasonal hires are assumed to continue on a seasonal basis and are distributed as NAF or exchange employment during the one-third of the year when most Red Flag and related exercises would occur (FNSB 2006). This analysis assumes a continuation of seasonal employment as part of NAF and base exchange and includes the seasonal employment as full-time equivalents in Table 4.11-2. Full-time NAF and base exchange employment would be projected to decline, but the seasonal employment would not be expected to discernibly change with the continuation of EAFB-based MFEs.

Public commenters questioned where temporary forces would be housed when they relocate to EAFB during MFEs. EAFB would continue to maintain on-base dormitories and bachelor officer quarters housing for use by personnel participating in the MFEs. This is currently the practice for Red Flag and related exercises. There is no requirement to change the process and on-base quarters would be available for transient personnel.

With the decrease in jobs, FNSB tax revenues would also decrease. The IMPLAN model was used to estimate the potential impact to tax revenues. Under Phase 1, approximately $260,983 in social insurance

tax revenues, $2.26 million in indirect business tax revenues, $799,940 in household tax revenues including property tax revenues, and $3.75 million in corporate tax revenues would be lost in state and local tax revenues within FNSB. Under Phase 2, approximately $388,751 in social insurance tax revenues, $3.37 million in indirect business tax revenues, $11.19 million in household tax revenues including property tax revenues, and $5.59 million in corporate tax revenues would be reduced in state and local tax revenues.

Contracts will be expected for any demolition on EAFB associated with the proposed F-16 relocation. Estimated values of these contracts are included in the SATAF report (PACAF 2012). As noted in Section 3.11.2.2, EAFB has annually contracted out for construction and/or other on-base projects. The value of construction contracts has ranged annually from $30 to $195 million in current dollars (EAFB 2002 through 2012). For the purpose of this EIS, the baseline year of 2013 has $90 million in contracts, FY1 has $65 million, and FY2 and beyond have an annual estimated contracting of $45 million per year in current dollars. This figure is projected to continue for construction, remodeling, and/or demolition (see Section 3.11.2.2). These annual contracts are projected to be $15 million for services, including food and health services, $10 million for maintenance and related, and $20 million for construction. Applying the IMPLAN model in the FNSB results in services producing 19.2 indirect and induced jobs per $1 million spent maintenance and related producing 9.2 indirect and induced jobs per $1 million spent, and non-residential construction producing 8.8 indirect and induced jobs per $1 million spent. For baseline year and FY1, the services and maintenance is assumed at FY2 levels and non-residential construction is assumed to be greater than the FY2 level. This level of contracts and associated employment are included in Table 4.11-3. Demolition is assumed to not change this estimated contracting with off-base suppliers.

Businesses dealing with the on-base population, such as service industries and suppliers of goods, would be expected to see a decline in their sales to EAFB based upon the overall decline in the base population. Economic factors would affect businesses within the FNSB. The IMPLAN model takes into consideration indirect and induced employment and quantifies the number of employment positions that would be reduced as a result of Alternative A (Table 4.11-3). Specific businesses, which could be affected, could be suppliers of such items as food supplies, maintenance of vehicles, and other supplies of goods to the base. The extent to which these businesses would be affected would depend on the specific business and the proportion of its sales to or on the base. It is not possible to identify specific large or small businesses within FNSB that would be specifically impacted. One factor, which reflects the resiliency of the FNSB to reductions in military employment, is the reduction if EAFB active duty personnel between 2000 and 2010 of 892 positions. During that period, FNSB population increased and the number of jobs overall within the region increased.

Commenters during the EIS scoping expressed concern that a decline in personnel and economic activity at EAFB could negatively impact tourism within FNSB. EAFB is a direct source of tourism dollars through the MFEs, which bring an estimated 2,050 visitors into the region during the exercises. Red Flag and other exercises are expected to continue and are expected to continue to result in employment and business activities categorized as tourism. With fewer active duty personnel assigned to EAFB, there could be a slight decline in individuals who visit EAFB-related family members in the FNSB. With an estimated 325,000 visitors per year to Fairbanks, it is not possible to determine what, if any, effect the

reduction in EAFB personnel would have (City-Data 2005). The overall effect of any reduction in visitors would be expected to be small and not measurable, given the normal fluctuations in tourism.

4.11.1.2.3 Housing

A housing survey was conducted for the FNSB in November 2012 (FNSB 2012a). This survey of housing impacts on EAFB personnel consisted of a survey of 94 respondents. Over 50% were active duty personnel or their spouses, 30% were civilian personnel or spouses, and the remaining represented local potentially affected individuals. Of those surveyed, 71% were homeowners. The survey had a greater proportion of homeowners than the overall base active duty population, which was 5% of accompanied active duty personnel in 2009. The general results of the survey highlighted the level of anxiety and uncertainty associated with the potential relocation of the F-16 mission. A substantial number of those surveyed expressed a concern about financial loss and hardship. That hardship included potential unemployment, loss of value of investment property, and possibly even foreclosure and bankruptcy. Whether these fears are realized, they contribute to the stress families are experiencing. Until a decision is made regarding the Proposed Action, the uncertainty is expected to continue. The survey documented that uncertainty about the move has led some respondents to either list or sell their homes in anticipation of a market downturn or wait to see what will happen at EAFB. The overall concerns expressed by individuals, as detailed in the EAFB housing impact survey, reflected real individual concerns about uncertainty, potential loss in housing value, effects upon the rental market, and effects upon education.

As demonstrated in this EIS, Alternative A would be projected to result in an increase in housing supply and a concomitant decrease in housing demand, especially in rental housing demand. These impacts will affect individuals, especially those located in areas near EAFB. Potential impacts to the FNSB housing market include a reduction in demand as a result of EAFB personnel relocating and an excess of owner-occupied residences and rental units. The surplus in housing would affect market conditions and reduce income to local owners of rental properties and property managers. Although the surplus housing effect would be primarily west of the City of Fairbanks, reduced rents and/or housing values could induce overall reductions in housing demand within the FNSB. To the extent that reduced housing values are reflected in real estate taxes, there would be a proportionate reduction in tax revenues in FNSB communities.

EAFB on-base housing is currently occupied and would be expected to continue to be occupied. The Air Force housing policy is to maintain occupancy in on-base units, especially if those housing units are privatized. Section 3.11.2.3 explained that in 2011, 2,082 Air Force active duty and dependents were living on-base and 2,761 active duty and dependents living off-base. There were 639 on-base family housing units occupied during the 2010 census and 743 units occupied in early 2013.

The EAFB end state would have 559 active duty personnel with an estimated 602 dependents and 210 appropriated fund civilians with 401 dependents. The total number of end state EAFB military-related active duty and civilian personnel is estimated to be 1,772. There are 348th Alaska Air National Guard personnel on EAFB. Assuming AKANG dependents to be comparable to those of appropriated fund civilian personnel, the total AKANG personnel plus dependents is estimated to be 1,013 persons. The total military-related personnel and dependents assigned to EAFB in the end state are estimated to be 2,785.

To maintain an on-base housing occupancy of 2,082 EAFB-related personnel, an equivalent of approximately 75% of all remaining active duty, appropriated fund, and AKANG personnel, and their families would be needed on base MFH. This is an equivalence number, and procedures are in place to provide on base MFH for occupancy to achieve expected occupancy rates. The full impacts of the proposed reduction in personnel and the need to maintain on-base MFH occupancy rates would be felt in the FNSB off-base housing and rental markets, with particular impacts to off-base locations near EAFB.

Off-base housing impacts can be estimated by combining the 2009 EAFB HRMA (Air Force 2009a) and 2013 on-base MFH occupancy information. The 2009 HMA notes that 5% of the EAFB accompanied personnel are in owner-occupied units. This produces an estimated overall owner-occupancy/renter proportion of 5/95. Based on the 3.3 persons per member for 2013 on-base family housing and the proportion of accompanied personnel, the overall average population per military member calculates to be 2.21. The out-migrating active duty population, including families, is estimated to be 3,012. The remaining active duty, including families, would total 1,772 persons. Since the on-base MFH population has been 2,082, an additional 310 in population would be needed to maintain on-base MFH occupancy. The out migration of 3,102 military personnel and dependents, plus maintaining 2,082 persons in MFH would reduce off base population by 3,322 persons. The total effect could reduce FNSB off-base housing demand by 1,503 units, or an estimated 1,428 rental units, and 75 owner-occupied units. The off-base personnel who eventually occupy on-base MFH, such as civil service, AKANG, and/or others would be expected to have a proportion of owner occupied units more closely associated with the 73% owner-occupied census for North Pole Zip Code 99705. Assuming the 2010 census average household size of 2.8 for the population of 310 needed to maintain MFH occupancy could result in an additional 81 owner-occupied units on the market.

Table 3.11-2 presented the 2010 available FNSB housing and rental units. An increase of 75 to 156 housing units could increase FNSB vacant housing units for sale from 601 to 757 and the vacancy rate from 2.3% to 2.9%. A substantial portion of this impact would be anticipated in the North Pole Zip Code where vacant units could more than double the owned home vacancy rate to 5.0% or more (ZIP 99705). From the concerns expressed in the *FNSB 2012 Housing Impacts Survey* (FNSB 2012a), more individuals could seek to sell homes and/or sell unoccupied rental units, which would have the potential to further depress the housing market. An increase of an estimated 156 housing units to the homes for sale over a three year period, combined with reduced demand, would be expected to affect the DOM as explained in Section 3.11.2.3.

Between January 31, 2010, and February 3, 2013, the FNSB real estate market reported annual sales of between 250 and 320 homes. There was an average of between 74 and 87 DOM for the home sales. There has been an increase from 79 DOM in 2010 to 129 DOM in early 2013. The trend toward a higher DOM would be expected to continue with the uncertainty about EAFB personnel and would further extend with any relocation decision. If the estimated 156 additional units entering the market over a three year period were focused in the North Pole housing market, this could represent an approximate 6 to 8 month supply of recorded housing sold in the North Pole market. This could depress housing prices and/or substantially increase the average DOM for regional housing sales.

Should the 104 additional MFH units continue to be occupied beyond the 639 MFH units identified in the 2010 census, the number of individuals on-base could increase by an estimated population of 340 with an

additional decrease in demand for off-base owner-occupied and/or rental units. An increase of 340 on base persons, at the 2010 census average household size of 2.8 and 73% owner-occupancy, would result in an additional approximately 90 owner-occupied units being placed on the housing market by FY3. If 743 MFH units continued to be occupied by persons with access to rent the units, the off-base housing demand could be reduced by an estimated total of 246 units. This would be an estimated 9 month supply of recorded housing sold in the North Pole market.

FNSB rental vacancies could increase from the 2010 census estimated 1,502 units to an estimated 2,930 units (assuming 95% of active duty off-base personnel rent). FNSB rental vacancies could exceed 17%. The portion of the rental vacancies within the North Pole Zip Code could be substantial, with possible rental vacancy rates in excess of 20%.

As housing costs decline in portions of the FNSB, market forces would result in a redistribution of population. There would be impacts to individuals during these market adjustments, with some of the concerns identified in the *FNSB 2012 Housing Impacts Survey* being realized (FNSB 2012a). To some extent, the owner and renter markets interchange as vacant rental units are put on the market for sale and owner-occupied units that become vacant and cannot be sold, are offered for rent. One additional difficulty with vacant housing in the FNSB is that severe temperatures require heating and maintenance to retain a unit acceptable for sale or rent. This increased cost for unoccupied units makes it very difficult for relocated individuals, individuals who no longer have employment to afford housing, or rental unit owners who face continuing costs with reduced revenue as they wait for an improvement in the market.

Local property values and rents would decline as a result of EAFB personnel relocations. Lower cost properties would become more desirable to individuals willing to commute a greater distance from Fairbanks. This would result in a readjustment of housing costs until employment and population factors increased housing demand. Based on population and employment information in Table 4.11-3, the adjustment could take 3 to 5 years.

The housing impacts would affect housing owners, long-term leaseholders, and rental property owners. Acutely impacted would be military personnel who own property and who are reassigned and homeowners who lose their jobs during the time when housing values decline. They would either have to dispose of the property at a loss or try to rent the property in a down market where there would be falling rental rates and competition with on-base housing.

4.11.1.2.4 Education

Table 4.11-3 also presents the enrolled student year-by-year projections given an assumption of no population growth. The number of students associated with Air Force military active duty personnel would decline from an estimated 1,089 in the baseline year to 303 in FY3. After all personnel adjustments have been implemented, the estimated active duty related reduction to the FNSB school district would be 786 students. This includes the 306 students relocated to JBER.

The SATAF report explains that 285 of the 542 military personnel proposed to be transferred from EAFB to JBER would be accompanied by families (PACAF 2012). The SATAF report included an estimate that 1,062 school-aged students would relocate from EAFB to JBER. This student number was more a

reflection to the total students potentially associated with an outmigration of active duty plus civil service personnel by the end state. Table 4.11-3 assumes that EAFB civilian employees who lose employment do not out-migrate. The 2010 census provides detailed information for EAFB (ZIP 99702) and for the Zip Code containing North Pole (ZIP 99705). The North Pole family size is 3.23 and the EAFB family size is 3.55. Using the higher family size and census data that the EAFB families are over 90% two-parent families' means that in EAFB MFH, there were approximately 1.65 children per household. Based on 2010 census data, 65% of those children would be between 5 and 19 years of age (ZIP 99702). This means the average EAFB active duty family has 1.0725 school-aged children. The total number of students associated with the relocation of 285 accompanied personnel is projected to be approximately 306 students. The initial reduction of students associated with the relocation of 542 personnel, plus the initial reduction of an additional 81 personnel from EAFB, is reflected on Table 4.11-3.

Table 4.11-3 presents the year-by-year estimated number of students of active duty and civil service personnel at EAFB if Alternative A were implemented. The reduction in students would begin in FY1 and continue through FY3. As presented on Table 4.11-3, the estimated number of active duty related students declines from an estimated 1,089 in baseline year to an estimated 303 students by FY3. The end state reduction of an estimated 786 students within the North Star Borough School District (District) would represent over 80% of the 974 total 2012-2013 academic year student population of the two on-base EAFB elementary schools plus the on-base junior/senior high school. This number of reduced enrollment is equivalent to 2.5 District schools. If the reduced EAFB civil service employees relocated from FNSB, this would mean an additional reduction of 142 students by FY3 (calculated from Table 4.11-3). 417 off base students currently commute to on base schools. Of these, 195 students are non-military related. Many of these non-military related students commute from areas east of EAFB.

Census data from 2010 has the proportion of the 5 to 19 year old population in the 99075 (North Pole) Zip Code as 36% are 5 to 9 years old, 33% are 10 to 14 years old, and 31% are 15 to 19 years old. That provides an approximation of the ages associated with the potential reduction of an estimated 786 student resulting from Alternative A. If civil servants with students relocated, the total end state reduction could reach 928 students, or 95% of the on-base student population. There are 104 teachers and administrators associated with the on-base schools plus maintenance and support workers. Based on the possible decline in enrollment, as many as 80 to 100 teachers and administrators, plus a number of support personnel may no longer be needed within the District by FY3.

The effects of this enrollment decline could reduce the requirements for schools within the ROI. The majority of this student reduction is expected to occur within the on-base EAFB schools and the off-base schools within the North Pole extended community. The reduction in enrollment would affect local schools and school budgets (FNBSD 2012b). Although it cannot be determined until actions occur, there would be a strong likelihood for on-base schools to be closed and students bussed from on-base to off-base schools. Bussing of on-base students to off-base schools would be reimbursed by the Air Force, whereas bussing of off-base students to on-base schools is typically paid by the District. Budget constraints could force the District to close on-base schools. This would increase the commute time for students east of EAFB who would then have to bypass EAFB and attend schools in North Pole. The effect of the student decline and resulting school closures would be increased commute time for off-base students east of EAFB and on-base students who would then have to commute to off-base schools. This would especially impact students and parents residing in EAFB housing.

Since Air Force MFH programs have a responsibility to maintain occupancy, the combination of high on-base MFH occupancy rates with possible closure of on-base schools would significantly increase bussing of students. Should EAFB schools close, students would have to be transported to off-base schools, possibly in Salcha or North Pole. The consolidation of these children may lead to adverse impacts as schools could become more crowded. Additional consequences to parents include students traveling further to school and after school activities, which could involve parent pick-up.

Another concern for the District is the potential delay in budgeting decisions and a change in collected tax revenues. Budget and hiring cycles for the school district are typically planned a year in advance and based on enrollment. Should the decrease in personnel and students occur, then the budget cycle for that year would already be set and FNSB School District could potentially result in a budget disconnect with fewer students that year.

Commenters at EIS scoping expressed concern that the proposed reduction in personnel at EAFB could have negative impact on the University of Alaska Fairbanks (UAF). Concern was expressed that there would be a reduction in enrollment, a reduction in UAF programs, a reduction in UAF funding, and a local brain drain as students leave the area due to a lack of opportunity. A comparison of the population data from 2000 to 2010 demonstrates that over that decade the EAFB active duty and civil service direct employment declined from 3,176 to 2,357. During the same period, UAF enrollment was relatively constant at approximately 11,000 students. UAF has focused on multiple engineering and energy-related programs, which would be anticipated to continue to grow. Many UAF activities are supported from outside the FNSB region. There is no historic basis for believing that EAFB reduction in population would have any long-term impacts upon UAF enrollment, programs, or services.

4.11.1.2.5 Public Services

In the FNSB, the City of Fairbanks and the city of North Pole, property taxes make up the majority of the general fund. Thus, a decrease in the property tax in these areas related to Alternative A (see Section 4.11.2.1.2) could result in a decrease in the general fund and subsequently a tighter budget for public services.

Section 4.11.2.1.2, notes that tax revenues would be expected to decline as a result of lower property values and tax revenues. A decrease in the local tax base and the level of employment could affect how stable the economy is viewed by bond rating agencies. The majority of GO bonds are backed by property taxes, thus if a downgrade in the bond rating or change in tax base affects the ability of the borough to secure payment of the bonds, the borough would levy taxes annually to meet the obligation. The recent $11.5 million dollars in debt authorized by borough residents for school-related facilities to meet student educational needs is eligible for 70% reimbursement by the state, which would alleviate some potential burden on the taxpayers (FNSB 2012b). Sufficient uncertainty exists to prevent evaluation of an infinite number of “what if” scenarios regarding potential bonding and taxation.

4.11.1.2.6 Summary of EAFB Alternative A Socioeconomic Impacts

Alternative A would have the potential for socioeconomic impacts within FNSB:

- Residents of owner-occupied housing, including off-base military personnel, would be projected to lose a substantial portion of their investment if they needed to sell quickly and could not wait for the market to stabilize. Non-military individuals seeking to sell homes in the area would face the same potential loss. Rental vacancy rates would substantially increase. Over an estimated three years, housing prices and rents would be expected to stabilize at lower than current levels.
- Education has the potential to be impacted, with declining enrollments, declining budgets, school closures, and loss of educators. On-base military and other residents would likely face extended bussing, increased commute time for students, increased time and transportation costs, and inconvenience as parents and others attempt to maintain after school activities at an increased distance from home and work.
- Employment would be impacted by increased unemployment from 6.2% to 8.9% within the FNSB, although the outmigration of military family members will reduce the workforce at the same time the number of jobs is declining. The unemployment rate would be at levels greater than experienced in the past decade.
- The FNSB population would be flat, or slightly decline, prior to continuing growth (Table 4.11-3).

4.11.1.3 Training Airspace

As discussed in Section 3.11.3, no significant impact to socioeconomics under the training airspace is anticipated due to the ongoing nature of the flight activities.

No discernible impacts to socioeconomics under the training airspace are anticipated due to the ongoing nature of the flight activities. The reduced operations in the Yukon MOAs with Alternative A could make it possible for more general aviation activity in the area. The eventual scheduling of the Yukon MOAs would be expected to be determined as missions and operational requirements are further defined.

4.11.2 Alternative B

4.11.2.1 JBER Socioeconomic Consequence

JBER aircraft and personnel changes would be the same under Alternative B as explained under Alternative A. Relocated personnel and families would continue to have a permanent residence in the JBER ROI. Any MFE flying mission TDY to EAFB would be comparable to any other TDY assignment. This means that Alternative B would result in the same population, employment, housing, education, and public service consequences as noted for Alternative A.

4.11.2.1.1 Summary of JBER Alternative B Socioeconomic Impacts

Alternative B would not be expected to have significant socioeconomic impacts in the JBER ROI, the Municipality of Anchorage, or in communities in the Mat-Su Valley. No impacts would be anticipated except the potential impacts upon housing noted under Section 4.11.1.1.

4.11.2.2 EAFB Socioeconomic Consequences

EAFB aircraft and personnel changes would be the same under Alternative B as explained under Alternative A. Relocated personnel and families would result in impacts to population, employment,

housing, education, and public service as noted for Alternative A. The employment difference under Alternative B would be that some level of on-base expenditures would not occur and some NAF and base exchange personnel would not be funded.

4.11.2.2.1 Employment

Under Alternative B, MFEs would be conducted out of JBER and F-16 AGRS personnel would not deploy to EAFB. Alternative B would not be expected to substantively change flight activities or economics at JBER. MFEs are projected to continue to stage from EAFB. This means that economic stimulation associated with exercises such as Red Flag would be expected to continue under Alternative B. The primary difference between Alternative A and B, from a socioeconomic perspective, is that an estimated 170 JBER personnel would not temporarily relocate from JBER to EAFB for Red Flag, and other exercises under Alternative B. This would be expected to reduce EAFB on-base demand for goods and services, including NAF and exchange services when compared with Alternative A.

NAF and exchange personnel, including seasonal personnel described in Section 4.11.2.2, are estimated to be proportional to MFE personnel and other activities at EAFB during that training. If the number of MFE-associated personnel is approximately 2,050, then a reduction of 170 personnel for the MFEs and related exercises could represent 8% to 9% of the EAFB seasonal demand (FNSB 2006). That could reduce the demand for seasonal NAF and exchange employment by an estimated 5 to 6 NAF and 2 to 3 exchange positions. Without the F-16 TDY personnel, there would likely be some contract maintenance and/or related services that would not be required, but the extent of services no longer required would be expected to be comparable to the reduction in NAF and exchange employment, or approximately 10 contract positions. Within the overall socioeconomic impacts associated with the proposed relocation of the F-16 aircraft and associated change in personnel assignments at EAFB, the marginal effect of Alternative B with a potential additional reduction in seasonal employment by 10 to 20 jobs would not be expected to have an additional substantial change to EAFB or FNSB. Any reduction in personnel or expenditures could have an effect on local suppliers of TDY support.

Section 4.11.1.2.6 summarizes the impacts of either Alternative B or A and notes the substantial housing and education impacts as well as the less substantial population and employment impacts. The year-to-year impacts depicted in Table 4.11-3 would generally apply to Alternative B.

Alternative B has the potential to require increased fuel to provide for tankers and for tankering services to F-16 aircraft. The SATAF report estimates that Alternative B would increase annual costs by nearly $13 million over Alternative A (PACAF 2012). This cost reflects the additional cost per hour of operating F-16 AGRS from JBER with the additional costs of KC-135R tanker support. Specific fuel consumption is not specified.

Military aircraft quality fuel is produced at a refinery in North Pole. This fuel is purchased by the Air Force for military aircraft based at EAFB and JBER. The relocation of F16 aircraft would not be expected to change fuel demand under Alternative A substantially, although shipment costs could increase. Fuel consumption would increase with Alternative B and result in more fuel purchased. The refinery is not running at capacity and an increased demand for military grade fuel would not be expected to substantially increase refining operations or manning.

4.11.2.2.2 Summary of EAFB Alternative B Socioeconomic Impacts

Alternative B would be expected to have socioeconomic impacts in the EAFB ROI, the FNSB, and in communities near EAFB where concentrations of EAFB personnel are currently located. Impacts would be as described in Section 4.11.1.2, with an additional reduction of temporary NAF/exchange and associated support personnel.

4.11.2.3 Training Airspace

No discernible impacts to socioeconomics under the training airspace are anticipated due to the ongoing nature of the flight activities. The additional air refueling support between JBER and training airspace would not be at altitudes that would impact civil aviation. The reduced operations in the Yukon MOAs with Alternative B could make it possible for more general aviation activity in the area. The eventual scheduling of the Yukon MOAs would be expected to be determined as missions and operational requirements are further defined

4.11.3 Alternative C, No Action

For the purpose of this EIS, The No Action Alternative is assumed to be represented by the affected environment conditions described in Chapter 3. Future Congressional budget requirements may dictate reduction in DoD budgets across the board and include reduction in Air Force budgets. The No Action Alternative does not necessarily mean a continuation of the status quo at EAFB or JBER. Under No Action, undefined cost savings would be expected to occur at EAFB and at JBER as a result of congressional budgetary decision.

4.12 Environmental Justice

4.12.1 Alternative A

4.12.1.1 JBER

Under Alternative A, noise levels at JBER would increase from a baseline affecting 408 residents, to a total population affected by noise levels greater than 65 dB L_{dn} to 831 residents (see Table 4.12-1). Of these residents, approximately 616 persons (74.1%) would be minority residents and an estimated 102 persons (12.3%) would be low-income. These minority and, to a lesser extent, low-income proportions are substantially greater than the minority and low-income proportions for the Municipality of Anchorage indicating that these populations would be disproportionately affected by the JBER noise levels. The proportion of minority and low-income populations affected under Alternative A is comparable to the proportion that is affected under baseline conditions. The share of minority and low-income persons affected by the existing and proposed noise levels is greater than the share of minority and low-income populations in the Municipality of Anchorage as a whole. Therefore, Alternative A, Alternative B, or the No Action Alternative would present a disproportionately high and adverse environmental impact on minority and low income populations.

Table 4.12-1. Off-Installation Population (Census 2010) Exposed to JBER Noise Levels of 65 dB L_{dn} or Greater under Existing Conditions, Alternative A, and Alternative B

	Total Population Affected	Minority		Low-Income		Children (under 18)	
		Number	Percent	Number	Percent	Number	Percent
Alternative A	831	616	74.1%	102	12.3%	276	33.2%
Alternative B	1,079	804	74.5%	141	13.0%	371	34.4%
Existing Conditions (Alternative C No Action)	408	302	74.0%	43	10.5%	121	29.7%

The population under 18 years of age that would be exposed to noise levels of 65 dB L_{dn} or greater would increase from approximately 121 children (29.7 %) under baseline conditions to approximately 276 children (33%) under Alternative A. Children attending Mountain View Elementary and Mount Spurr Elementary would continue to be exposed to noise levels of 65 dB L_{dn} or greater. Schools and child care centers are considered compatible with noise levels up to 75 dB L_{dn} with additional noise attenuation (32 CFR 256-8). Since noise levels at these locations would be below 75 dB L_{dn}, these facilities could be made compatible with noise attenuation to address potential adverse impacts. For noise levels above 75 dB, education services are not compatible regardless of noise attenuation. These noise levels are not compatible with outdoor use and could contribute to hearing loss in children regularly exposed to high aircraft noise. Noise levels at the impacted schools are, and would be, below 75 dB L_{dn} (Table 2.4-3).

4.12.1.2 EAFB

Alternative A would not result in disproportionate impacts upon minority or low income populations. An estimated $2.1 million of the annual EAFB contracts are with Alaska Native Corporations. The projected reduction of EAFB contracts from an annual average of $90 million per year over the past decade to a projected future annual average of $45 million per year would have the potential to reduce by one half, the $2.1 million EAFB service contracts with Alaska Native Corporations. For service contracts, that amount translates to an approximate reduction in 20 direct, indirect, and induced FNSB jobs.

The relocation of Air Force personnel would reduce school enrollment and be expected to result in school closures within the FNSB School District. This would increase bussing of students and reduce time for after school activities. Budget constraints could dictate impacts to children (see Section 4.11.1.2.3).

4.12.1.3 Training Airspace

No adverse impacts to environmental justice populations under the training airspace are anticipated due to the ongoing nature of the flight activities.

4.12.2 Alternative B

4.12.2.1 JBER

Under Alternative B, there would be 1,079 off-base residents affected by noise levels greater than 65 dB L_{dn}, an increase from 408 persons (see Table 4.12-1). Of these 1,079 residents, approximately 874.5% would be minority residents and an estimated 13% would be low-income. Children affected by these noise levels would increase under Alternative B to 34.4% of the total affected population. Minority and low-income populations in the Mountain View community are being disproportionately impacted by off-base noise as compared to the Municipality of Anchorage as a whole. Children attending Mountain View Elementary School and the Mount Spurr Elementary School are being exposed to noise levels

above 65 dB L_{dn} during the school day. Under existing conditions, Alternative A, or Alternative B there are disproportionate effects to minority and low-income populations.

4.12.2.2 EAFB

Alternative B would not result in disproportionate impacts upon minority or low income populations. The relocation of Air Force personnel would reduce school enrollment and be expected to result in school closures within the FNSB School District. This would increase bussing of students and reduce time for after school activities. Budget constraints could dictate impacts to children.

4.12.2.3 Training Airspace

As discussed in Section 3.12.3, there are few population centers located beneath the training airspace (see Figure 3.8-1). There are four federally recognized Alaska Native villages beneath the Stony training airspaces which would be under increased flight training operations. Supersonic events could increase an average of up to 2 additional sonic booms per month under certain approved training airspaces and such an increase could be perceived by Alaska Natives, long term residents, or extended users of the land beneath the MOA/ATCAAs. This change in supersonic events, if detected, would not be expected to create additional adverse impact to individuals beneath the airspace. Continued implementation of mitigations contained in the Alaska MOA EIS (Air Force 1995) address impacts to communities potentially affected by flight training operations. For example, F-16 operations in the Stony MOAs would increase MOA usage by less than 7%. The change in subsonic noise would be imperceptible to individuals beneath the airspace. The change in supersonic events within the Fox 3 MOA could be perceived by long term residents or extended users of the land beneath the MOA as an average of up to 2 additional sonic boom per month.

4.12.3 Alternative C, No Action

Under the No Action Alternative, 18 AGRS would not relocate from EAFB to JBER. There would continue to be noise levels that would impact 408 off base residents comprised of a higher percentage of minority and low income population than other parts of Anchorage (see Table 4.12-1).

An estimated 121 children are included in the 408 off-base residents. The 343 students attending the Mountain View Elementary School would be within the 65 dB L_{dn} contour during the school day under the No Action Alternative. Minority and low-income populations in the Mountain View community are being disproportionately impacted by off-base noise as compared to the Municipality of Anchorage as a whole. This is an ongoing condition, which would affect these populations regardless of whether 18 AGRS were relocated to JBER or not.

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5.0 CUMULATIVE IMPACTS

The CEQ regulations stipulate that the cumulative effects analysis in an EIS considers the potential environmental consequences resulting from "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Chapter 3.0 discusses the baseline conditions for environmental resources in the JBER ROI, the EAFB ROI, and in the training airspace. Chapter 4.0 discusses potential consequences within the ROIs and under the training airspace. Chapter 5.0 identifies past, present, and reasonably foreseeable projects that could cumulatively affect environmental resources in conjunction with the proposed relocation of the 18 AGRS from EAFB to JBER and use of Alaskan military training airspace.

Assessing cumulative effects begins with defining the scope of other project actions and the potential interrelationship with the Proposed Action (CEQ 1997). The scope must consider other projects that coincide with the location and timetable of the Proposed Action and other actions. Cumulative effects analyses evaluate the interactions of multiple actions. The CEQ (1997) identified and defined eight ways in which effects can accumulate: time crowding; time lag; space crowding; cross boundary; fragmentation; compounding effects; indirect effects; and triggers and thresholds. Furthermore, cumulative effects can arise from single or multiple actions, and through additive or interactive processes (CEQ 1997). Actions not part of the proposal, but that could be considered as actions connected in time or space (40 CFR 1508.25) (CEQ 1997) may include projects that affect areas on or near JBER and EAFB and projects underlying the affected training airspace. This EIS analysis addresses three questions to identify cumulative effects:

1. Does a relationship exist such that elements of the Proposed Action or alternatives might interact with elements of past, present, or reasonably foreseeable actions?
2. If one or more of the elements of the alternatives and another action could be expected to interact, would the alternative affect or be affected by impacts of the other action?
3. If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the alternative is considered alone?

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

5.1 Past, Present, and Reasonably Foreseeable Actions

This EIS provides decision makers with the cumulative effects of both action alternatives for the Proposed Action as well as the incremental contribution of past, present, and reasonably foreseeable actions. Recent past and ongoing military action in the region were considered as part of the baseline or existing conditions in Chapter 3.

5.1.1 Military Actions

JBER and EAFB, like other major military installations, regularly require new construction, facility improvements, and infrastructure upgrades. Table 5.2-1 provides a list of past, present, and potential future applicable military projects occurring in the region encompassing the JBER ROI (Anchorage and Mat-Su) and the EAFB ROI (FNSB). Table 5.2-2 presents other non-military projects within the JBER ROI and EAFB ROI.

5.1.2 Non-Federal Actions

Non-Federal actions include major public and private projects within the two ROIs. The Municipality of Anchorage is a large urban area with multiple construction projects occurring, especially in the summer months. The FNSB is a regional center with multiple construction projects, again especially in the summer months. Specific major non-Federal actions, which have the potential to interact in time or location with the proposed 18 AGRS relocation, are listed on Table 5.2-2.

5.2 Cumulative Effects Analysis

5.2.1 Airspace Management and Use

The airspace analysis in this EIS includes all expected aircraft operations in the existing Alaskan training airspace. Potential airspace expansion and enhancements to airspace were considered as part of the JPARC EIS (Air Force 2012a).

5.2.1.1 JBER

This EIS analysis includes the cumulative airspace use associated with the proposed 18 AGRS, F-22s, C-17s, C-130s, helicopters, and other aircraft at JBER. The net effect is an estimated overall reduction in JBER flight operations by jet fighters from 2008. Operations do not substantially affect JBER tower responsibility or the Anchorage Alaska Terminal Area management of Anchorage airspace. Operations by F-16 Aggressor aircraft within proposed training airspace are included in the JPARC analysis.

5.2.1.2 EAFB

The proposed relocation of the 18 AGRS F-16 aircraft from EAFB would reduce overall aircraft operations within associated airspace. This EIS includes the potential change in airspace use and determines that there would be no cumulative impact.

Table 5.2-1. Past, Present, and Reasonably Foreseeable DoD Actions in JBER and EAFB ROI

Project	Description	Timeframe[1]			JBER/ EAFB[12]
		Past	Present	Future	
Programmatic Environmental Assessment for Army 2020 Force Structure Alignment and Finding of No Significant Impact (FONSI) (April 2013); no selection of alternatives as of April 2013 (Army 2013)	This PEA analyzed the potential impacts associated with realignment of the Army's force structure between FY 2013 and FY 2020. Under Alternative 1, the Army component at JBER would lose 4,300 of its military population (both military and civilians) from its FY11 total of 6,923 to 2,623 by FY20 and Fort Wainwright would lose 4,900 of its military population from its FY11 total of 7,430 to 2,530 by FY20. Under Alternative 2, the Army component at JBER would gain approximately an additional 1,000 in military population from its FY11 total of 6,923 to 7,923 by FY20 and Fort Wainwright would gain approximately an additional 1,000 in military population from its FY11 total of 7,430 to 8,430 by FY20.		X		D
JPARC Modernization and Enhancement EIS; no selection of preferred alternatives as of April 2013 (Air Force 2012a)	JPARC modernizations and enhancements would improve military training for individual services and joint actions. This NEPA action considered six definitive proposals to be included in the ROD; these proposals included the following: • Fox 3 MOA Expansion and Paxon MOA Addition (Air Force) • Realistic Live Ordnance Delivery (Air Force) • Battle Area Complex Restricted Area Addition (Army) • Expand R-2205 Restricted Area (Army) • Night Joint Training (Air Force) • Unmanned Aerial Vehicle Access (Army) In addition, six programmatic proposals were evaluated and included the following: • Enhanced Ground Maneuver Space (Army) • Tanana Flats Roadway Access (Army) • Intermediate Staging Bases (Army) • Joint Air-Ground Integration Complex (Army) • Missile Live Fire in the Gulf of Alaska for AIM-120 and AIM-9 Missiles (Air Force) • Joint Precision Air Drop System Drop Zones (Air Force)			X	D
FY 2014 to FY 2018 Army Military Construction (MILCON) Alternate Program Objective Memorandum (APOM) September 2011 (Army 2011)	Army projects developed for planning and programming during the FY 14-FY 18 period in accordance with the APOM for future construction at JBER in support of the Army transformation program in Alaska.			X	I
F-22 Beddown at Elmendorf AFB Alaska, EA/FONSI (Air Force 2006)	Two F-22A squadrons with 36 aircraft eventually replaced 60 F-15C and F-15E aircraft at JBER (Elmendorf AFB). F-22A training flights take place on Alaskan MOAs, ATCAA, and ranges where F-15C and F-15E aircraft previously trained.	X			D
New Dormitory Construction at EAFB	Construction of a 168 Person Dormitory at Eielson Air Force Base, Alaska.			X	D
Military Housing Privatization Initiative (MHPI), Eielson Air Force Base, Alaska EA/FONSI (Air Force 2011b)	Conveys up to 934 housing units and leases of the underlying land to a private developer for a period of up to 50 years. The developer owns the units, leases the land from the Air Force, and collects rent from Service members while providing maintenance and management services. Contract has not been executed as of April 2013.			X	D

Table 5.2-1. Past, Present, and Reasonably Foreseeable DoD Actions in JBER and EAFB ROI

Project	Description	Timeframe[1]			JBER/ EAFB[12]
		Past	Present	Future	
Infrastructure Improvements in the Base Developed Area at Eielson Air Force Base, Alaska (March 2011) EA/FONSI (EAFB 2011c)	Infrastructure projects within the developed portion of EAFB are consistent development goals and include support of Red Flag-Alaska. Specific Red Flag-Alaska supporting infrastructure projects include: 1) meeting and briefing center 2) resurfacing of specific taxiways and arming areas, and 3) modernization of electronic range capabilities. The construction and renovation projects permit Eielson AFB to continue to support host and tenant missions.	X			D
Range Complex Training Land Upgrades, EA/FONSI (USARAK 2010a)	Fort Richardson and Fort Wainwright site-specific range projects in support of training; sustainable range planning for small arms complexes and ranges; using adaptable use zones, and proposed environmental stewardship range construction guidelines to maximize the efficiency and effectiveness of environmental review of range and training land projects.	X			N
JPARC Master Plan (Army and Air Force 2011)	The Master Plan defined military requirements with input from military stakeholders in Alaska. The plan identifies both short-term and funded actions and possible long-range capabilities.	X			D
Resumption of Year-Round Firing Opportunities at Fort Richardson, Alaska, EIS) (USARAK 2010b)	Restoring year-round live-firing capabilities at JBER. Past restrictions caused a shortage of indirect live-fire training opportunities. Resumption of training ensures that Army units are certified with a variety of weapons systems before they can be safely and effectively deployed. The Proposed Action provides for training opportunities necessary for 4th Brigade Combat Team to attain and sustain certification. In progress.			X	N
Gulf of Alaska Navy Training Activities Supplemental EIS/Overseas EIS (Navy 2011)	Ongoing naval training activities and Navy EIS training activities for two large-scale joint force exercises, including Anti-Submarine Warfare activities and the use of active sonar. These exercises would each last up to 21 days and consist of multiple component training activities during 3 to 6 weeks annually in Temporary Maritime Activities Area or other areas of the Gulf of Alaska.			X	D
Relocation of the Air National Guard 176th Wing to Elmendorf AFB, Alaska, EA (Air Force 2007a)	Relocation of the 176th WG and all associated aircraft and expeditionary combat support elements from Kulis ANGB to Elmendorf AFB including the placement of 12 C-130H, three HC-130N, and five HH-60G aircraft, for a total of 20 aircraft; construction of new facilities; renovation or modification of some existing facilities; replacement of support equipment; and assignment of Air National Guard.	X			D
Establish the Delta MOA Complex EA (Air Force 2010a)	Charting the Delta MOA Complex established connecting airspace to provide a realistic setting for MFEs. This action adopted MOA EIS mitigation measures to reduce effects on other resources.	X			D
Grow the Army Force Structure Realignment EA (USARAK 2008a)	Stationing of new units in Alaska by approving a variety of projects that would provide necessary support to incoming soldiers and their families, including family housing and support facilities, upgrading ranges to meet increased training requirements, constructing administrative and maintenance facilities, and provision of adequate maneuver and live-fire training facilities.	X			I

Table 5.2-1. Past, Present, and Reasonably Foreseeable DoD Actions in JBER and EAFB ROI

Project	Description	Timeframe[1]			JBER/ EAFB[12]
		Past	Present	Future	
Donnelly Training Area-East Mobility and Maneuver Enhancement EA/FONSI (USARAK 2008b)	Enhance DTA-East training facility to meet Army needs and allow for sustainable use. Enhancements improved existing training facilities for paratroopers and provided sustainable trails and include bivouac areas for unit training. The Proposed Action involves three enhancements: *Donnelly Drop Zone Expansion, DTA East Trail Network Upgrade,* and *Hardened Bivouac*.	X			N
Management of Nike Site Summit, Fort Richardson EA/FONSI (USARAK 2008c)	Management strategy for Nike Site Summit that addressed existing U.S. Army Garrison Alaska military training needs, compliance with Section 106 of the National Historic Preservation Act (NHPA), human health and safety concerns, and vandalism issues associated with trespassing on Fort Richardson.	X			N
Eielson AFB Infrastructure Support of Red Flag EA/FONSI (Air Force 2007b)	Infrastructure improvements to meet mission needs of Red Flag.	X			D
Construction and Operation of a Railhead Facility and Truck Loading Complex, Fort Wainwright, Alaska, EA/FONSI (USARAK 2007)	Construction and operation of a new railhead facility and truck loading complex. The railhead facility and truck loading complex decreased deployment time to no more than 96 hours by increasing the existing train loading capacity with a location in close proximity to supply warehouses and ammunition supply points, and near existing rail lines.	X			N
Transformation of USARAK Final EIS (USARAK 2004A)	Transformation of the 172d Infantry Brigade in Alaska into Stryker Brigade Combat Team. This action addressed the change in training needed from mostly pedestrian to heavy-wheeled-vehicle activities in training areas.	X			N
C-17 Beddown Elmendorf AFB, Alaska, EA (Air Force 2004B)	Replacement of the existing C-130 cargo aircraft fleet with C-17 aircraft at JBER. The Proposed Action included routine aircraft operations in the vicinity of EAFB, the construction and use of support facilities on EAFB, and an increase in personnel.	X			D
Alaska MOA EIS (Air Force 1997)	Restructuring and using Special Use Airspace (SUA) in Alaska for flight training and exercises. The ROD included mitigations that are part of the existing operational parameters for several MOAs in the JPARC.	X			D
F-22 Plus-Up EA Joint Base Elmendorf-Richardson, Alaska (Air Force 2011a)	Added six primary F-22 aircraft and one backup aircraft to JBER to meet Air Force mission requirements and brought JBER F-22 operational fighters to a total of 47 F-22 aircraft. The F-22 aircraft train in existing Alaska training airspace and ranges.	X			D
Stationing and Training of Increased Aviation Assets Within USARAK EIS/ROD (USARAK 2009)	The U.S. Army, Alaska implemented the reorganization and augmentation of its aviation assets in Alaska as an Aviation Task Force (ATF). The ATF is permanently stationed at Fort Wainwright. New facilities provided for approximately 2,005 Soldiers, family members, and civilian support personnel.	X			I
C-17 Training Areas Elmendorf AFB, Alaska EA/FONSI 2005 (Air Force 2005b)	C-17 training operations in Alaskan SUA and upgrading Runway 07/25 at Allen Army Airfield, frequent use of the runway as a C-17 assault landing zone, and frequent use of five existing drop zones for C-17 training.	X			D
Modification of Military Training Routes (MTRs) EA/ROD 2005 (Air Force 2005c)	Modified MTRs within the state of Alaska to better connect the MTRs with existing SUA. These changed MTRs are used by aircraft with low level navigation missions.	X			D

Table 5.2-1. Past, Present, and Reasonably Foreseeable DoD Actions in JBER and EAFB ROI

Project	Description	Timeframe[1]			JBER/ EAFB[12]
		Past	Present	Future	
Eielson projects Identified by BRAC Act of 2005 (BRAC 2005)	This project removes 354th Fighter Wing assigned A-10 aircraft from Eielson AFB. An Aggressor Squadron of F-16s replaces operational F-16s at Eielson AFB. The Aggressor Squadron F-16s participate in MFE and other training.	X			D

Notes:

1 JBER/EAFB Interface options: D=direct, I=indirect N=no interface.

2 Past projects are those with a decision document before 2013; Present projects are those that are in the process of implementation; Future projects are those for which a decision has not been made.

Key:

AFB=Air Force Base
ANGB=Air National Guard Base
ATCAA=Air Traffic Control Assigned Airspace
BRAC=Base Realignment and Closure
C=Celsius
DTA=Donnelly Training Area
EA=Environmental Assessment
EIAP=Environmental Impact Analysis Process
EIS=Environmental Impact Statement
FONSI=Finding of No Significant Impact
INRMP=Integrated Natural Resources Management Plan
JBER=Joint Base Elmendorf Richardson; Combination of Elmendorf AFB and Fort Richardson
JPARC=Joint Pacific Alaska Range Complex
LFA=Low Frequency Active
MFE=Major Flying Exercise
MOA=Military Operation Area
MTR=Military Training Route
NHPA=National Historic Preservation Act
ROD=Record of Decision
SUA=Special Use Airspace
USARAK=U.S. Army Alaska
USFWS=U.S. Fish and Wildlife Service

Table 5.2-2. Past, Present, and Reasonably Foreseeable Actions in the Larger Region

Project	Description	Timeframe*		
		Past	Present	Future
Cook Inlet Beluga Whale Subsistence Harvest- Supplemental Environmental Impact Statement (EIS)/Record of Decision (ROD) 2008 (USDOC 2008)	Implemented a long-term plan to manage subsistence harvests of the Cook Inlet beluga whale stock.	X		
Essential Fish Habitat Identification and Conservation, Implementation, North Pacific Fishery Management Council, Magnuson-Stevens Fishery Conservation and Management Act of 1976 (USDOC 2002)	Under this act, the National Marine Fisheries Service and regional Fishery Management Councils (Councils) identified fishery management plans to minimize the adverse effects of fishing on waters and substrate necessary to fish for fish spawning, breeding, feeding, or growth to maturity.	X		
Gulf Apex Predator-Prey Project	Issued a final report in 2005. The Gulf Apex Predator-Prey Project's primary goal is to document trophic relationships between Steller sea lions, their prey, predators, and potential competitors in waters near Kodiak Island, an area of continued sea lion declines and extensive commercial fishing.	X		
Knik Arm Crossing EIS/ROD	Proposed Knik Arm Crossing would be an 8,000 to 14,000 feet long bridge to enhance access between the Municipality of Anchorage and the Matanuska-Susitna Borough to the northwest. This effort includes a request for take of marine mammals incidental to construction over the course of five construction seasons (spring 2013 through autumn 2017).			X
Port MacKenzie Development	Matanuska-Susitna (Mat-Su) Borough is proposing to build an additional deep-water dock facility in the Point MacKenzie area, to facilitate economic development in the borough, for about 30 years. Docks increase vessel traffic in the Anchorage area, and can contribute to economic, land, and access development.			X
Port of Anchorage Expansion	The Port of Anchorage is planning a major expansion of its marine terminal capacity, including road and rail service expansion and redevelopment of the marine terminal.		X	X
Ferry Service for Knik Arm	Mat-Su Borough is developing a ferry link between Port MacKenzie and the Port of Anchorage with increased vessel traffic in the Cook Inlet/Knik Arm area.			X
The Eastern Interior Resource Management Plan (RMP)/EIS – In Progress (Air Force 2013b)	The Bureau of Land Management is developing a RMP for the Eastern Interior Planning Area. The Eastern Interior RMP will provide future direction for 6.7 million acres of public land including the White Mountains National Recreation Area, the Steese National Conservation Area, and the Fortymile area.			X
Northern Rail Extension EIS	Proposed construction and operation of approximately 80 miles of new rail line from North Pole, Alaska, to Delta Junction, Alaska. The project includes new structures, bridges, a passenger facility, communications towers, access roads for rail line construction and operations, and sidings.		X	X
The Susitna-Watana Hydroelectric Project	Proposed 750-foot high dam approximately 90-river miles north of Talkeetna with a 41-mile long, 2-mile wide (at widest) reservoir. The type and final height of the dam construction are still being evaluated as part of the engineering feasibility studies. The dam would have a nominal crest elevation at 2,025 feet mean sea level.			X

Note: *Past projects are those with a decision document before 2013; Present projects are those that are in the process of implementation; Future projects are those for which a decision has not been made.

5.2.1.3 Training Airspace

The proposed JPARC modernization and enhancement already includes F-16 aggressor aircraft training in Alaskan airspace in combination with F-22s, C-17s, C-130s, helicopters, and other aircraft (Air Force 2012a). Operations by the 18 AGRS aircraft based at EAFB are already addressed in the JPARC Draft EIS. The proposed F-16 relocation has the potential to increase flight operations in the existing Fox 3 MOA by 0.5% of total training operations, as shown in Table 2.4-6. This level of change would not be perceived by any observer or by any species. The location of the F-16s does not substantively change projected aircraft operations, MFE training, or other training exercises. The JPARC airspace proposals would not significantly increase MOA/ATCAA and Restricted Area uses above current levels nor would the F-16 training in this Special Use Airspace change discernibly with the proposed relocation. The only difference would be the routing used by the F-16s when transiting between JBER and this training airspace, as depicted by the Alternative B operations in Table 2.4-6, and any workload adjustments for the FAA facility controlling these flights.

No substantive cumulative impacts are anticipated within Alaska airspace as a result of the proposed 18 AGRS relocation, either separately or in conjunction with any adopted JPARC modernization or enhancements. Since no cumulative airspace impacts would be anticipated, no cumulative effects upon other resources would be anticipated under the airspace where 18 AGRS F-16s would be training regardless of where they were based in Alaska.

5.2.2 Noise

5.2.2.1 JBER

The noise analysis in this EIS includes all aircraft changes identified in Table 5.2-1. The noise analysis for the F-16s presented in Section 4.2 and used to evaluate biological, socioeconomic, and environmental justice impacts includes all JBER aircraft and is a cumulative analysis. Noise effects under the airspace also reflect the cumulative actions from changes in F-15, F-22, C-130, C-17, and other aircraft training exercises. The JPARC EIS includes 18 AGRS F-16 flight operations within the existing and proposed airspace. The JPARC EIS identifies MFEs, which can extend during environmental night (between 10:00 PM and 7:00 AM). These exercises, when conducted, require FAA coordination.

Resumption of year-round live-fire training at Eagle River Flats Impact Area, construction of the Knik Arm Bridge, and increased ship traffic to the Port of Anchorage could result in local noise impacts to wildlife species. The intermittent noise effects from aircraft overflights are not expected to contribute cumulatively to the existing and projected noise effects on wildlife or the CIBW. The analysis of noise effects on biological resources in this EIS includes cumulative sources of noise.

5.2.2.2 EAFB

The proposed relocation of the 18 AGRS would not contribute to any cumulative noise effects. Localized demolition noise would not have any long-term effects.

5.2.2.3 Training Airspace

The noise consequences in this EIS include all operations in training airspaces and represent a cumulative analysis.

5.2.3 Health and Safety

5.2.3.1 JBER

Minor facility modifications would not contribute to any health or safety cumulative impacts. Flight safety would be conducted in accordance with established safety procedures within local airspace and under the SUA airspace.

Potential bridge access routes associated with the Knik Arm Crossing project could cross portions of JBER and potentially affect safety zones within JBER. The Air Force is working with the Knik Arm Bridge and Toll Authority to ensure that base safety and security is maintained.

5.2.3.2 EAFB

The proposed 18 AGRS relocation proposal would not contribute to any cumulative health or safety impacts.

5.2.3.3 Training Airspace

No activities within the airspace are anticipated to produce cumulative impacts.

5.2.4 Air Quality

5.2.4.1 JBER

JBER is in attainment for all of the criteria pollutants regulated by CAA. There would be minor facility modifications and an increase in commuting traffic associated with the proposed 18 AGRS relocation, which would have minimal emissions and not affect changes to air quality attainment status in combination with other local facilities or activities.

Should the Army base 1,000 additional military personnel at JBER, there could be cumulative air quality effects from increased stationary and mobile emission sources. The Knik Arm Crossing has the potential for growth with associated increases in regional vehicle emissions, as it would open the way for further development in areas that are currently undeveloped. Further development and other civilian and military projects could contribute to a net increase in overall cumulative emissions.

The potential effects of GHG emissions from the action alternatives of the Proposed Action are by nature global. Given the global nature of climate change and the current state of the science, it is not useful at this time to attempt to link the emissions quantified for local actions to any specific climatological change or resulting environmental impact. Nonetheless, the GHG emissions from the project alternatives have been quantified to the extent feasible in this EIS for information and comparison purposes. Other projects could result in both direct and indirect cumulative emission of GHGs. Construction vehicles, personal vehicles, aircraft, transport trucks, buses, and military vehicles would directly produce GHGs. CO2 resulting from vehicle engines would be the primary source of GHGs. Effects from the Proposed Action on total GHG emission levels in the action area are expected to be insignificant. Indirect emissions of GHGs would result from fossil fuels being produced and transported to support regional projects. Quantification of such indirect effects is not possible at the level of analysis undertaken in this EIS.

There would be no cumulative effects of GHG emissions upon the 18 AGRS mission. The 18 AGRS would be relocating within Alaska and using the same airspace for training missions. The potential effects of GHG emissions are by nature global, and the relative difference between GHG emissions effects upon the F-16s located a EAFB or JBER would not be detectable.

5.2.4.2 EAFB

The proposed 18 AGRS relocation would not contribute to cumulative air quality effects.

5.2.4.3 Training Airspace

Cumulative construction projects under the airspace could produce localized short-term emissions. No long term air quality effects are anticipated in the training airspace associated with EAFB.

5.2.5 Physical Resources

5.2.5.1 JBER

The proposed relocation of F-16 Aggressors to JBER would not be expected to result in incremental adverse impacts to terrestrial or water resources at JBER, within the airspace, or in the region in conjunction with past, present, or reasonably foreseeable projects.

5.2.5.2 EAFB

Potential demolitions at EAFB would include best management practices to prevent migration of disturbed materials into EAFB or soils or regional water resources. Potential soil disturbance would be short term and would not be expected to contribute to cumulative effects.

5.2.5.3 Training Airspace

The proposed 18 AGRS relocation does not introduce activities, which could affect physical resources under the airspace cumulatively with other projects.

5.2.6 Hazardous Materials and Waste Management

5.2.6.1 JBER

Minor facility modification associated with the proposed 18 AGRS move to JBER would not contribute to substantial hazardous materials or wastes. These minor projects would be conducted in accordance with other projects that are being undertaken or foreseeable future projects at JBER. Such projects would include the Army projects developed for planning and programming in accordance with the *Alternate Program Objective Memorandum* (APOM) for future construction at JBER-Richardson identified in Table 5.2-1. All facility modification and facility operations at JBER, including hydrazine capabilities to support the F-16s, would adhere to current and potential future Federal and Alaska permits, statutes and regulations on the receipt, management, handling, use, and disposal of hazardous materials. No cumulative impacts would be anticipated in conjunction with any other JBER activity.

5.2.6.2 EAFB

Hazardous wastes could be associated with the demolition of 17 EAFB facilities. Any facility demolition projects would adhere to current and potential future Federal and Alaska permits, statutes and regulations, as well as best management practices specific to hazardous materials and waste management at EAFB. Demolition would not contribute to cumulative impacts in conjunction with other regional projects.

5.2.6.3 Training Airspace

Alternative A or B does not produce hazardous materials, which could affect hazardous waste under the airspace cumulatively with other projects.

5.2.7 Biological Resources

5.2.7.1 JBER

The primary biological resource that could be affected by cumulative projects is the CIBW. Several past, present, and planned projects could result in increased noise from facility modification and other sources within the Knik Arm habitat for the CIBW.

Cumulative direct impacts would occur from regional development, including coastal zone construction and effects on intertidal and sub tidal marine habitats. Indirect effects could come from human activities, including increased recreational boating and increased storm water runoff into the beluga habitat. The Knik Arm Crossing EIS identifies the main anthropogenic stressors to CIBW is the increased commercial and residential growth in the area. This resulted in additional marine vessel traffic at the Port MacKenzie Dock, greater Cook Inlet Ferry use, increased vessel noise and traffic, more accidental fuel spills, increased noise from operations, and increased turbidity resulting from re-suspension of mud substrate by propeller scour. Facility modification impacts on belugas could include avoidance of the construction zone, changes in resting or feeding cycles, displacement from habitat, masking of sounds and changes in vocal behavior, changes in swimming or diving behavior, altered direction of movement, and physical injury (FHWA 2007).

Alternative 2 of the resumption of year-round live-fire training at Eagle River Flats Impact Area could result in local effects on beluga whales unless mitigated by establishing training protocols that prohibit firing explosive munitions at Eagle River Flats Impact Area when beluga whales are present in Eagle River. Minor impacts would be expected on CIBW because 160 dB noise contours for the 105-mm and 120-mm weapons systems extend into Eagle Bay. Studies have shown that underwater noise can cause whales and other marine mammals to exhibit a behavioral reaction, which is classified as a “Level B take”. Neither the 60-mm nor the 81-mm mortars would generate noise within either Eagle River or Eagle Bay at levels greater than 160 dB at frequencies within the hearing range of a beluga whale (40Hz or higher). Any impacts, even minor, could contribute to the overall cumulative effects on the beluga whale. The Knik Arm Crossing EIS indicated that cumulative impacts to the beluga whale could be substantial due to the importance of Knik Arm and Upper Cook Inlet as habitat for whales. The reasons for the decline in the beluga whale population are unknown, and increased human interaction undoubtedly plays a part.

The cumulative effect of overflights from fighter aircraft based at JBER would be expected to be comparable to that experienced in 2008 before the replacement of 60 F-15s. The aircraft has the potential for whales to display a behavioral reaction, which is not projected to contribute significantly to the cumulative impacts upon the beluga population in the Upper Cook Inlet.

The JPARC EIS includes F-16 AGRS flight operations in the proposed Fox 3 MOA Expansion and the proposed Paxon MOA Addition. The proposed relocation of the F-16 aircraft and associated training would not be expected to change or have a cumulative effect on the impacts already addressed in the JPARC EIS.

5.2.7.2 EAFB

The proposed relocation of the 18 AGRS from EAFB would not contribute to cumulative effects to local or regional biological resources.

5.2.7.3 Training Airspace

The proposed relocation of the 18 AGRS from EAFB would not contribute to cumulative effects to biological resources under training airspaces.

5.2.8 Cultural Resources

5.2.8.1 JBER

Minor renovations and repairs associated with the proposed relocation would not adversely affect cultural resources or historic properties. All facility modifications and operations at JBER to support the proposed relocation would adhere to current and potential future Federal and Alaska Memoranda of Agreement, consultations, statutes, and regulations specific to cultural resources located on JBER. Cultural resources would not be impacted on the installation or under training airspace.

Regional civil projects with the potential to contribute to cumulative impacts to area or regional cultural resources include the Knik Arm Crossing and bridge access routes, Northern Rail Extension, and the future Alaska Pipeline Project in the Anchorage area. These and other actions identified in Table 5.2-2 would have the potential to impact cultural resources, contributing to area cumulative impacts. Any Federal or Federally supported projects would be subject to compliance with NEPA and Section 106 of the NHPA with the result that adverse effects would be avoided, minimized, or mitigated, reducing the potential for adverse cumulative impacts to occur.

No Alaska Native concerns or traditional cultural resources have been identified as being affected by the action alternatives of the Proposed Action at JBER; thus, the Proposed Action would not contribute to the cumulative effect expected from other projects in the region. The Air Force will continue to consult with federally recognized Alaska Native tribes, and Alaska Native Corporations as appropriate.

The proposed 18 AGRS relocation would not be expected to result in adverse impacts, either as a project or cumulatively, on any buildings, archaeological sites, or traditional resources eligible for listing on the National Register of Historic Places (National Register) in the region.

5.2.8.2 EAFB

The proposed 18 AGRS relocation would not contribute to adverse cumulative effects to cultural or historical resources. Any facility demolition projects would adhere to current agreements with the Alaska SHPO, statutes, and regulations, on-going consultation with the Alaska SHPO, as well, as best management practices specific to cultural resources on EAFB. Because no Alaska Native concerns or traditional cultural resources have been identified as being affected by the proposed 18 AGRS relocation at EAFB, the Proposed Action would not contribute to cumulative effects. The Air Force will continue to consult with federally recognized Alaska Native tribes, and Alaska Native Corporations as appropriate.

5.2.8.3 Training Airspace

Cultural resources, including Alaska Native traditional cultural resources and issues of concern, would not be cumulatively affected by F-16 flight operations in the training airspaces. The Air Force will continue to consult with federally recognized Alaska Native tribes, and Alaska Native Corporations as appropriate.

5.2.9 Land Use and Recreation

5.2.9.1 JBER

There would not be cumulative impacts upon land use from the proposed action in conjunction with other past, on-going, or future projects. Recreational resources at JBER would not be significantly affected by changes in Army personnel. Implementation of other reasonably foreseeable actions could generate land use effects to JBER with off-base corridors interacting with runway safety zones. The Knik Arm Crossing or the proposed expansion at the Port of Anchorage could alter land use and land ownership patterns, and increase regional traffic congestion. Should the Army select 2020 Force Structure Realignment Alternative 1, a reduction in personnel at JBER would reduce demand for recreational resources. Additional personnel could result in a cumulative impact upon EAFB area recreational resources if the Army selects Army Alternative 2.

5.2.9.2 EAFB

The proposed relocation of the 18 AGRS from EAFB would not contribute to cumulative land use impacts at EAFB. Recreational resources would not be significantly impacted at EAFB/Fort Wainwright. Should the Army select 2020 Force Structure Realignment Alternative 1, use of JPARC ground training land would be expected to decrease. Should the Army select Alternative 2, there could be increased ground training exercises with minor impacts to subsistence activities and to Alaska Natives. The proposed relocation of the F-16s would not contribute to any cumulative impact to Alaska Natives.

5.2.9.3 Training Airspace

The proposed relocation of the 18 AGRS from EAFB would not contribute to cumulative effects to land use under training airspaces. Incidental changes in sonic booms would not be expected to impact recreation or subsistence activities.

5.2.10 Infrastructure

5.2.10.1 JBER

There would be renovations and modifications to facilities, but no proposed infrastructure modifications associated with the proposed 18 AGRS relocation. Several regional projects, including the ports, access roads, and the Knik Arm Bridge would cumulatively involve changes in regional infrastructure.

The proposed 18 AGRS relocation would result in negligible incremental cumulative impacts to infrastructure, or energy demand in the region in conjunction with past or reasonably foreseeable projects that cannot be avoided, minimized, or mitigated.

Depending on individual decisions regarding housing, the action alternatives of the Proposed Action could minimally affect transportation as off-base residents commuted to on-base employment. . Any such commuting would not be expected to substantially affect land use patterns or traffic circulation within the JBER ROI in a manner that cannot be avoided, minimized, or mitigated.

Additional personnel and traffic could result in a cumulative impact upon base access roadways if the Army selects Army 2020 Force Structure Realignment Alternative 2. Implementation of other reasonably foreseeable actions however, could generate land use and transportation effects in the vicinity of JBER. The Knik Arm Crossing is proposed to alter circulation and land use by linking the Municipality of Anchorage and Mat-Su Borough, and thereby affecting development patterns in the region. In addition, bridge access route alternatives would traverse JBER. Proposed expansion at the Port of Anchorage, just west of JBER, could alter land use and land ownership patterns, and increase traffic congestion. Construction of these and other reasonably foreseeable projects could increase pressure on regional infrastructure and construction resources.

Increased personnel at JBER could incrementally contribute to cumulative transportation impacts in conjunction with past or reasonably foreseeable actions.

5.2.10.2 EAFB

Demolition of buildings would reduce energy demands and permit the reduction of some heating infrastructure as well as reduced maintenance of pavement. This would not have cumulative impacts to facilities or infrastructure off EAFB.

5.2.10.3 Training Airspace

No infrastructure impacts associated with the 18 AGRS relocation would occur under the airspace.

5.2.11 Socioeconomics

5.2.11.1 JBER

Proposed personnel changes would generate small beneficial effects to business economic activity in Anchorage and adjacent communities. The addition of 542 personnel would increase off-base housing demand and would be expected to result in some Air Force personnel residing in housing, which does not meet Air Force quality, cost, or distance standards.

Should the Army reduce JBER personnel, there would be a surplus of housing. Anchorage school districts may need to re-evaluate budgets and staffing for schools that could lose a substantial number of Army and civilian-related students as part of their enrollments. Should the Army increase JBER personnel, there would be a cumulative impact upon off-base rental housing and an increase in school-aged children. This could result in a greater number of the military personnel and families residing in housing which did not meet Air Force quality, cost, or distance standards. Depending on the residential location choices of individuals, some schools could become overcrowded. A number of military and non-military projects in the region surrounding the Anchorage and Mat-Su Borough, including the recent Port MacKenzie Development, the Port of Anchorage Expansion, and other proposed construction projects, could increase the demand for construction employment in the region. Although the increase in economic activity associated with a specific project would be temporary, lasting only for the duration of the facility modification period, the cumulative effects of the construction projects would create longer term employment opportunities for the foreseeable future during the facility operation and maintenance cycle.

The relocation of the 18 AGRS, in combination with past and reasonably foreseeable future actions, has the potential to create adverse cumulative impacts to local or regional community socioeconomic resources, specifically housing, in the greater Anchorage region.

5.2.11.2 EAFB

Relocation of the 18 AGRS and associated changes at EAFB are projected to result in adverse economic and community cumulative effects in the FNSB and in local communities near EAFB. Adverse impacts would be expected to housing, education, employment, and population. An Army selection of Army 2020 Force Structure Realignment Alternative 1 has the potential to contribute to additional adverse cumulative socioeconomic impacts at United States Army Garrison (USAG) Fort Wainwright with the loss of an additional 4,900 military population. This could result in a more than doubling of the socioeconomic impacts described in Section 4.11. The impact would be especially felt in Fairbanks as well as throughout the FNSB. Should the Army select Alternative 2, there would be an increase of approximately in the 1,000 persons associated with the military. The cumulative effect of this action would be to reduce by approximately one-third the potential socioeconomic impacts anticipated with the proposed EAFB actions and described in Section 4.11. Potential Army unmanned aerial vehicle operational personnel could cumulatively reduce potential socioeconomic impacts from EAFB changes by approximately 10%.

Potential personnel increases from rail or pipeline construction from civil projects identified in Table 5.2-2 within the FNSB could stimulate economic activity in the region and potentially increase the demand for construction employment with associated regional cumulative economic activity. Although the increase in economic activity associated with a specific project would be temporary, lasting for the duration of the construction period, the cumulative effects of the construction projects could potentially create employment for the foreseeable future. This additional economic activity could be the source of employment opportunities for residents in the area and be considered a beneficial cumulative socioeconomic impact if these opportunities do, in fact, materialize. The cumulative effect of Army decisions could increase or decrease socioeconomic impacts. The cumulative effect of energy and other projects could reduce the projected impacts associated with the EAFB personnel reductions.

5.2.11.3 Training Airspace

Socioeconomic effects, either directly from the 18 AGRS relocation or cumulatively with other projects would not be expected to occur under the training airspaces.

5.2.12 Environmental Justice

5.2.12.1 JBER

There are existing adverse impacts to minority and low income populations adjacent to JBER from aircraft noise and the proposed increased flight operations, which would extend the impact upon additional minority and low income populations. There are no additional cumulative noise impacts to disadvantaged populations other than the off-base impacts described in this EIS.

Increased economic activity from projects identified in Table 5.2-1 and Table 5.2-2 could increase employment, including that for minorities. Increased demand for housing could affect low income persons and require that they expend a greater portion of their income for housing. Children attending the off-base Mountain View elementary School would continue to be impacted by noise levels of 65 dB L_{dn} or greater. Cumulative projects would not be expected to result in greater impacts to minorities or low income populations or to children.

5.2.12.2 EAFB

There would not be a disproportionate impact upon minority or low income populations in the EAFB ROI. School closures could impact children and require more extensive bussing to available schools.

An Army selection of Alternative 1 could further reduce school availability and require more bussing. Cumulative impacts to children could be greater than with the proposed EAFB action alone. Should the Army select Alternative 2, there would be an additional 1,000 in Army population. This could reduce school district and FNSB employment impacts by approximately one-third, but it is not expected to reduce housing impacts in the FNSB or North Pole areas substantively.

Civil projects identified in Table 5.2-2 within FNSB have the potential to stimulate economic activity in the greater region and potentially increase the demand for construction employment and associated economic activity in the region. This additional economic activity could encourage in-migration, increase enrollments, and reduce impacts upon FNSB schools and children associated with EAFB personnel reductions.

5.2.12.3 Training Airspace

Infrequent changes in sonic booms under airspaces would not be expected to cumulatively affect subsistence resource harvesting by Alaska natives. No cumulative impacts would be anticipated.

5.3 Other Environmental Considerations

5.3.1 Relationship Between Short-Term Uses and Long-Term Productivity

CEQ regulations (Section 1502.16) specify that environmental analysis must address "…the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term

productivity". Special attention should be given to impacts that narrow the range of beneficial uses of the environment in the long-term or pose a long-term risk to human health or safety. This section evaluates the short-term benefits of the proposal compared to the long-term productivity derived from not pursuing the proposal. Short-term effects to the environment are generally defined as a direct consequence of a project in its immediate vicinity.

Short-term effects could include localized disruptions and higher noise levels in some areas. Off-base noise levels would increase in the Mountain View community near JBER. The proposed 18 AGRS relocation involves an additional 542 Air Force personnel and their dependents as well as an additional 18 primary and 3 backup aircraft at JBER. The additional personnel and aircraft would not significantly impact the long-term productivity of the land or air, as fighter aircraft have been regularly based at JBER, and trained in regional airspace. The military training that occurs in the airspace is consistent with existing operations

Demolition of no longer needed EAFB facilities would reduce consumption of energy for heating the facilities. This could improve the long-term availability of energy resources. Public scoping commenters also noted that removal of the facilities removed the longer term potential for facility re-use.

5.3.2 Irreversible and Irretrievable Commitment of Resources

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

At JBER, most impacts are short-term, temporary, and minor such as air emissions from the proposed minor facility renovation required to support proposed F-16s and flight operations. Longer lasting impacts include the potential for increased noise in the JBER area from the additional 18 primary and 3 back up F-16s proposed to be relocated from EAFB.

At EAFB, the potential demolition of facilities no longer required to support the F-16 mission on a full-time basis would reduce the requirement for heating and would reduce the consumption of heating resources.

Air Force aircraft and personnel would use fuel, oil, and lubricants during normal activities. Training operations would involve irreversible consumption of nonrenewable resources, such as gasoline used in vehicles and jet fuel used in aircraft. Alternative B, with air refueling support for the F-16 aircraft in route to Red Flag and Distant Frontier exercises from JBER, would involve a greater consumption of jet fuel than Alternative A. This means that Alternative B results in a greater commitment of irretrievable resources than Alternative A. None of the activities associated with the proposed relocation would be expected to decrease the availability of minerals or petroleum resources significantly in either the JBER ROI or the EAFB ROI.

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7.0 ACRONYMS AND ABBREVIATIONS

µPa	micropascal
18 AGRS	18th Aggressor Squadron
3 WG	3rd Wing
52 FW	52nd Fighter Wing
673 ABW	673rd Air Base Wing
AAC	Alaska Administrative Code
AAD	Average Annual Day
ACEC	Area of Critical Environmental Concern
ACM	Asbestos-Containing Material
AD	Active Duty
ADEC	Alaska Department of Environmental Conservation
ADT	Average Daily Traffic
AF	Air Force
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFI	Air Force Instruction
AFOSH	Air Force Occupational Safety and Health
AGL	Above Ground Level
AGRS	Aggressor Squadron
AICUZ	Air Installation Compatible Use Zone
Air Force	United States Air Force
AKANG	Alaska Air National Guard
Anchorage Center	FAA Anchorage Air Route Traffic Control Center (ARTCC)
ANG	Air National Guard
ANGB	Air National Guard Base
APOM	Alternate Program Objective Memorandum
APZ	Accident Potential Zone
AQCR	Air Quality Control Region
ARL	Anchorage Regional Landfill
ARTCC	Air Route Traffic Control Center
ASD	Anchorage School District
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
ATF	Aviation Task Force
BAH	Basic Allowance for Housing
BASH	Bird/wildlife Aircraft Strike Hazards
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BOOMAP	Noise modeling program
BOS	Base Operating Support
BRAC	Base Realignment and Closure
BTEX	benzene, toluene, ethylbenzene, xylenes
C	Celsius
CAA	Clean Air Act
CABOOM	Noise Modeling Program
Cartee Airspace	Merrill Class D airspace
CDNL	C-Weighted Day-Night Average Noise Level

Census	U.S. Census Bureau
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH_4	methane
CHPP	Central Heat and Power Plant
CIBW	Cook Inlet Beluga Whale
CO	Carbon Monoxide
COA	Course of Action
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide equivalents
CZ	Clear Zone
dB	decibel
DF	Distant Frontier Training Exercises
DoD	Department of Defense
DoDI	Department of Defense instruction
DOM	Days On Market
DOPAA	Description of Proposed Action and Alternatives
DRMO	Defense Reutilization and Marketing Office
DTA	Donnelly Training Area
EA	Environmental Assessment
EAFB	Eielson Air Force Base
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
EPU	Emergency Power Unit
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESU	Evolutionary Significant Units
ETAP	Eastern Tanana Area Plan
ETR	Engine Thrust Request
F-16 Relocation EIS	Environmental Impact Statement for the Proposal to Relocate 18 AGRS from EAFB, Alaska to JBER, Alaska and Rightsizing the Remaining Wing Overhead/Base Operating Support at Eielson AFB, Alaska
F-22 Plus-Up EA	F-22 Plus-Up EA Joint Base Elmendorf-Richardson, Alaska
FAA	Federal Aviation Administration
Facility 6263	Corrosion Control Facility
FC	Candidate for Federal listing
FE	Listed as endangered under ESA
FECC	Fairbanks Emergency Communications Center
FEDC	Fairbanks Economic Development Corporation
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FNSB	Fairbanks North Star Borough
FNSBSD	Fairbanks North Star Borough School District
FONSI	Finding of No Significant Impact
FT	Listed as threatened under ESA
FY	Fiscal Year
FYDP	Future Year Defense Plan

GAP	Gulf Apex Predator-Prey
GHG	Greenhouse Gasses
GO	General Obligation
GVEA	Golden Valley Electric Association
H-70	Hydrazine (liquid)
HAF	Headquarters Air Force
HAZMART	Hazardous Materials Pharmacy
HazMat	Hazardous Material
HFC	Hydro Fluorocarbons
HMA	Housing Market Analysis
HQ	Headquarters
HVAC	Heating, Ventilation, Air Conditioning
Hz	Hertz
ICRMP	Integrated Cultural Resources Management Plan
IFR	Instrument Flight Rule
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
ILS	Instrument Landing System
IMPLAN	Impact Analysis for Planning
INRMP	Integrated Natural Resources Plan
IR	Instrument Route
JBER	Joint Base Elmendorf-Richardson (combination of Elmendorf AFB and Fort Richardson)
JPARC Draft EIS	Draft Environmental Impact Statement for the Modernization and Enhancement of Ranges, Airspace, and Training Areas in the Joint Pacific Alaska Range Complex in Alaska
K	1000
kHz	kilohertz
LBP	Lead Based Paint
L_{dn}	Day-Night A-Weighted
L_{dnmr}	Onset-Rate Adjusted Monthly Day-Night Average Sound Level
LFA	Low Frequency Active
LFE	Large Force Exercise
L_{max}	Maximum Noise Level
MACA	Midair Collision Avoidance
MAJCOM	Major Command
Mat-Su	Matanuska-Susitna Borough
MBTA	Migratory Bird Treaty Act
MFE	Major Flying Exercise
MFH	Military Family Housing
mg/m^3	milligrams per cubic meter
MGD	Million Gallons per Day
MILCON	Military Construction
mm	millimeter
MMPA	Marine Mammal Protection Act
MMT	Million Metric Tons
MOA	Military Operation Area
MRNMAP	Military Operation Area-Range NOISEMAP Program
MSL	Mean Sea Level
MTR	Military Training Route
N_2O	Nitrous Oxide
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards

NAF	Non-Appropriated Fund
NC	percent core RPM and ETR
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act of 1969
NGO	Non-Governmental Organizations
NHPA	National Historic Preservation Act
NM	Nautical Mile
NMFS	National Marine Fisheries Service
NMPLOT	Noise Contour Plotting Software
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOISEMAP	Environmental Noise Mapping Software
NO_x	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
NRE	Northern Rail Extension
NRHP	National Register of Historic Places
NRIS	National Register Information Service
NWSR	National Wild and Scenic River
O_3	Ozone
OSHA	Occupational Safety and Health Administration
OU5	Operational Unit 5
PA	Public Affairs
PACAF	Pacific Air Forces
PAH	Poly-Aromatic Hydrocarbons
Pb	Lead
PCB	Polychlorinated Biphenyls
PCS	Permanent Change of Station
PFCs	Per Fluorocarbons
PM_{10}	Particulate Matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	Particulate Matter with an aerodynamic diameter of 2.5 microns or less
PRMP	Proposed Resource Management Plan
psf	pounds per square foot
PUA	Public Use Area
QRP	Qualified Recycling Program
RA	Restricted Areas
RCRA	Resource Conservation and Recovery Act
Red Flag	Red Flag-Alaska Training Exercises
RMA	Recreation Management Area
RMP	Resource Management Plan
ROD	Record of Decision
ROI	Region of Influence
RPM	Rotations Per Minute
SAIC	Science Applications International Corporation
SAM	Social Accounting Matrix
SAP	Satellite Accumulation Point
SATAF	Site Activation Task Force
SELCALC	Noise Calculation Software
SER	Significant Emissions Rate
SF_6	sulfur hexafluoride
SFO	Simulated Flame-Out

SFR	State Forest Reserve
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxide
SPCCP	Spill Prevention Control and Countermeasures Plan
SPL	Sound Pressure Level
SRA	State Recreation Area
SRR	State Recreation River
SUA	Special Use Airspace
SUAIS	Special Use Airspace Information Service
SWPPP	Storm Water Pollution Prevention Plan
TACAN	Tactical Navigation
TBAP	Tanana Basin Area Plan
TBD	To Be Determined
TCE	trichloroethene
TDY	Temporary Duty
TO	Technical Order
TOA	Total Obligation Authority
TRACON	Terminal Radar Approach Control
Training Airspace	Alaska Training Special Use Airspace
TRSA	Terminal Radar Service Area
U.S.	United States
U133	hazardous waste designation for liquid hydrazine
UAF	University of Alaska Fairbanks
UAV	Unmanned Aerial Vehicle
USAG	United States Army Garrison
USARAK	United States Army Alaska
USC	United States Code
USFWS	United States Fish and Wildlife Service
VFR	Visual Flight Rule
VMT	Vehicle Miles Travelled
VOC	Volatile Organic Compounds
VR	Visual Route

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