U.S. ARMY GARRISON
FORT WAINWRIGHT, ALASKA

REAL PROPERTY MASTER PLAN
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

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Date

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LIST OF ACRONYMS/ABBREVIATIONS

AAC	Alaska Administrative Code
ACM	asbestos-containing material
ACP	Access Control Point
ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
ADP	Area Development Plan
AFB	Air Force Base
APE	area of potential effects
AQCP	Air Quality Control Permit
AR	Army Regulation
ASP	Ammunition Supply Point
AST	aboveground storage tank
AT/FP	Anti-Terrorism/Force Protection
BLM	Bureau of Land Management
BMP	Best Management Practice
BOF	Battalion Operations Facility
BP	years before present
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHPP	Central Heat and Power Plant
COF	Company Operations Facility
CPSC	Consumer Product Safety Commission
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted decibel
dBC	C-weighted decibel
dBP	peak sound level
DNL	day-night average sound level
DoD	Department of Defense
DOPPA	Description of Proposed Action and Alternatives
DPW	Directorate of Public Works
DU	Doyon Utilities

EA	Environmental Assessment
EFH	Essential Fish Habitat
EISA	Energy Independence and Security Act
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EO	Executive Order
EOD	Explosive Ordnance Disposal
ESA	Endangered Species Act
FNPA	Finding of No Practicable Alternative
FNSI	Finding of No Significant Impact
GHG	greenhouse gas
HAZWOPER	Hazardous Waste Operations and Emergency Response
GWP	global warming potential
HEMTT	Heavy Expanded Mobility Tactical Trucks
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
ITAM	Integrated Training Area Management
kW	kilowatt
LBP	lead-based paint
LEED	Leadership in Energy and Environmental Design
LOS	level of service
LUPZ	Land Use Planning Zone
MBTA	Migratory Bird Treaty Act
MW	megawatt
$\mu g/m^3$	micrograms per cubic meter
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NLR	noise level reduction

NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
PCB	polychlorinated biphenyl
PEA	Programmatic Environmental Assessment
P.L.	Public Law
PM	Particulate matter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
POL	petroleum, oils, and lubricants
ppm	parts per million
ROI	region of influence
SBCT	Stryker Brigade Combat Team
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SOP	Standard Operating Procedure
SWPPP	Storm Water Pollution Prevention Plan
TCP	Traditional Cultural Property
UFC	Unified Facilities Criteria
USAG FWA	U.S. Army Garrison Fort Wainwright, Alaska
USARAK	U.S. Army Alaska
USARTRAK	U.S. Army Recreation Tracker
U.S.C.	U.S. Code
USGS	U.S. Geological Survey
UST	underground storage tank
UXO	unexploded ordnance

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1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The U.S. Army Garrison Fort Wainwright, Alaska (USAG FWA) proposes to implement a Real Property Master Plan (RPMP) for the Fort Wainwright Army Installation. The Directorate of Public Works (DPW) Master Planning Division developed a long-term plan/vision to provide the facilities and infrastructure required to support both current and future mission activities at Fort Wainwright. The RPMP consists of several elements that resulted from the visioning, analysis, and design phases of the planning process. Components of RPMP include the Vision Plan, Installation Planning Standards, Area Development Plans (ADPs), Capital Investment Strategy, and Plan Summary. Taken together, these products constitute the RPMP and serve as a land use plan that flexibly governs the management of existing and required facilities and installation development. Their collective purpose is to guide development on the installation to ensure that it meets the planning vision. The RPMP, however, is not a static, inflexible, single plan, but a living document; a compilation of components unified by a common vision in sync with evolving missions, security requirements, and technology.

Army guidance supports integration of the National Environmental Policy Act (NEPA) process into master planning. In adherence with NEPA of 1969 (42 U.S.C §4321 et seq.), the Council on Environmental Quality (40 CFR §1500-1508), and supplemental requirements provided under Army Regulation 32 CFR §651, Environmental Analysis of Army Actions, the USAG FWA is preparing this Programmatic Environmental Assessment (PEA) to assess the potential environmental and socioeconomic impacts from implementing the RPMP. It also provides the decision maker with a phased approach to evaluate the project-specific proposals as they become ripe for decision in the future.

This PEA focuses on the implementation of the Fort Wainwright RPMP, including the Vision Plan, Regulating Plan, and ADPs, which consist of short-, mid-, and long-term strategies to guide the physical development of USAG FWA over the next 25 years. The PEA is a public document used to determine and evaluate the potential environmental consequences of adopting the RPMP, establish procedures for detailed project review, and identify mitigation measures to lessen or eliminate adverse effects. The intended audience of the PEA is Army decision makers, interested government agencies and nongovernment organizations, tribes, and members of the public. The effects analyses in this report are based on a variety of sources and the best available information at the time of preparation. The information contained in this PEA will be reviewed and considered by the Army prior to the final decision on how to proceed with the implementation of the RPMP, if at all, and to determine whether a Finding of No Significant Impact (FNSI) is appropriate or whether a Notice of Intent to prepare an Environmental Impact Statement (EIS) should be issued.

1.2 FORT WAINWRIGHT LOCATION AND SETTING

Fort Wainwright is located in central Alaska, north of the Alaska Range in the Tanana River Valley (Figure 1-1). The installation consists of a Main Post and several training areas: Tanana Flats, Yukon, Donnelly, Gerstle, Black Rapids, and Whistler Creek Trainings Areas. The Fort Wainwright RPMP focuses on future development scenarios within the Main Post area of Fort Wainwright (Figure 1-2). The training areas are addressed under the Range Complex Master Planning process.

The Fort Wainwright Main Post is approximately 15,369 acres in area (including the Small Arms Complex) and is within the Fairbanks North Star Borough (FNSB) (Figure 1-2). The installation is on the eastern edge of the urbanized portions of the city with Alaska Highway 2 running along the southern border of the Main Post, which connects to Alaska Highway 4.

The city of Fairbanks, on the western boundary of Fort Wainwright, is the largest city in the borough with a population of approximately 31,535 (ADCCED 2016). The FNSB population is approximately 99,631 (U.S. Census Bureau 2016a). Residential developments have grown eastward, abutting the installation boundary along the Chena North District and the western and eastern sides of the Small Arms Complex. A majority of the land surrounding Fort Wainwright is State of Alaska-owned land. Principal land use management categories include fish and wildlife habitat, public recreation, forestry, agricultural sale, and settlement. The Tanana Valley State Forest lies north of Fort Wainwright with private and FNSB-owned land parcels to the south. Alaska Native corporation-owned and Native allotment parcels also border Fort Wainwright.

Fort Wainwright's mission is to integrate resources and deliver installation services to enable the readiness of the U.S. Army Alaska (USARAK) while enhancing the quality of life for Soldiers, Families, and community. Home to more than 8,500 Soldiers, Civilians, and contractors, the installation also supports more than 8,100 Family members (USAG FWA, 2015g). The Units housed at Fort Wainwright include the 1st Stryker Brigade Combat Team (SBCT), 25th Infantry Division (1/25th SBCT), the USARAK Aviation Task Force, and the Northern Warfare Training Center, as well as numerous tenants including the U.S. Army Medical Command, Cold Regions Test Center, U.S. Army Corps of Engineers, Bureau of Land Management – Alaska Fire Service, Doyon Utilities, and North Haven Communities (USAG FWA, 2015g).

As part of USARAK, USAG FWA is at the forefront of protecting national interests in the Asian Pacific region while also providing ready and relevant forces to overseas contingency operations. The installation is one of the U.S. military's most centrally located power projection platforms, offering joint training opportunities and unique climate, which in turn provides ideal training grounds to prepare Soldiers for the diverse challenges they potentially face.

Figure 1-1. Regional Map

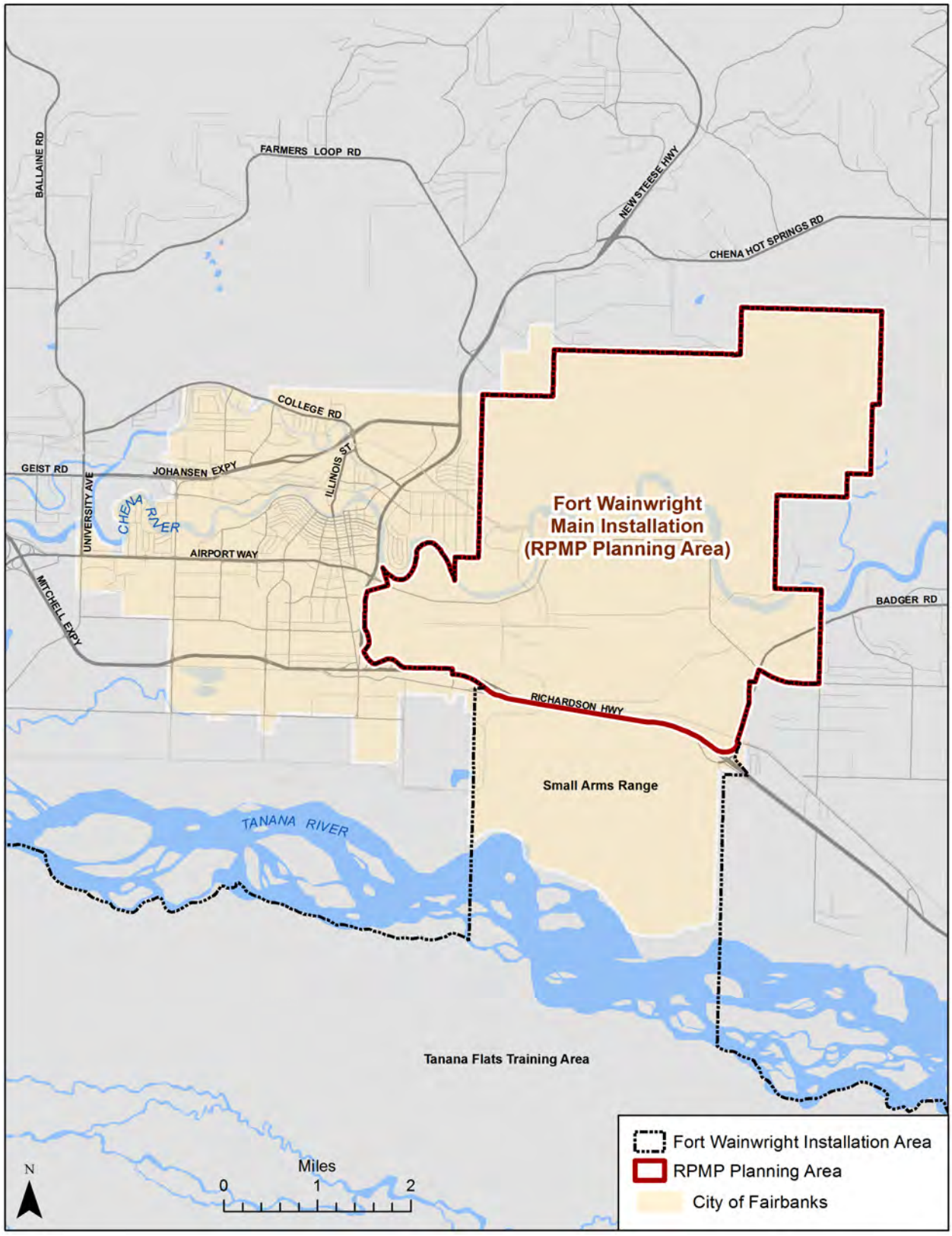

Figure 1-2. Vicinity Map

1.3 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.3.1 Purpose of the Proposed Action

The Proposed Action is to adopt and implement the Fort Wainwright RPMP. The purpose of the Proposed Action is to provide a practical framework and guiding principles to meet the installation's mission goals and future operational requirements through the RPMP. The RPMP also allows planners the flexibility to accommodate future changes in a sustainable manner. Through implementation of the RPMP, the USAG FWA provides for modern and efficient facilities to accommodate multiple functions and users to include adequate Anti-Terrorism/Force Protection (AT/FP) measures; consider functional relationships to adjacent facilities and land uses; and provide for sustainable design and compatible architectural features.

1.3.2 Need for the Proposed Action

The need for the Proposed Action results from Army installations being required to develop and maintain an RPMP in accordance with Army Regulation (AR) 210-20, Real Property Master Planning; AR 420-1, Army Facilities Management, Chapter 10 (U.S. Army 2012); and Unified Facilities Criteria (UFC) 2-100-01, *Installation Master Planning* (U.S. DoD 2012, 2013). The RPMP is the installation Commander's plan for the orderly management and development of the real property assets of the installation including land, facilities, and infrastructure. Up until this point, Fort Wainwright has not had a single formal master plan that facilitates both short-, mid-, and long-term planning for achieving mission requirements at the installation. Implementing a master plan places the installation in compliance with the directive in UFC 2-100-01 which specifically requires Army installations to develop and implement an RPMP by Fiscal Year 2018 (U.S. DoD 2012).

1.4 PROJECT BACKGROUND

1.4.1 Master Planning Process

Master planning is an iterative process that involves meetings and planning sessions (charrettes) and data collection to develop feasible alternatives. The process consists of primary phases—identification, evaluation, implementation, and monitoring and amending (though they are not carried out in an entirely linear progression).

1.4.1.1 Identification Phase

The identification phase prepares the foundation for detailed planning through identification of a vision—specific goals that support that vision and measurable objectives that support one or more goals. The product that results from this phase is often referred to as the Vision Plan.

The visioning practicum (workshop) was the first step toward creating a consolidated master plan for Fort Wainwright. The Fort Wainwright vision practicum was held 26 and 27 February 2013, with the purpose of teaching the Garrison planning staff and leadership the importance of master planning and tools to plan effectively. The Garrison Commander introduced the first day

of the practicum, followed by the USARAK Commanding General providing his insight on master planning needs at Fort Wainwright. A discussion of Army master planning theory and tenets followed the leadership in-briefs and then a collaborative discussion of Fort Wainwright's strengths, weaknesses, opportunities, and threats.

1.4.1.2 Evaluation Phase

In the evaluation phase, planners prepare and evaluate development alternatives for all scales of planning, from individual districts to the overall installation. Planning workshops or charrettes, which evaluate specific areas with the necessary support of installation stakeholders, were part of the evaluation. This phase included workshops focused on specific development plans, and included:

- North Post District ADP practicum held on 15–19 September 2014,
- South Post District ADP practicum held on 7–11 December 2015,
- Ladd Army Airfield District ADP practicum held on 25–29 January 2016,
- Chena North District ADP practicum held on 18–22 April 2016, and
- West Post District ADP practicum held on 13-16 June 2016.

1.4.1.3 Implementation Phase

The implementation phase is marked by the selection of a preferred alternative that would implement the vision. Detailed documents are typically prepared to guide installation development and implementation of the plan. Following the creation of a Preferred Alternative Illustrative Plan, participating stakeholders organize development actions within the ADPs chronologically, ultimately separating development into three separate phases: Short-Range, Mid-Range, and Long-Range. Short-Range actions often represent development that is high priority for the installation, is quickly implementable, and/or has low implementation costs. Mid-Range development represents development that requires a more complex or lengthy planning process or development that precipitates from actions taken during the Short-Range phase. Finally, Long-Range actions represent development that is not expected to be implemented in the near future; these are often large and forward thinking projects that consider and address the future needs of operations and personnel on the installation.

1.4.1.4 Monitoring and Amending Phase

As the RPMP is adopted and executed, monitoring and amending are necessary because of resource constraints, mission changes, or alterations in environmental, social, or political conditions. The RPMP will be revised to reflect such change in order to maintain its relevance as a useful planning and management tool. At a minimum, the RPMP should be reviewed annually (USAG FWA, 2014a). Any changes or updates to the plan will require additional reviews to determine if they are already fully captured in this PEA or if additional NEPA analysis will be required.

1.4.2 Area Development Planning Districts

Installations are divided into identifiable and connected districts based on geographical features, land use patterns, building types, and/or transportation networks. As districts are identified, an ADP is then prepared for each district. This leads to developing the RPMP in logical planning increments. By focusing master planning on districts, planners can identify areas that need planning attention due to mission, requirement, or command priority changes. The RPMP area consists of the Fort Wainwright Main Installation north of the Richardson Highway. The RPMP area does not include the Small Arms Range or the Tanana Flats Training Area which are adjacent to the Fort Wainwright Main Installation, or the other training areas (e.g., Yukon Training Area, Donnelly Training Area, Gerstle Training Area, or Black Rapids Training Area) located in other areas of Interior Alaska. The RPMP area at Fort Wainwright is divided into five ADP districts (Chena North, North Post, Ladd Airfield, West Post, and South Post) (Figure 1-3).

1.5 DECISION TO BE MADE

The intent of this PEA is to provide a holistic view and understanding of the potential environmental impacts resulting from implementation of the RPMP. This document is not intended to serve as the sole NEPA analysis for each individual project but instead will be used in the planning for subsequent projects through identification of environmental Best Management Practices (BMPs) and Standard Operating Procedures (SOPs) that are in place to mitigate potential impacts. The RPMP still requires much planning and justification, which will require additional NEPA documentation whether it is a Categorical Exclusion, Environmental Assessment (EA), or EIS. Conducting NEPA on the implementation of a RPMP is useful because it can help to identify potentially controversial issues during the planning process; result in efficiencies for project execution at later stages and cost savings through the use of tiered NEPA documentation; and ultimately inform the decision maker of environmental consequences from implementation of the Proposed Action and subsequent resulting actions.

The Army will decide whether to adopt the proposed RPMP as discussed in Chapter 2. If appropriate, the final decision will be documented in the FNSI, which would include mitigation measures that are essential to reduce identified adverse impacts, if any are determined. This PEA analyzes the RPMP in as much detail as is currently available; however, this document is intended to provide guidance for further site-specific projects under the guise of the RPMP. Additional project-specific NEPA documentation may be necessary to ensure a full disclosure of potential environmental impacts and required mitigation measures. In addition, for projects with potential to adversely affect historic properties, the Cultural Resources Manager will be involved in the planning and design to ensure that the projects are meeting the goals of the Integrated Cultural Resources Management Plan and that adverse effects are mitigated in accordance with the National Historic Preservation Act (NHPA) Section 106 process.

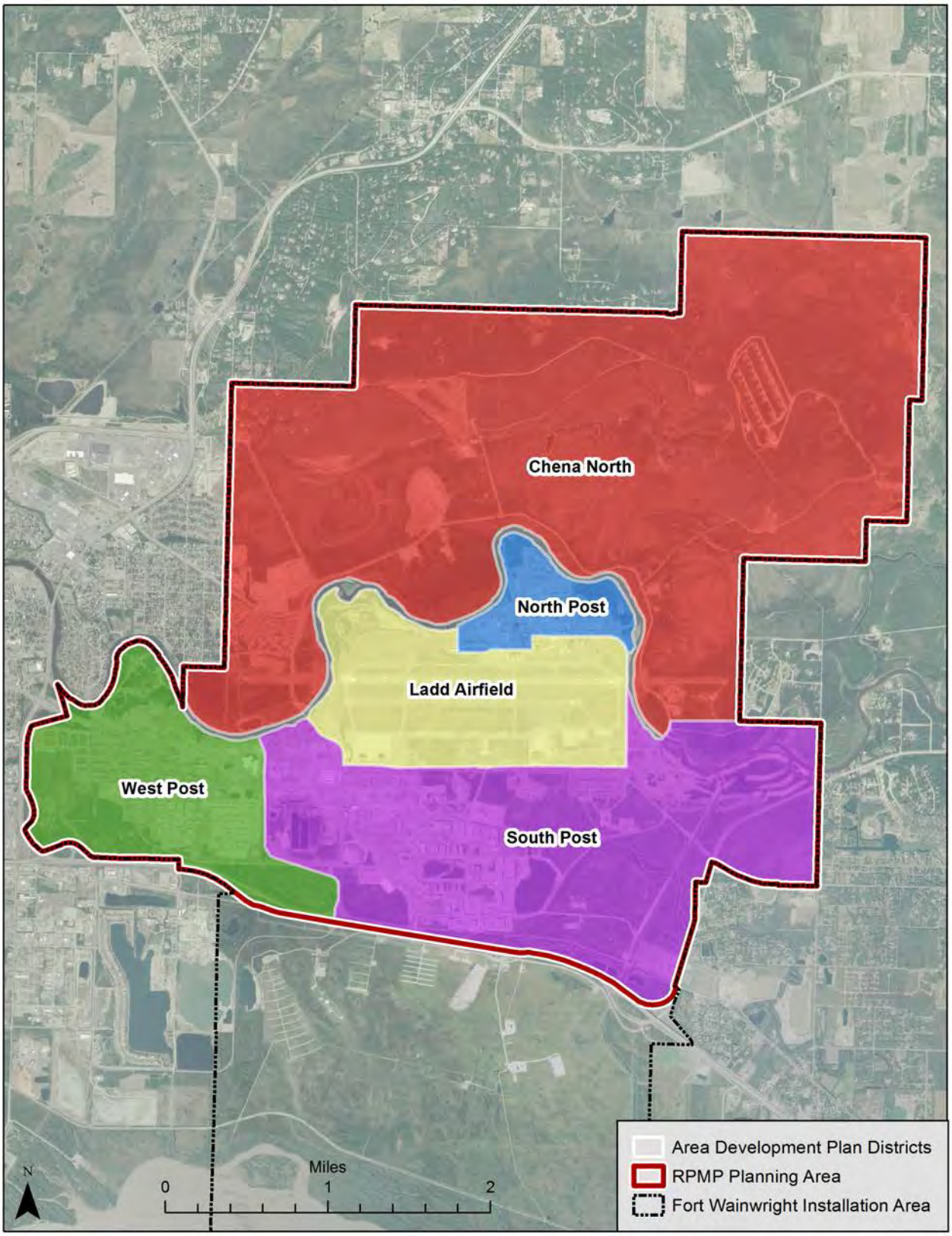

Figure 1-3. Fort Wainwright Area Development Plan Districts

1.6 SCOPE OF ENVIRONMENTAL ANALYSIS

Implementation of the Fort Wainwright RPMP offers the decision maker a phased approach to evaluate the project-specific proposals and potential environmental impacts. This PEA identifies, documents, and evaluates the potential direct, indirect, and cumulative impacts environmental effects of adopting the RPMP in accordance with NEPA implementing regulations issues by the CEQ (40 CFR §§ 1500-1508) and the Army (32 CFR § 651). The RPMP represents a concerted effort to balance mission growth, environmental protection, and the sustainable allocation of resources. This document also provides an evaluative mechanism to assist in the assessment and implementation of future actions. To understand the potential environmental consequences of the decision to be made, the PEA qualitatively and, when appropriate, quantitatively evaluates the environmental impacts of the alternatives.

The majority of project-specific actions identified in the RPMP are conceptual at this time. These project-specific actions are dependent on many variables with changes to the military mission, funding availability, and Army Headquarters decisions among those having the greatest effect on future plans. Because of this, the full extent of potential impacts from implementation of the RPMP cannot be fully understood at this time since the projects may change as they are developed. Implementation of the Proposed Action would be conducted in a manner, however, that would ensure statutory and regulatory compliance with the implementation of BMPs and SOPs over the lifetime of the RPMP to minimize overall environmental impacts. This PEA will focus on long-term implementation of the Vision Plan and the Area Development Plans in a programmatic nature. As projects move into the development phase and become ripe for decision, the Army will utilize this PEA as a basis to evaluate concerns and impacts and develop additional NEPA analysis if warranted.

The PEA does not relieve the burden from proponents to satisfy NEPA requirements for actions and projects not sufficiently addressed in this document.

The RPMP and PEA do not address environmental impacts to the training areas from the USARAK Range Control projects or military training. Those impacts are continually addressed through the Range Complex Master Plan process.

Under NEPA, the analysis of environmental conditions only addresses those areas, or Regions of Influence (ROIs), and environmental resources with the potential to be affected by the Proposed Action or alternatives. Locations and resources with no potential to be affected are not analyzed. The ROI, which includes all areas and lands that might be affected, may vary by resource. The Army's NEPA regulation 32 CFR §651 calls for the environmental analysis to be proportionate to the nature and scope of the action, the complexity and level of anticipated effects on important resources, and the capacity of Army decisions to influence those effects in a productive, meaningful way from the standpoint of environmental quality.

1.7 PUBLIC INVOLVEMENT

In accordance with 32 CFR §651, the Army provides opportunities for the public to participate in the NEPA process to promote open communication and to improve the decision-making process. Persons and organizations having potential interest in the Proposed Action are encouraged to participate in the environmental analysis process.

The Notice of Availability (NOA) for the PEA and draft FNSI has been published in the Fairbanks Daily News-Miner. The publication of the NOA initiated a 30-day comment period, during which the Army invited the general public, local governments, state agencies, and other federal agencies to submit comments or suggestions concerning the analyses and alternatives addressed in the PEA and draft FNSI. Copies of the draft PEA and draft FNSI were made available for public review at libraries in the region and on the Fort Wainwright website at: https://www.wainwright.army.mil/index.php/about/environmental.

The Army consulted with Alaska Native tribes in accordance with the requirements of Department of Defense (DoD) Instruction 4710.02, DoD Interactions with Federally-recognized Tribes; Executive Order (EO) 13175, *Consultation and Coordination with Indian Tribal Governments*; the DoD American Indian and Alaska Native Policy, and Alaska Implementation Guidance; and the Department of the Army American Indian and Alaska Native Policy.

The Army will review and consider comments received during the public comment period. At the conclusion of the public comment period, once comments have been considered and resolved if necessary, the Army may execute the FNSI and proceed with the Proposed Action.

1.8 COOPERATING AGENCIES

NEPA mandates that federal agencies responsible for preparing NEPA analyses and documentation do so “in cooperation with state and local governments” and other agencies with jurisdiction by law or special expertise (42 U.S.C. §§4331(a), 4332(2)). The CEQ regulations addressing cooperating agency status (40 CFR §§1501.6 and 1508.5) allow federal agencies (as lead agencies) to invite tribal, state, and local governments, as well as other federal agencies, to serve as cooperating agencies in the preparation of EAs. Since the PEA addresses potential impacts of implementing the RPMP on Fort Wainwright Main Post and development of the plan included various Army, federal and state organizations, no formal cooperating agency requests were made. Various Army organizations have been involved in the development of the ADPs for Fort Wainwright, including USARAK 17th Combat Sustainment Support Battalion, USARAK Aviation Task Force, Network Enterprise Center 59th Signal Battalion, and 1/25th SBCT, and will be reviewers of the PEA as it is prepared.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 PROPOSED ACTION

The RPMP was developed using a collaborative approach to identify and incorporate stakeholder preferences, identify and consider site limitations and benefits, and provide a community that maximizes mission readiness and environmental stewardship (DoD 2012, 2013). The Unified Facilities Criteria (UFC 2016) 2-100-01 on Installation Master Planning (DoD 2012) establishes a consistent approach for master planning across the DoD, while AR 420-1, Chapter 10, provides the specific guidance for Army installations. The RPMP is sufficiently flexible to permit installation expansion, accommodate reduction and changes in mission, and ensure that installation assets can meet mission requirements. The RPMP is the road map to ensure installation real property supports long-term mission requirements. A well-prepared RPMP expresses a long-term commitment to provide a high-quality, sustainable, and enduring installation. It covers a 25-year planning horizon and provides the map to executing that commitment (DoD 2012, 2013).

The RPMP establishes long-term strategies to guide the physical development of Fort Wainwright. The Proposed Action provides areas to accommodate new mission growth, provides additional administrative, storage, and parking facilities, and incorporates known design requirements that were identified during the planning process. It also maintains the installation's design vision in creating an energy-efficient installation with compact districts, versatile buildings, and interconnected transportation networks. The plan will be reviewed on an annual basis to address necessary mission changes. Any changes to the plan will be reviewed to determine they fall within the scope of this PEA, or if additional NEPA analysis will be required. This plan also incorporates BMPs and SOPs that, when applied, further reduce potential environment impacts resulting from implementation of the RPMP. The RPMP is composed of five components, which are: (1) the Vision Plan, which includes the Framework Plan and Network Plans; (2) the Installation Planning Standards; (3) the ADPs, which include Regulating Plans, Transportation Plans, and Illustrative Plans as ADP components; (4) the Capital Investment Strategy; and (5) the Plan Summary.

2.1.1 Vision Plan

The RPMP planning process was a collaborative effort between USAG FWA and USARAK leaders and personnel, and local stakeholders (e.g., Fairbanks North Star Borough [FNSB] Planning Commission, Bureau of Land Management [BLM] – Alaska Fire Service). The planning effort took shape during the development of the Fort Wainwright Real Property Vision Plan. The Vision Plan includes vision statement, goals and objectives, rights and blights of each ADP, field building assessments, and plant palette for vegetative guidelines. Along with creating a vision, this undertaking also established four design goals that were incorporated in the vision statement and were further refined through the development of the planning objectives. The goals outlined in the vision plan include:

Goal 1: *Energy Efficient Installation – In aspects of planning for Fort Wainwright, energy-efficiency should be paramount to ensure the installation's viability in an era of fiscal uncertainty.*

Goal 2: *Compact Districts – Compact development creates sustainable installations through measures including consolidation, multi-use, multi-story buildings, and walkability.*

Goal 3*: Versatile Buildings – The planning of buildings concerns much more than housing a function, and buildings at Fort Wainwright should be used to enhance architectural themes, encourage compact development, preserve cultural heritage, and enhance force protection, among other things.*

Goal 4: *Interconnected Transportation Networks – Transportation at Fort Wainwright should incorporate many different characteristics and not focus on automobiles, but include public transportation, sidewalks and paths, and include the installation Access Control Points (ACPs) in the design.*

2.1.2 Area Development Plans

The bulk of the installation planning efforts should occur at the scale of an ADP district. The Fort Wainwright districts are identified as Chena North, North Post, Ladd Airfield, West Post, and South Post (see Figure 1-3). This section summarizes the most recent results of master planning efforts for each ADP district, and this information shapes the programmatic impact analysis relative to potential development within each ADP district. The executive summaries of each ADP are included in Appendix A. In accordance with EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, future development would attempt to reduce the consumption of fuel, energy, water, and other resources; maximize the use of existing facilities; and reduce the footprint of unnecessary or redundant facilities and infrastructure. In the future, if Fort Wainwright's mission requirements were to change, the ADP and Regulating Plan would be altered to reflect overall installation changes and requirements. As such, information presented on the ADP districts is relatively general to allow the installation greater flexibility to accommodate installation and mission requirements. Each ADP includes a regulating plan, illustrative plan, and proposed transportation projects.

Regulating Plan - A Regulating Plan is a component of each ADP. The Regulating Plan is the controlling document and principal tool for implementing the installation's form-based code. A form-based code regulates the key elements of the Illustrative Plan, such as parking, facility function, green space, building types, height, set-backs, circulation patterns, landscaping, and land use. The Regulating Plan serves as the guiding element to ensure future development meets the design intent of the Illustrative Plan through the development and application of land use standards. The use of a form-based code allows Fort Wainwright to exercise more control in the development process. It is a tool to ensure that building development supports Fort Wainwright's vision, goals, and principles. Form-based codes promote mixed-use, compact, and walkable

development patterns, rather than traditional auto-oriented, segregated land uses. Form-based codes emphasize spatial principles that support sustainable development, making building form and character the most important factor, and building use secondary. The use of form-based code is reflected in both the Regulating Plans for building and street standards and the Illustrative Plans that graphically illustrate potential development. A Regulating Plan was developed and applied to each ADP discussed below.

Transportation Plan - A transportation planning report was prepared in 2009 (USKH, 2009) to address potential future growth at Fort Wainwright and to determine what measures would be necessary to maintain traffic operations at base intersections at acceptable levels of service. Three distinct issues were analyzed and addressed in the report: traffic operations, traffic safety, and pedestrian circulation. To address traffic operations, the existing base traffic network was modeled and future growth estimates were factored in, which resulted in anticipated traffic growth rates for base roads. These growth rates were used to predict future traffic volumes, which were then analyzed for level of service deficiencies and potential circulation improvements. An evaluation of base pedestrian facilities was also conducted. In general, pedestrian facilities should provide connectivity between existing and new pedestrian facilities, provide controlled crossings between pedestrian traffic generators, and provide pedestrian access between areas of common work or recreational interest. The results of the study were incorporated into transportation planning within each ADP, the transportation standards in each Regulating Plan, and transportation network vision, improvement and development.

Illustrative Plan - The Illustrative Plan is a component of each ADP. It shows one possible outcome for development in each of the respective ADPs. The individual Illustrative Plan for each ADP was developed by installation leadership and stakeholders. This plan integrates the ADPs for each district into one overall plan for the installation. The individual plans were analyzed as a whole to ensure that the known requirements for the installation are sited and that planning for each district balances the others. The final layout of the installation would likely vary from this plan in some details such as specific building footprints and parking layouts; however, the Illustrative Plan provides the framework for future programming and siting. Illustrative Plans for the individual ADPs provide a detailed diagram of proposed land uses.

In addition to the illustrative plan preferred alternative identified in the ADP, the installation conducted a capacity analysis to determine the maximum developmental capacity of the district. This analysis provides installation planners and leadership additional flexibility to accommodate future mission changes or growth. The illustrative plan incorporates current and future known mission requirements while the capacity plan identifies areas of development if the need arises in the future. For this reason, the capacity plan is considered speculative at this time and is not analyzed in this PEA.

The vision and goals for each ADP, as well as a brief description of proposed development, are as follows:

2.1.2.1 Chena North District ADP

Vision: An adaptable area that leverages the natural landscape to support readiness and preserves local resources for multi-faceted training, paired with compatible installation services and recreational opportunities.

- ***Goal 1****: Leverage the Natural Landscape – Incorporate the natural topography and natural resources to enhance training capabilities and provide safe recreational spaces for a variety of users across each season.*

- ***Goal 2****: Multi-faceted Training – Improve and expand local training areas that enhance broad-mission training capabilities by increasing access to critical mission assets to improve efficiency.*

- ***Goal 3****: Compatible Installation Services – Improve access to post and increase the capacity of the local transportation network by expanding mission support facilities and installation support services along key transportation corridors.*

- ***Goal 4****: Recreational Opportunities – Improve access to recreational areas by expanding recreational opportunities at Birch Hill and along the Chena River and through improving local Morale, Welfare, and Recreation (MWR) facilities.*

The Chena North District ADP aims to expand the Upper Ammunition Supply Point (ASP), implement a new ACP, mitigate the co-use of joint-training areas, and address appropriate uses for the western part of the ADP adjacent to the outside community. The Chena North District ADP is shown in Figures 2-1, 2-2, 2-3, and 2-4. Figure 2-1 shows the Chena North regulating plan and provides a frame of reference for specific zoning and how proposed projects correspond to regulating standards. Figures 2-2, 2-3, and 2-4 depict the implementation timeframe of specific projects.

In order to co-locate functions and reduce safety risks within the built-up area of the Main Post, Fort Wainwright is proposing to expand the Upper Ammunition Supply Point and to relocate the Lower ASP to this area The Upper ASP area can reasonably accommodate the explosive weight capacity of the Lower ASP to support relocation of this infrastructure away from the built-up environment; given its remote and undeveloped setting, the Upper ASP would be a more appropriate use of the area than the Lower ASP location. In tandem with expanding the Upper ASP, road upgrades, involving paving and realignment, would be made to improve accessibility and the safety of munitions.

To better improve accessibility and safety in and around the Chena North District ADP, and the installation in general, the Trainor Gate ACP would be closed and a new ACP would be constructed on Canol Road. Trainor Gate does not currently meet AT/FP standards and is ill-suited to accommodate a larger throughput due to its single-lane configuration. It experiences traffic back-up when railroad activity interrupts traffic flow east of the gate. The closure of Trainor Gate would also improve the safety of students and parents in the nearby elementary and

middle schools by minimizing the number of vehicles on Trainor Road. The new ACP would be designed for multi-lane vehicular access and would promote a more direct route to the Birch Hill ski area and other recreational spaces.

As part of the Chena North District ADP, the cross-country ski trails to the north encompass a large portion of the ADP and are frequently utilized for both training and public recreation. Because of this duality of uses and users, conflicts have occurred. To help mitigate conflicts, sections of recreational/training area have been designated for different types of recreational/ training uses. For instance, the joint-use training area farthest west would be appropriated for ungroomed Nordic training trails while the joint-use training area to the north would be maintained for groomed Nordic training trails and a dedicated area for biathlon training.

In the long term, the Birchwood Housing area would be removed and installation support services, such as staging and storage facilities, would be constructed in its place. This is a leased area and the lease will end in 2024. The focus of the Chena North District is for close-in training abilities; as a result, privatized housing is not a recommended use for this area. In addition, land adjacent to the installation's periphery, and to the outside community, would be designated as open vegetated buffer zone to maintain a healthy distance between military operations and the outside community.

The executive summary of the Chena North District ADP is included in Appendix A of this PEA. The implementation time frame for the Chena North District ADP would be 0 to 5 years (short- term), 6 to 15 years (mid-term), and 16 to 25 years (long term) (see Figures 2-2, 2-3, and 2-4).

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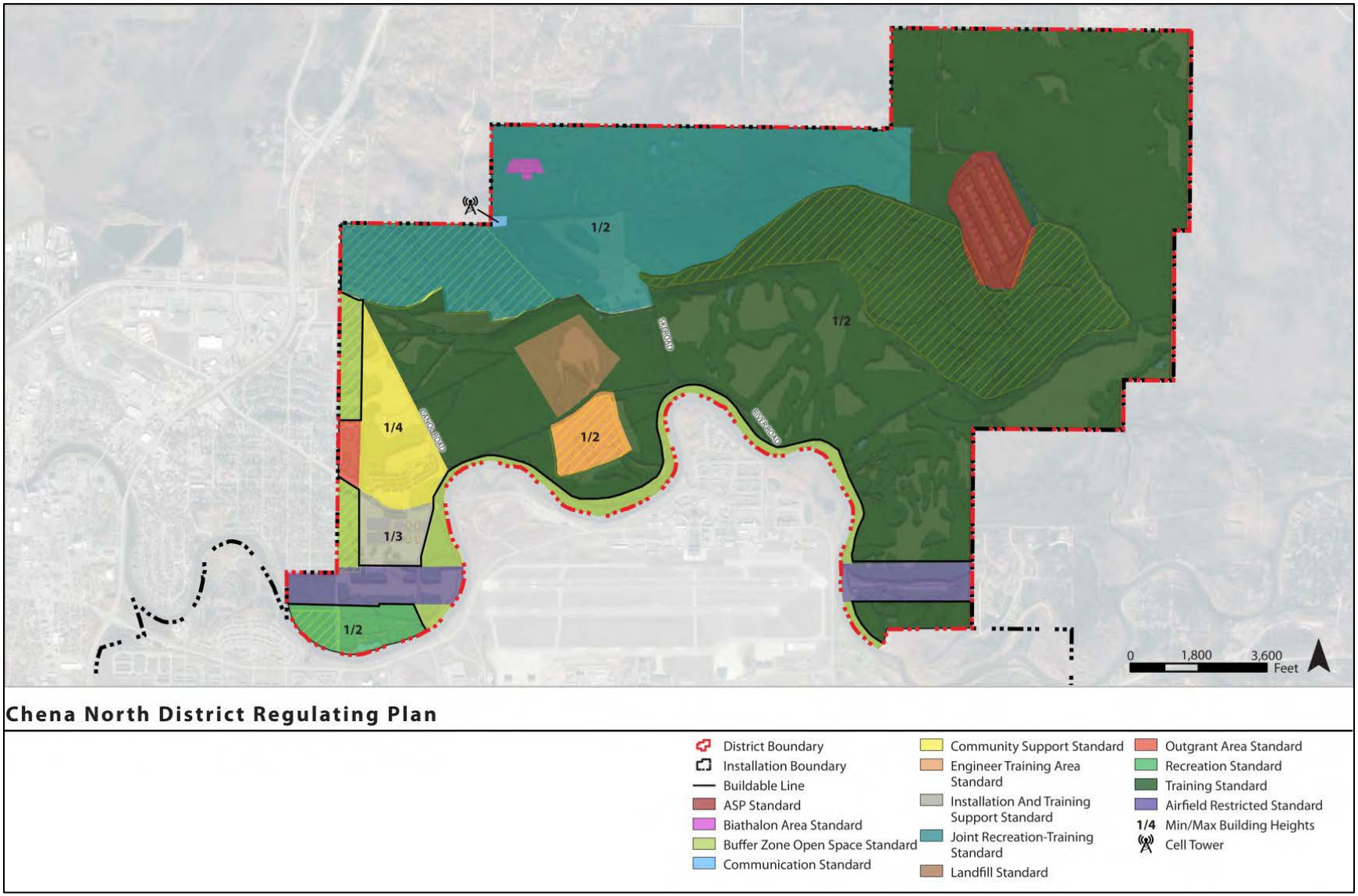

Figure 2-1. Chena North District Regulating Plan

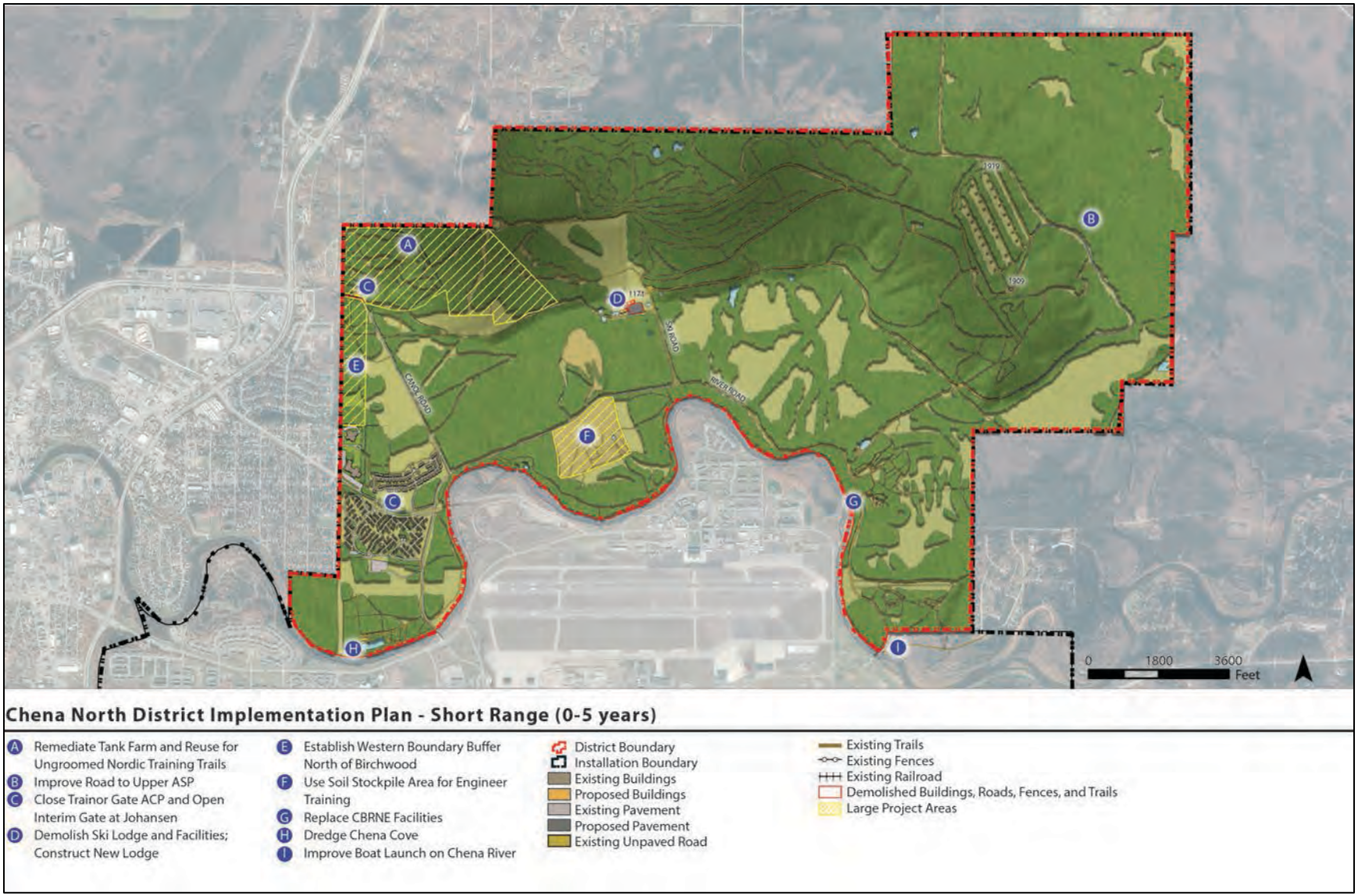

Figure 2-2. Chena North District Implementation Plan Short-Range (0-5 years)

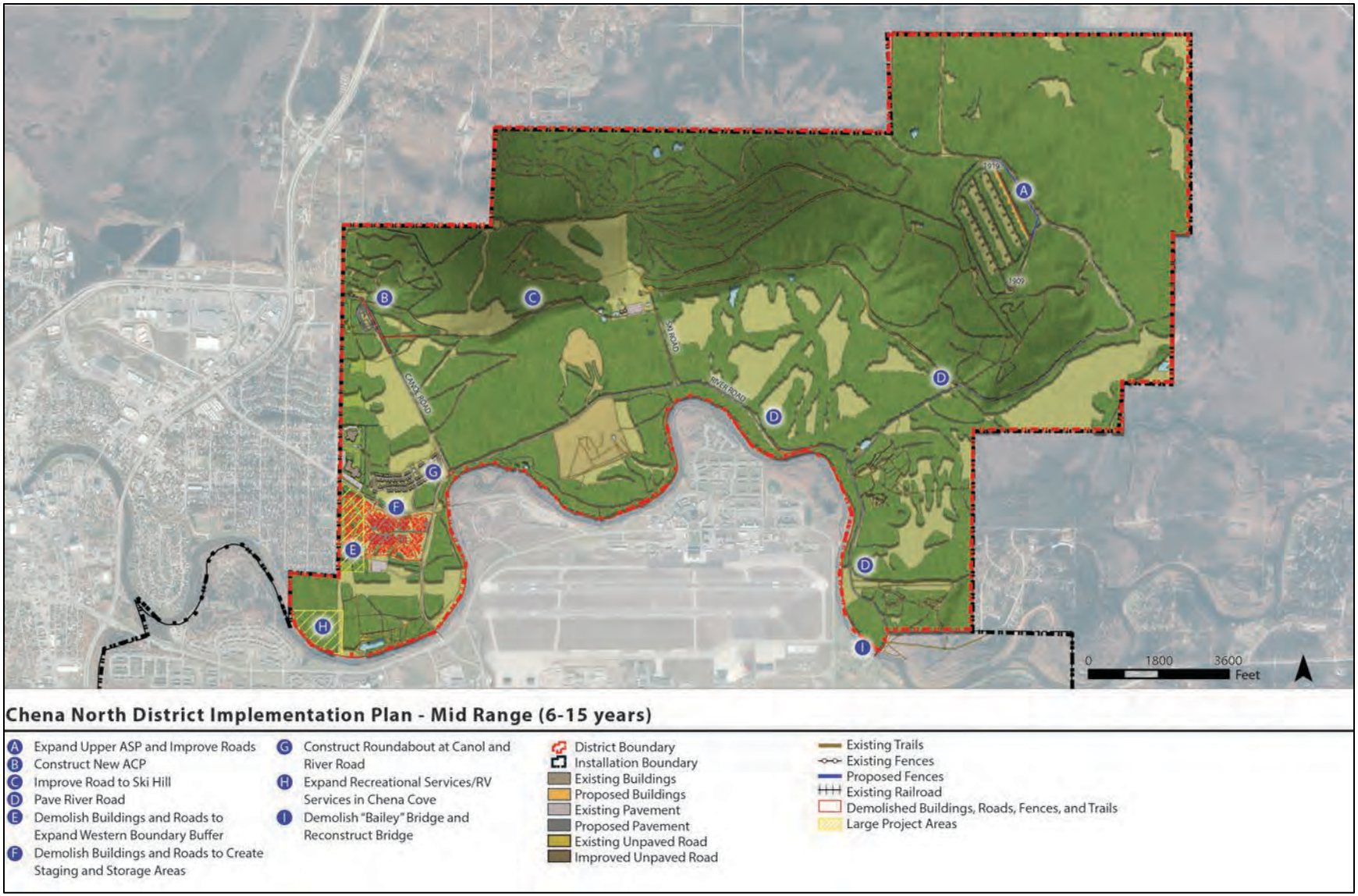

Figure 2-3. Chena North District Implementation Plan Mid-Range (6-15 years)

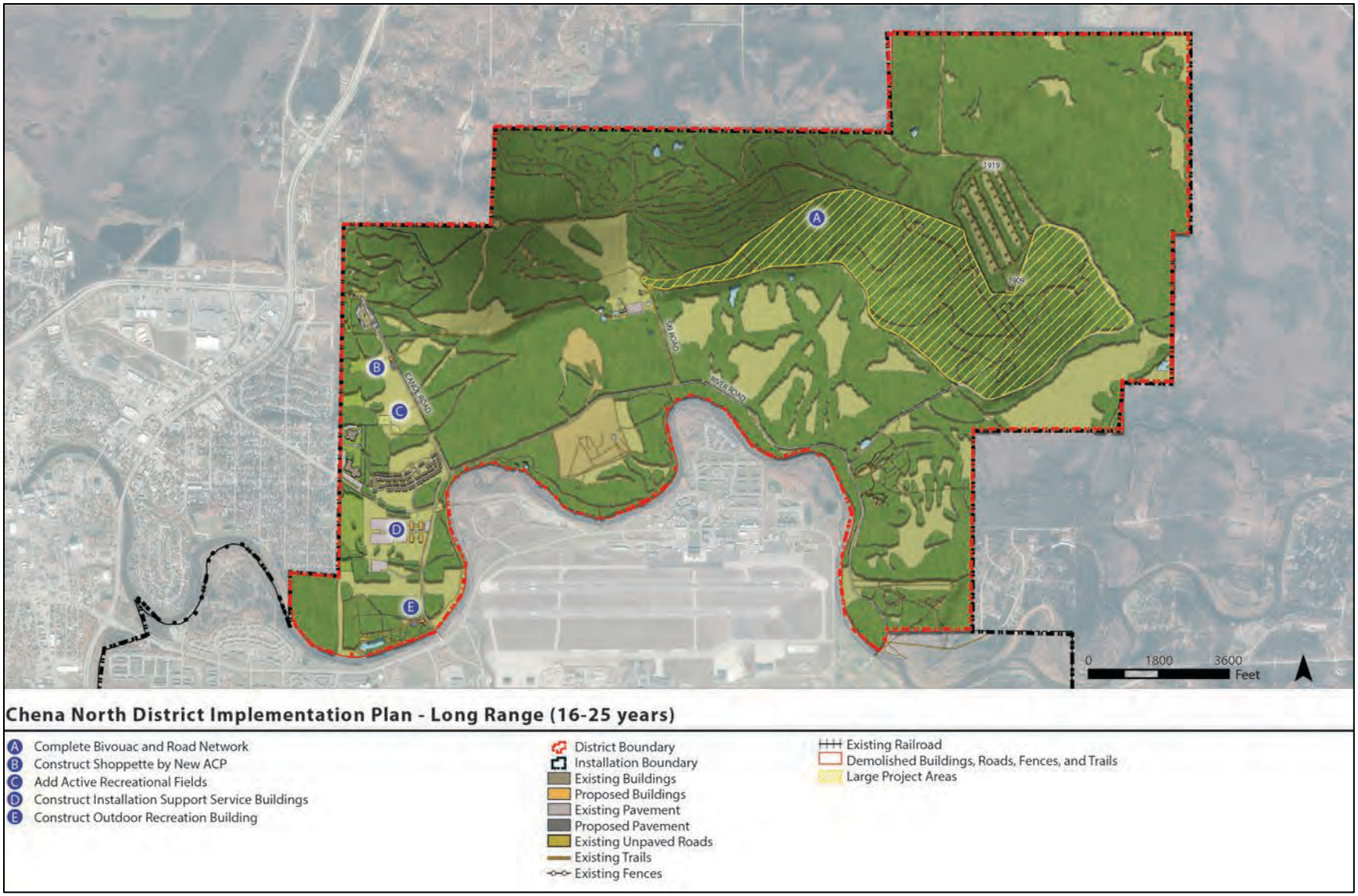

Figure 2-4. Chena North District Implementation Plan Long-Range (16-25 years)

2.1.2.2 North Post District ADP

Vision: A mixed-use campus with energy-efficient, flexible, and adaptable infrastructure well connected by great streets and multi-use paths that preserves the heritage of the district.

- ***Goal 1****: Mixed-Use Campus – Provide a connected mixed-use campus that is safe, convenient, and comfortable in the Arctic environment.*

- ***Goal 2****: Energy-Efficient, Flexible, and Adaptable Infrastructure – Provide infrastructure (buildings, utilities, and roads) that is energy-efficient, flexible, and adaptable.*

- ***Goal 3****: Great Streets and Multi-Use Paths – Provide a network of "great streets" and multi-use paths by implementing strategies that enhance transportation and environmental infrastructure and support pedestrian, bicycle, and transit movement. "Great streets" advance both beauty and functionality, as well as the practice of context sensitive design.*

- ***Goal 4****: Preserves the Heritage – Celebrate and preserve the heritage of the district by maintaining, enhancing, and promoting historic buildings, views, assets, and other character-defining features.*

The North Post District ADP supports the improvement of energy efficiency of installation structures; creates a unified river trail system; repurposes the historic asset of the Ladd Field Chapel; relocates Development Test Command (DTC) outside of the housing area; provides for a motor pool, organizational parking, and vehicle maintenance facility; provides improved dining options; connects Apple Road with Marks Road and provides improved vehicle parking; and improves Gaffney Road for pedestrian use. Older outdated structures would be assessed or re-purposed for reuse or demolished to allow developable area for new consolidated facilities to be constructed. The contributing resources to the National Historic Landmark (NHL) would be assessed for future use in accordance with the National Historic Preservation Act (NHPA). Proposed changes to the North Post District will be done in consultation with the Cultural Resources Manager for guidance on appropriate considerations for new construction, renovation, demolition and landscaping within and adjacent to the Ladd Field National Historic Landmark, per the *Design Guidelines for Ladd Field World War II National Historic Landmark Fort Wainwright, Alaska, 2012*; *Army Installation Design Guide: Fort Wainwright, 2006*; *Unified Facilities Criteria DoD Building Code, 2016*; and *Integrated Cultural Resources Management Plan, 2013*. Figure 2-5 shows the North Post regulating plan and provides a frame of reference for specific zoning and how proposed projects correspond to regulating standards. Figures 2-6, 2-7, and 2-8 depict the implementation timeframe of specific projects.

The executive summary of the North Post District ADP is included in Appendix A of this PEA. The implementation time frame for the North Post District ADP would be 0 to 5 years (short-term), 6 to 15 years (mid-term), and 16 to 25 years (long-term) (see Figures 2-6, 2-7, and 2-8).

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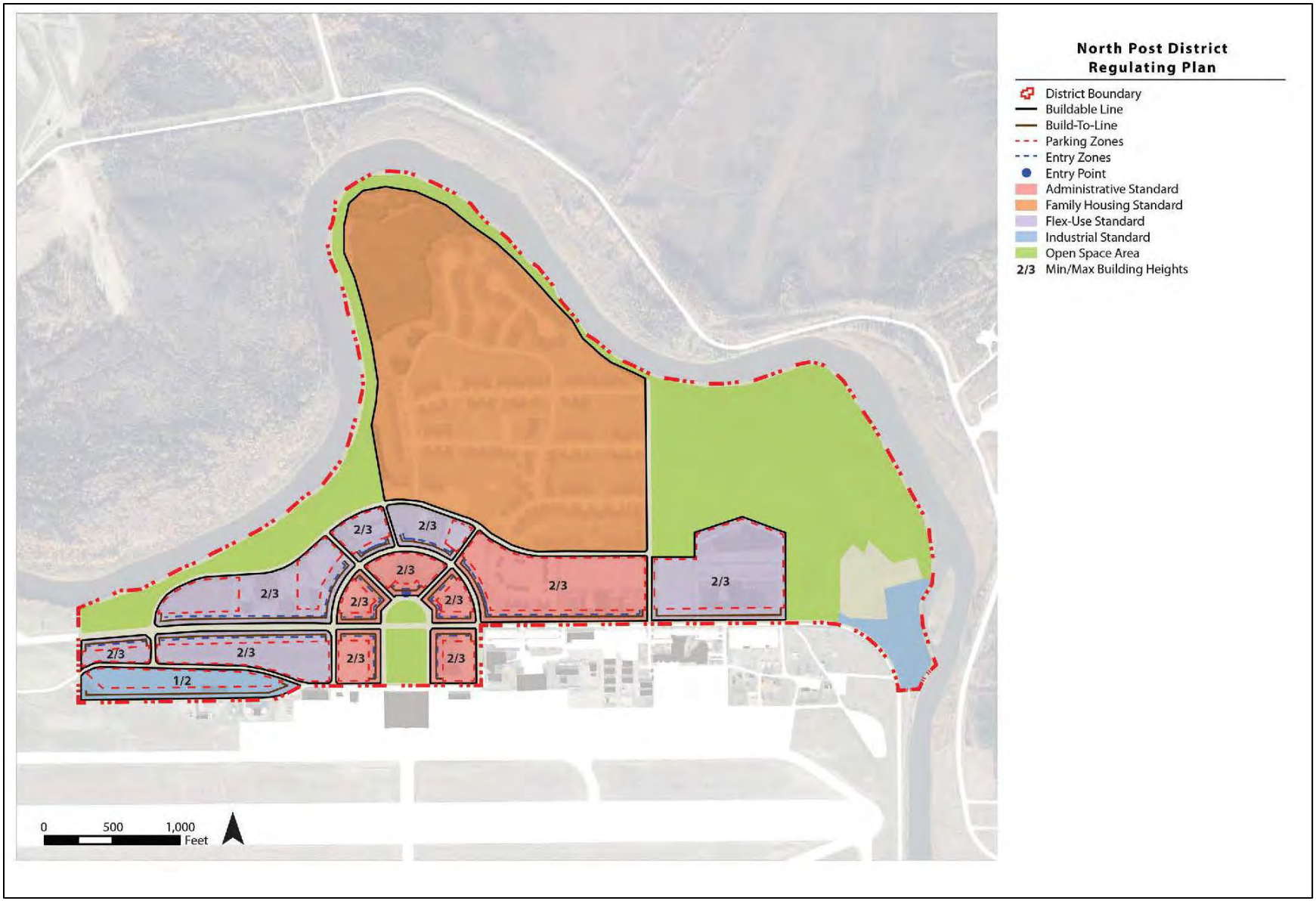

Figure 2-5. North Post District Regulating Plan

Figure 2-6. North Post District Implementation Plan Short-Range (0-5 years)

Figure 2-7. North Post District Implementation Plan Mid-Range (6-15 years)

Figure 2-8. North Post District Implementation Plan Long-Range (16-25 years)

2.1.2.3 Ladd Airfield District ADP

Vision: A full-service, year-round airfield capable of supporting manned and unmanned aerial systems to enable readiness and force projection for DoD and entrusted partners.

- ***Goal 1****: Present a Full-Service, Year-Round Airfield – Provide a cold region-capable airfield supporting manned and unmanned aerial systems by maximizing ground support, runway use, and aviation maintenance capacity.*
- ***Goal 2****: Enable Readiness – Provide infrastructure and facilities that support airfield operations and serve as a platform for training and access to the Joint Pacific Alaska Range Complex (JPARC) and the surrounding environment.*
- ***Goal 3****: Support Force Projection – Serve as an airfield capable of aerial deployments with infrastructure and resources for worldwide embarkation and debarkation.*

The Ladd Airfield District ADP is shown in Figures 2-9, 2-10, 2-11, and 2-12. Figure 2-9 shows the Ladd Airfield regulating plan and provides a frame of reference for specific zoning and how proposed projects correspond to regulating standards. Figures 2-10, 2-11, and 2-12 depict the implementation timeframe of specific Ladd Airfield projects.

The Ladd Army Airfield serves the National Guard, BLM-Alaska Fire Service, the Shadow Tactical Unmanned Aircraft System (TUAS), and the soon-to-be complete Gray Eagle Unmanned Aerial System (UAS) facility. The airfield has two runways; the north runway is 8,575 feet long and the south runway is currently 7,280 feet long. The south runway is proposed to be extended approximately 1,600 feet for a total length of 8,800 feet. Planning for the current tenants and needed space requires additional hangars and renovation of existing hangars, proper runways, taxiways, launch pads, and fueling capacity. The ADP depicts an extension of the southern runway to properly serve UAS. In addition, the ADP outlines a launch pad for TUAS, and increased fueling capacity for the airfield. Renovation of Hangars 1, 7, and 8 would provide additional capacity for the National Guard and other tenants, and the construction of additional facilities fulfills the necessary requirements for Heavy Expanded Mobility Tactical Trucks (HEMTT), aviation simulators, and base operations. Any actions proposed by BLM have been or will be addressed in BLM NEPA documentation.

The Ladd Army Airfield District ADP incorporates the realignment of Montgomery Road and traffic circles for enhanced crosswalks consisting of raised pavement, lighting, and reflective signage at highly active pedestrian points along Montgomery Road.

Cold weather services would be enhanced with the construction of an aircraft deicing facility. The Regulating Plan provides areas north of the northern runway to construct two additional tenant hangars and a hangar for Battalion growth south of the southern runway. The old rail yard is also available for future development.

The Regulating Plan provides for extending the northern runway and constructing a C-17 ramp to accommodate future tenants. It also allows for creating a Deployment Passenger Assembly Point by renovating Buildings 2107 and 2110. Gaffney Road would be converted to be an

internal service road making the airfield more accessible internally and more secure within Fort Wainwright.

Proposed changes to the Ladd Airfield District will be done in consultation with the Cultural Resources Manager for guidance on appropriate considerations for new construction, renovation, demolition and landscaping within and adjacent to the Ladd Field National Historic Landmark, per the *Design Guidelines for Ladd Field World War II National Historic Landmark Fort Wainwright, Alaska, 2012*; *Army Installation Design Guide: Fort Wainwright, 2006*; *Unified Facilities Criteria DoD Building Code, 2016*; and *Integrated Cultural Resources Management Plan, 2013*.

The executive summary of the Ladd Airfield District ADP is included in Appendix A of this PEA. The implementation time frame for the Ladd Airfield District ADP would be 0 to 5 years (short-term), 6 to 15 years (mid-term), and 16 to 25 years (long term) (see Figures 2-10, 2-11, and 2-12).

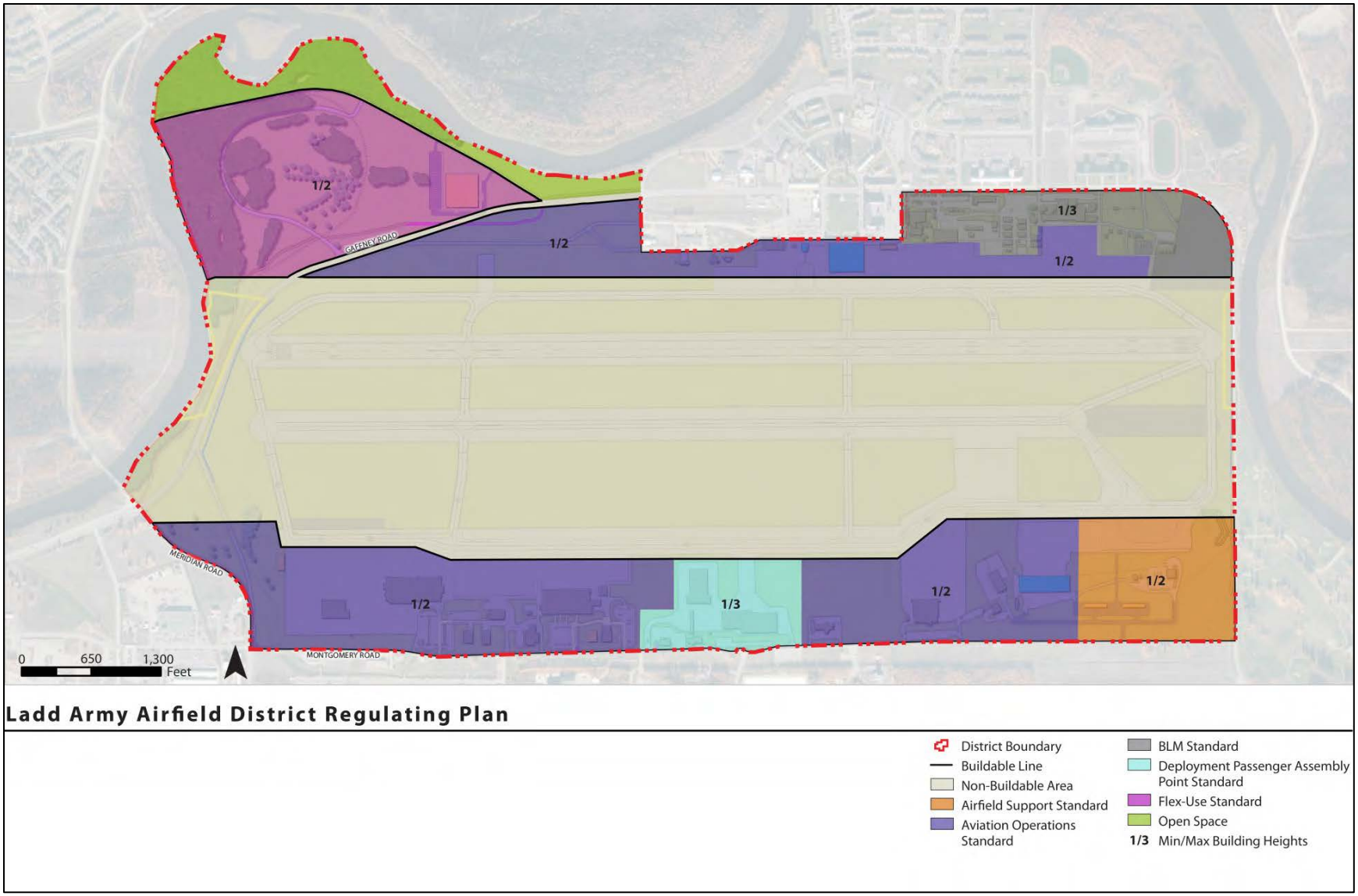

Figure 2-9. Ladd Army Airfield District Regulating Plan

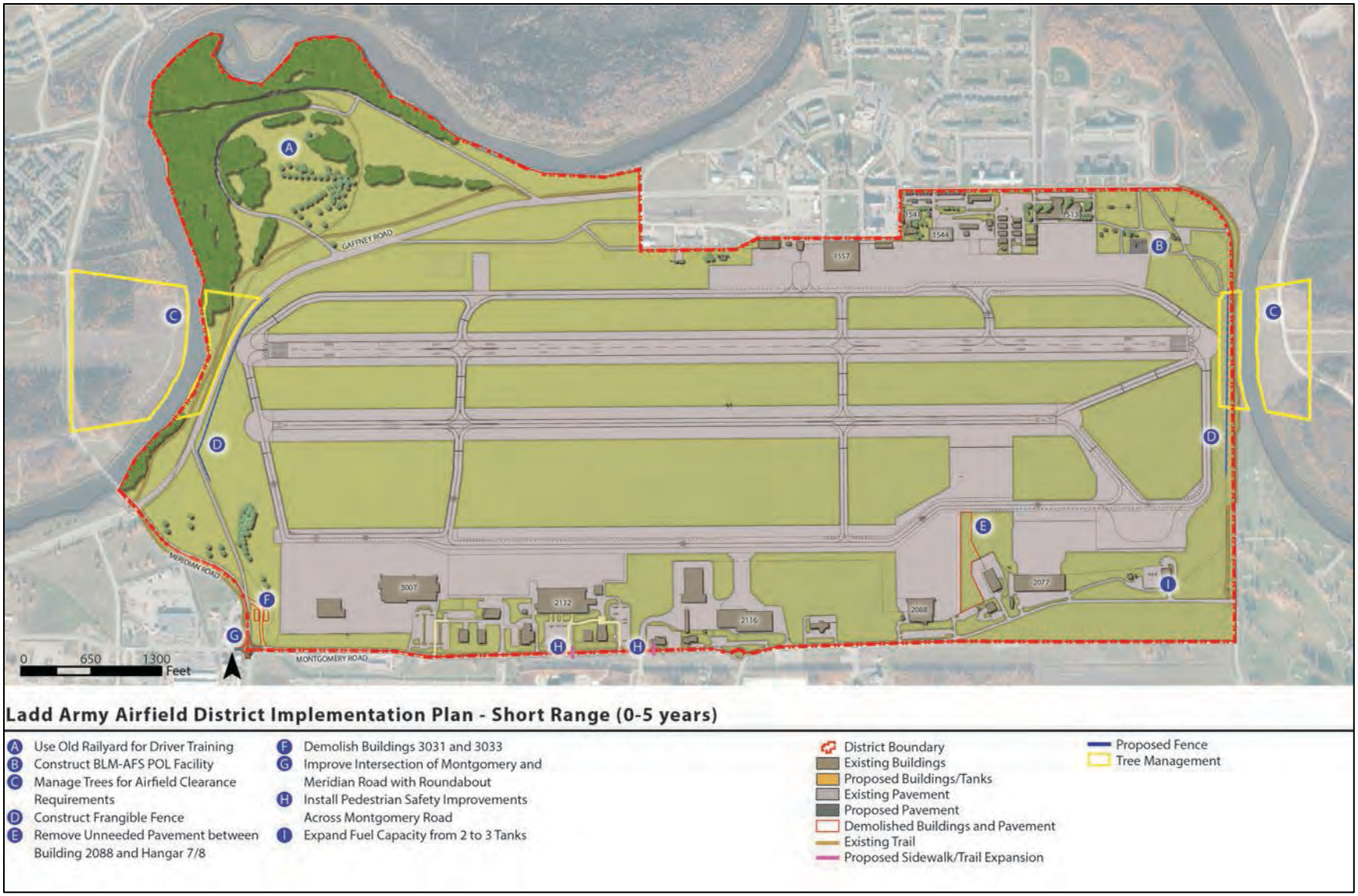

Figure 2-10. Ladd Army Airfield District Implementation Plan Short-Range (0-5 years)

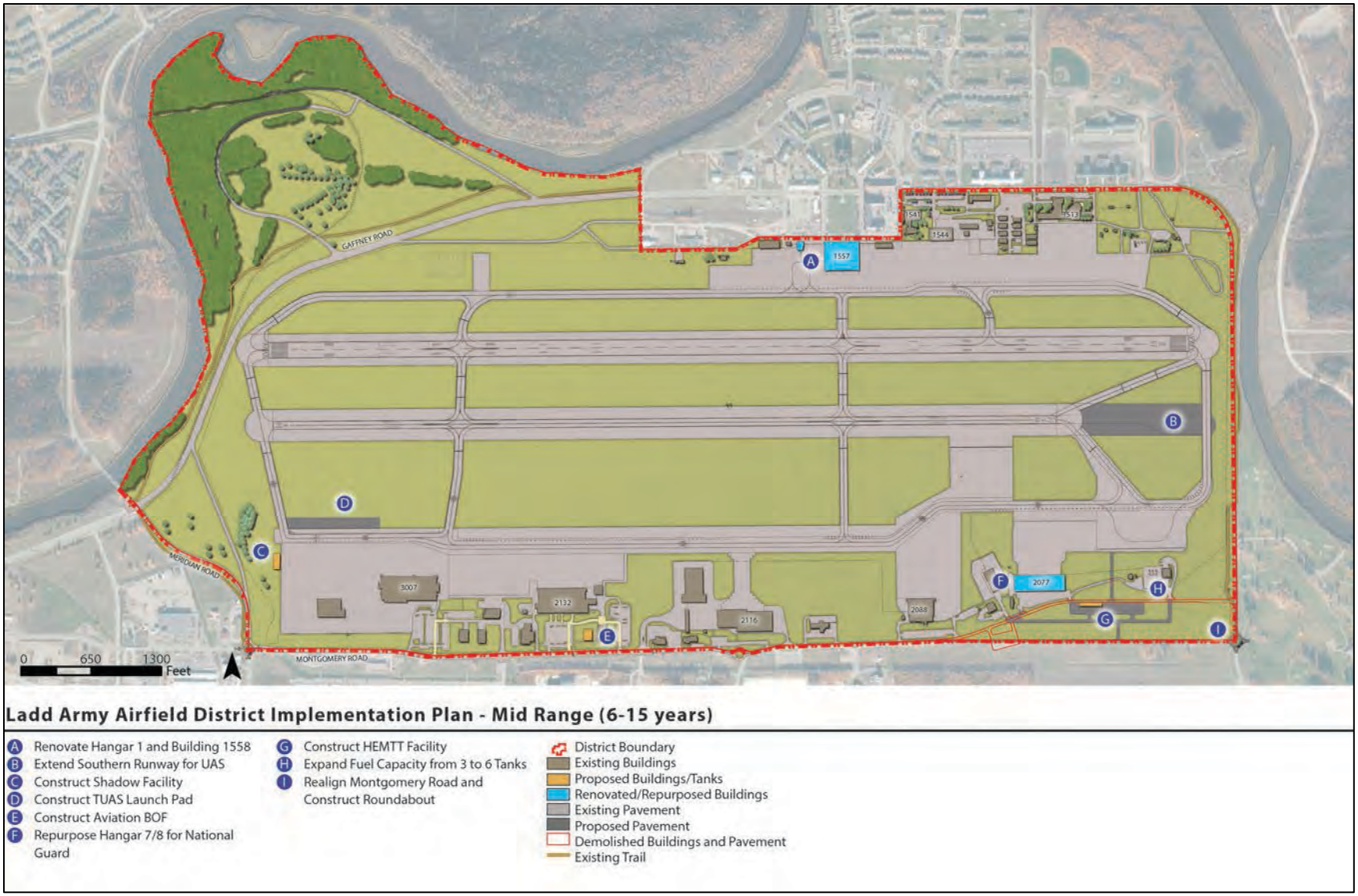

Figure 2-11. Ladd Army Airfield District Implementation Plan Mid-Range (6-15 years)

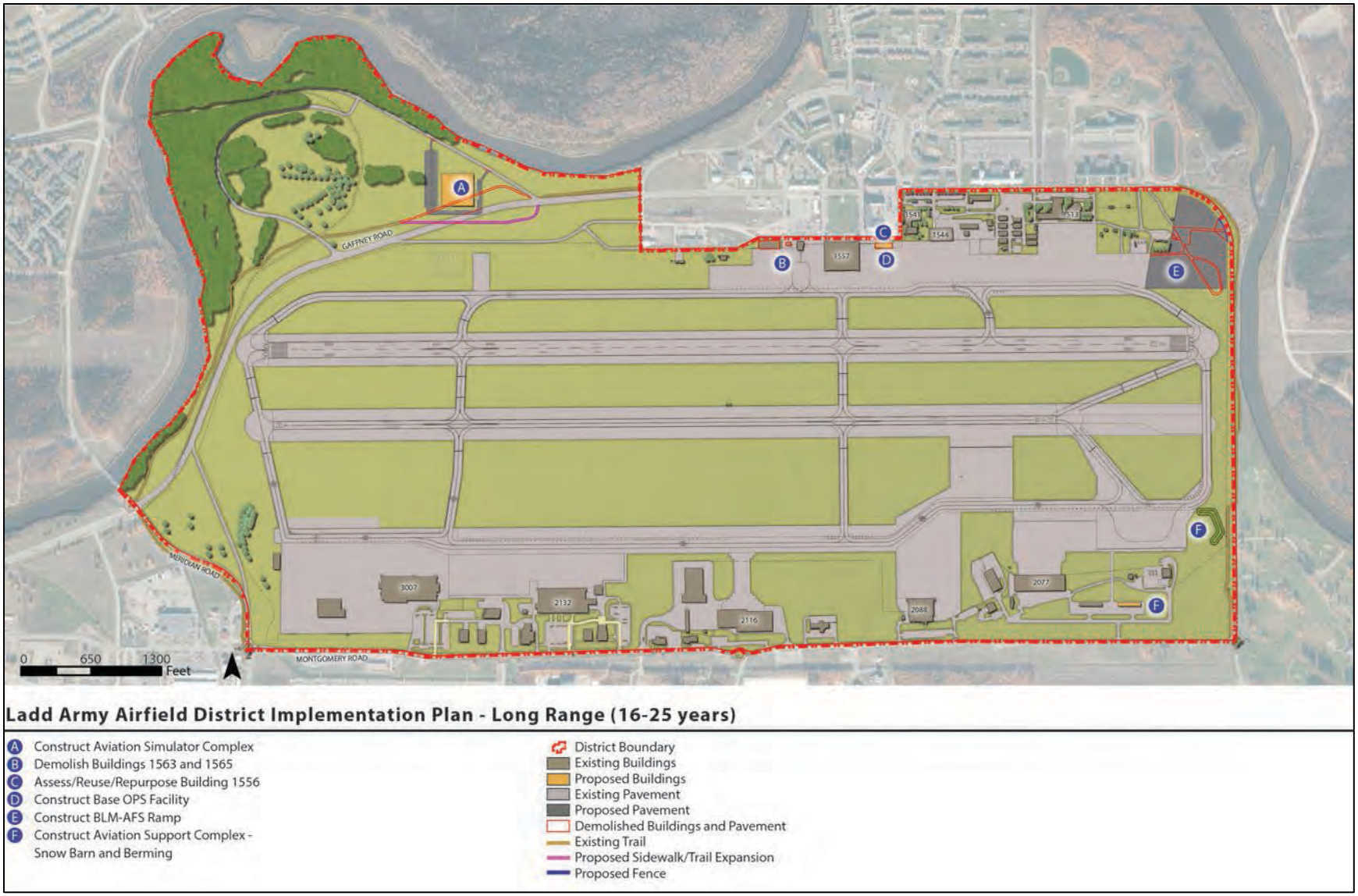

Figure 2-12. Ladd Army Airfield Implementation Plan Long-Range (16-25 years)

2.1.2.4 West Post District ADP

Vision: A family-oriented community connected by pedestrian-friendly streets and sidewalks that promote convenient access to health care, educational, recreational, and community services.

- ***Goal 1****: Family-Oriented Community – Collocate compatible functions such as family housing, child care, education, health care, recreation, and small-scale commercial services to create a welcoming neighborhood.*

- ***Goal 2****: Pedestrian-Friendly Streets and Sidewalks – Provide a network of complete streets equipped with landscape strips, bike paths, wide sidewalks, and lighting.*

- ***Goal 3****: Convenient Access – Provide efficient circulation to include secure, convenient access on, off, and within post.*

The West Post District ADP is shown in Figures 2-13, 2-14, 2-15, and 2-16. Figure 2-13 shows the West Post regulating plan and provides a frame of reference for specific zoning and how proposed projects correspond to regulating standards. Figures 2-14, 2-15, and 2-16 depict the implementation timeframe of specific West Post projects. The West Post District is comprised of mostly family-oriented development ranging from housing, small-scale commercial, schools, medical, and recreational areas that serve all ages. A key objective in planning neighborhoods is walkability. The location of the Main Gate to the west, Bassett Army Community Hospital to the east, Glass Park and neighborhood services to the north, and housing throughout the district creates high-vehicular traffic and unsafe pedestrian conditions along Gaffney Road.

The most prominent short-range proposed projects are the improvements planned for along Gaffney Road. These improvements are planned to be completed in sections, with two sections planned for the short-range. These improvements will include turn lanes installed between Tamarack Drive and 602nd Street and the realignment of Gaffney Road between 9th Street and 10thStreet. These improvements will allow for more direct access into the designated commercial area. Other projects include constructing a pedestrian bridge on Gaffney Road, removal of the current visitor center and the construction of a new Visitors Center at the Main Gate at Gaffney Road.

Mid-range projects include upgrading the ATC at Gaffney Road and improving the Medical Complex. The ASAP building will be demolished and the group will be relocated to the Medical Complex in building 4056. Incompatible functions are removed from the medical complex including the Cold Regions Research Lab. Additional road segments are improved around the Hospital as well as sidewalks along Neely Road to allow for easier access to the Complex.

West Post long-term plans consist of: extending 10th Street to Alder Ave.; developing a new Fire Station and new recreation area on the southern edge of the residential area near the old band building; relocating the RV park and Outdoor Recreation Facility to Chena Cove; demolition of the old Barracks buildings north of Gaffney Road; and relocation of the American Tire business out of the area.

The executive summary of the West Post District ADP is included in Appendix A of this PEA. The implementation time frame for the West Post District ADP would be 0 to 5 years (short-term), 6 to 15 years (mid-term), and 16 to 25 years (long-term) (see Figures 2-14, 2-15, and 2-16).

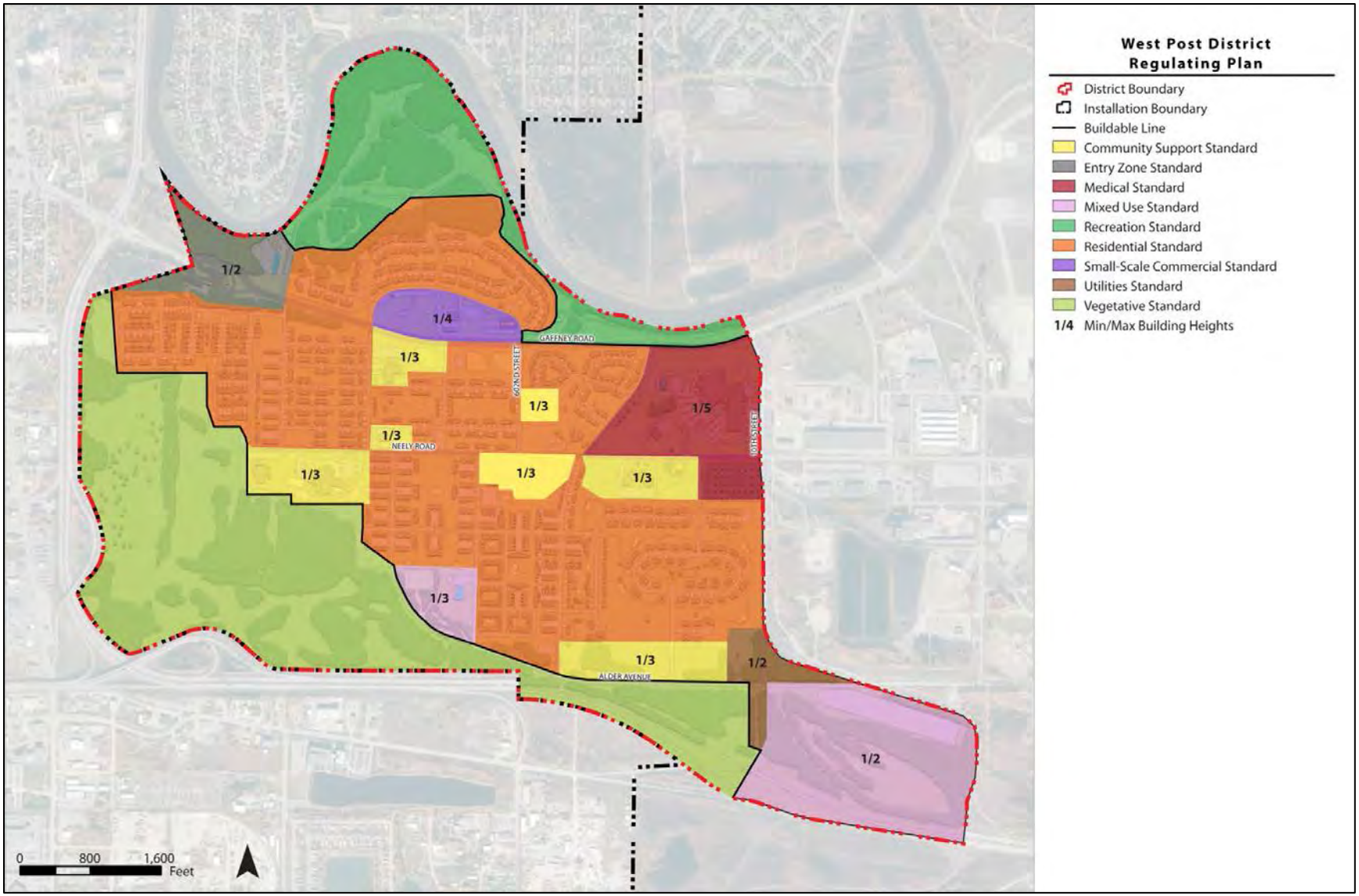

Figure 2-13. West Post District Regulating Plan

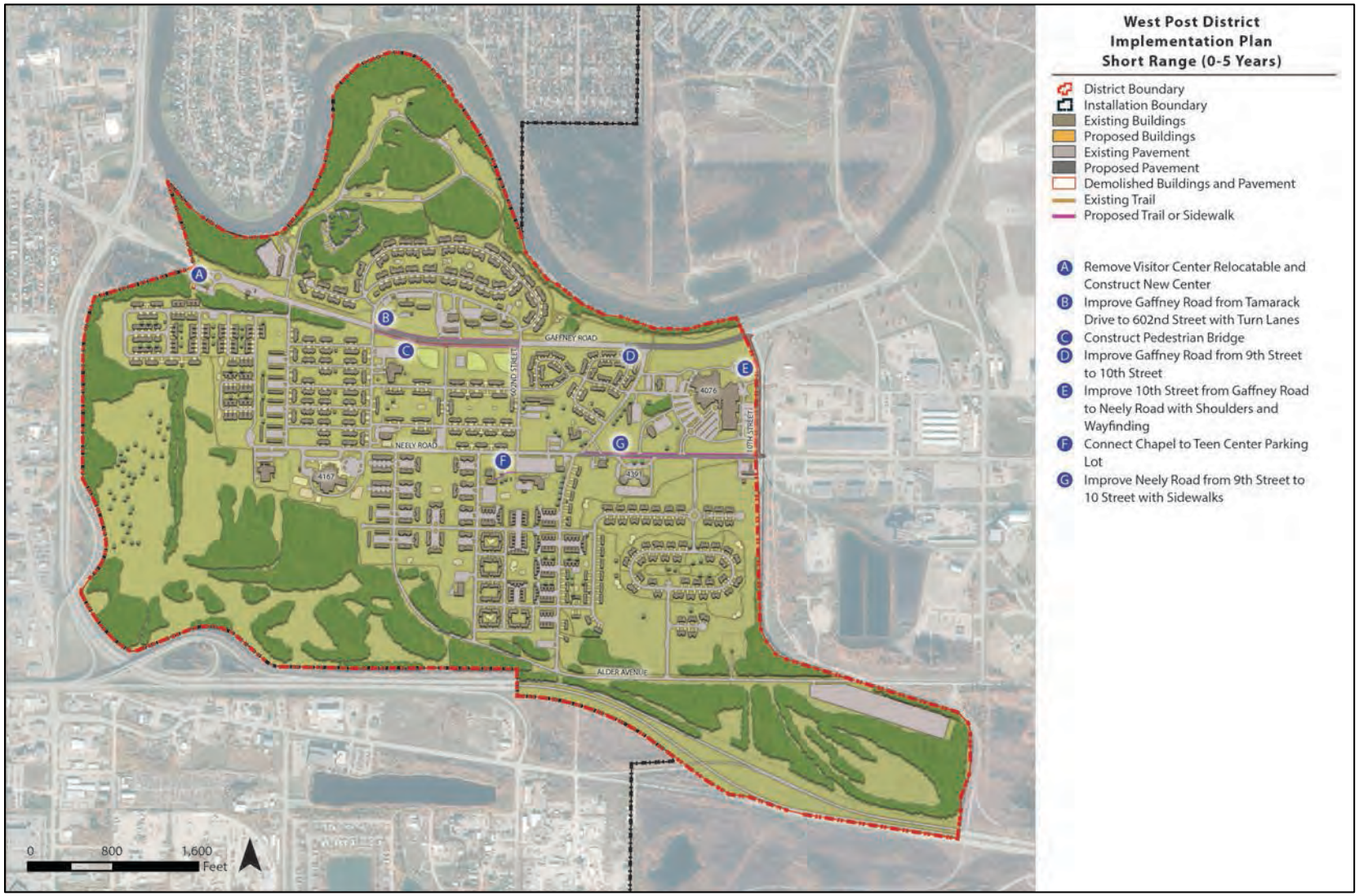

Figure 2-14. West Post District Implementation Short-Range (0-5 years)

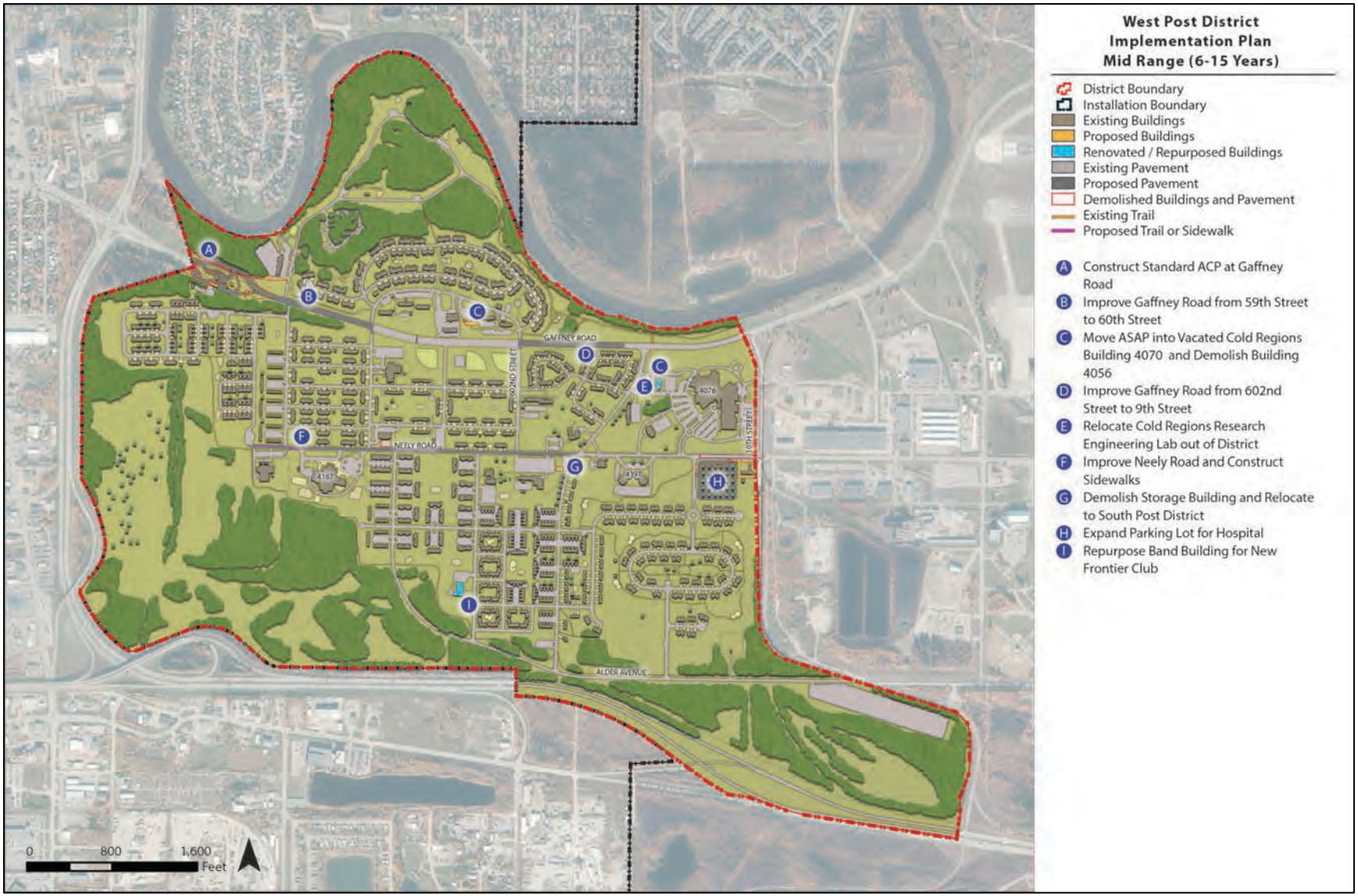

Figure 2-15. West Post Implementation Mid-Range (6-15 years)

Figure 2-16. West Post Implementation Long-Range (16-25 years)

2.1.2.5 South Post District ADP

Vision*: A pedestrian-friendly support center with co-location of compatible functions in support of Soldier and Family readiness.*

- ***Goal 1****: Pedestrian Friendly – Provide a network of complete street strategies that create safe pedestrian environments with separated sidewalks and lighted, connected pathways.*
- ***Goal 2****: Support Center – Provide required functions for the Soldier within walkable areas that are safe, convenient, and comfortable.*
- ***Goal 3****: Co-location of Compatible Functions – Determine optimum land use and locations of facilities to consolidate multiple functions for operations, training, and support.*

The South Post District ADP is shown in Figures 2-17, 2-18, 2-19, and 2-20. Figure 2-17 shows the South Post regulating plan and provides a frame of reference for specific zoning and how proposed projects correspond to regulating standards. Figures 2-18, 2-19, and 2-20 depict the implementation timeframe of specific South Post projects. The South Post District ADP supports the successful achievement of the goals set out in the vision by capitalizing on the strengths and opportunities identified for the area. The South Post District ADP focuses on the need to improve the district's transportation network, including vehicular and pedestrian accessibility. A clear, fluid transportation network fosters smart site planning, regulated uses and organized development, and safety of pedestrians. By creating a Loop Road through the extension of Meridian Avenue, traffic can continue south to access functions located in the southern portion of the district opposed to further increasing the high-volume traffic on Montgomery Road. The loop road extension would also continue to the intersection of Old Badger Road and Rhineland Avenue and north to Old Badger Road and MacArthur Avenue providing better accessibility to western functions. In addition to road realignment, use of roundabouts would improve congested intersections.

Future development would provide sidewalks along roadways in high-pedestrian areas such as the barracks, Company Operations Facilities (COFs)/Battalion Operations Facilities (BOFs), and community support functions improving safety thereby enhancing the proximity of various yet compatible uses. A clear vehicular and pedestrian transportation network supports the major community support services that the entire Fort Wainwright population utilizes. Locating these services near the current Post Exchange (PX) and Commissary area reduces commuting across the district. The existing area is well planned with barracks located to the east and the Physical Fitness Center and ball fields located to the west. This area can be enhanced by relocating similar uses currently in outdated facilities to newly constructed facilities in proximity or to space available in the PX.

The South Post ADP was created within the context of consolidating similar building uses into existing or newly constructed structures and demolishing previous footprints or structures in poor

condition. In particular, the demolition of the relocatable barracks and industrial buildings in poor condition located in the southwestern portion of the district would facilitate growth areas. This demolition provides future development areas for barracks, COFs, and BOFs in the event that Fort Wainwright's mission continues to grow. Filling in Badger Pit provides expansion opportunities for motor pools and related facilities for potential mission growth. Lastly, the realigned roadway network creates future capacity blocks that will have the necessary accessible infrastructure in place (Michael Baker Jr., Inc. – AECOM Joint Venture, 2016c).

The executive summary of the South Post District ADP is included in Appendix A of this PEA. The implementation time frame for the South Post District ADP would be 0 to 5 years (short-term), 6 to 15 years (mid-term), and 16 to 25 years (long-term) (see Figures 2-18, 2-19, and 2-20).

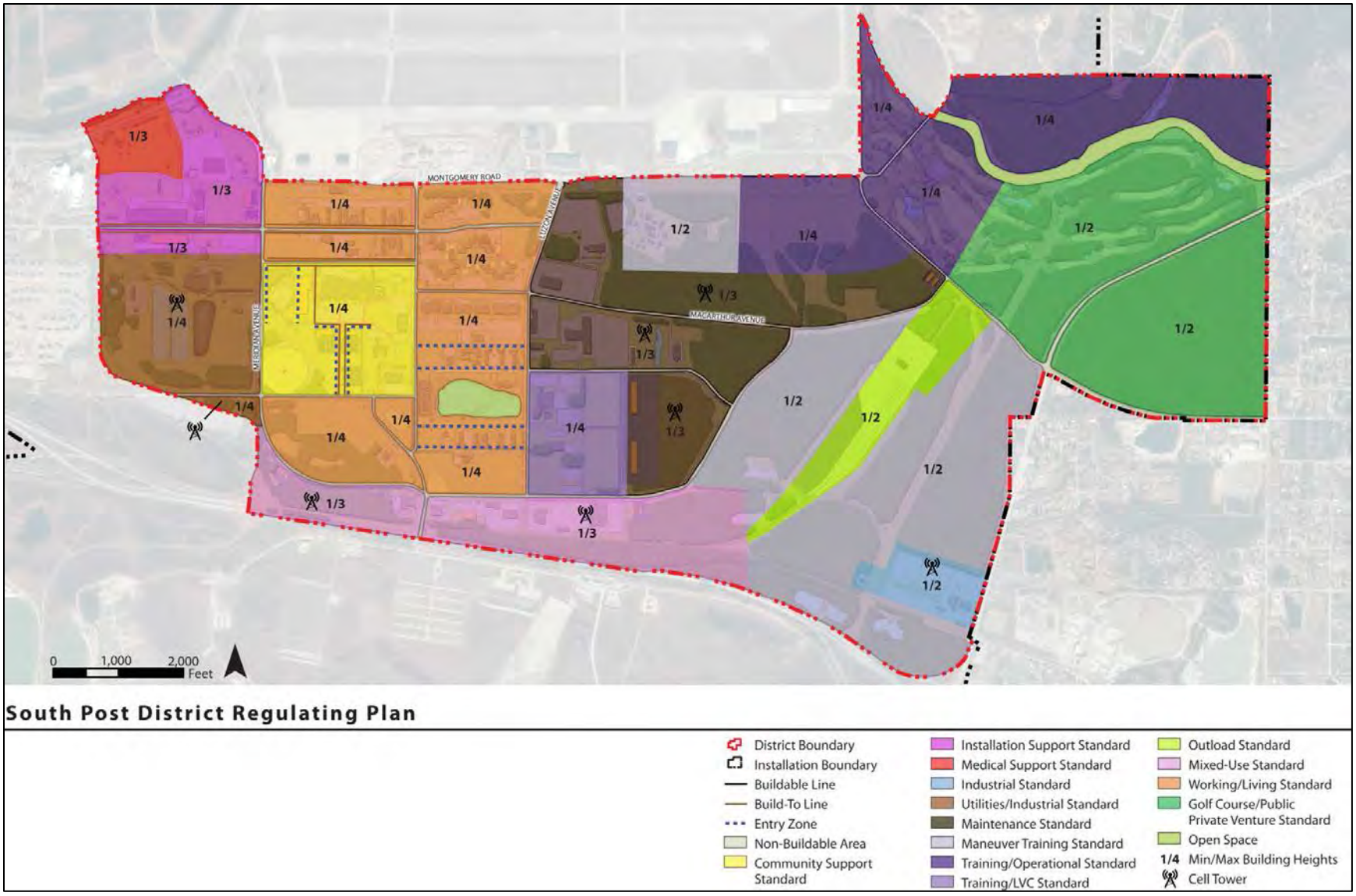

Figure 2-17. South Post District Regulating Plan

Figure 2-18. South Post District Implementation Plan Short-Range (0-5 years)

Figure 2-19. South Post District Implementation Plan Mid-Range (6-15 years)

Figure 2-20. South Post District Implementation Plan Long-Range (16-25 years)

2.1.3 Capital Investment Strategy

The ADPs provide a model for development, and the Capital Investment Strategy is based on these plans. Included within the ADPs are short-, mid- and long-range phasing plans, which provide a map for development. The Capital Investment Strategy uses these plans to provide a list of projects for the base to adopt to realize the plans. Knowing that any plan must be flexible, it is important to note that the phasing plans and the Capital Investment Strategy are recommendations and that, based on funding and mission changes, these plans can change.

2.1.4 Installation Design Principles

The Proposed Action would include adoption of the Fort Wainwright design principles. The design principles capture the installation's guidelines for development of sustainable and efficient facilities and provide a clear set of guidelines to ensure that Fort Wainwright's vision and planning objectives for development are achieved. The design principles include:

Energy Efficient Installation

- Green Space
- Energy Efficient Lighting
- Solar Arrays
- South Facing Windows
- Covered Walks
- Parks
- Climate Specific
- Building Orientation
- Insulation – R-60 in walls; R-90 in roofs
- Proper U-value for doors and windows
- Air-tight building envelope
- Properly designed and maintained HVAC system

Compact Districts

- Centralized Services
- Consolidated Facilities
- Accessibility
- Walkability
- Small Downtown
- Convenient Parking
- Low Maintenance Landscaping
- Quiet Neighborhoods

Versatile Buildings

- Modern Buildings
- Multi-Story Buildings
- Mixed-Use Buildings
- Preserved Heritage
- Safe/Force Protection
- Varied Architecture

Interconnected Transportation Networks

- Tree-Lined Areas
- Connected Roads
- Sidewalks and Paths
- Efficient ACPs
- Public Transportation

2.2 ALTERNATIVES

This section describes the alternatives carried forward for analysis in this PEA. These include the No-Action Alternative and the Proposed Action. The Proposed Action includes the adoption and implementation of the RPMP, and all of its components.

2.2.1 Alternatives Carried Forward for Analysis

2.2.1.1 Alternative 1 – Implement the Fort Wainwright RPMP

Under Alternative 1 (the Proposed Action), USAG FWA would adopt the RPMP and the features described in Section 2.1, including the Vision Plan, the ADPs with associated Regulating, Illustrative and Transportation Plans, and the Capital Investment Strategy. Through this programmatic EA (PEA) the overall environmental impacts of the RPMP are assessed, allowing future development to take place under a process that allows for tiered NEPA review of specific future projects as they are developed and implemented.

The RPMP is the set of physical products that result from the visioning, analysis, and design phases of the planning process. The Preferred Alternative, shown in the Illustrative Plans for each ADP, incorporates the known requirements for future programs. Implementation of the RPMP would allow the USAG FWA Master Planning Office to conduct short-, mid- and long-range planning to meet the Garrison Commander's goals set forth in the Vision Plan.

The Garrison Commander, Master Planning, and Environmental Staff will be able to utilize the RPMP and PEA as tools to begin the design and evaluation of proposed projects. Through this, it would be determined if the project impacts are already fully captured in this PEA or if additional NEPA analysis will be required for the action to proceed. This flexibility would increase Fort Wainwright's ability to meet mission objectives and implementation of the RPMP while conforming to applicable environmental requirements.

2.2.1.2 No-Action Alternative

Under the No-Action Alternative, management of Fort Wainwright would continue based on existing planning principles and development goals. Implementation of projects to address facility deficits and excesses would occur on an as-needed basis without a formalized framework that enables suitable locations of projects to address the large-scale functional relationships at Fort Wainwright. Implementation of the No-Action Alternative would conflict with the National Defense Authorization Act of 2013 requiring military installations to develop a master plan. The No-Action Alternative would be inconsistent with DoD and Army regulations and instructions, as well as 10 U.S. Code §2864 (Master Plans for Major Military Installations) that require the formal adoption of a master plan. Inclusion of the No-Action Alternative is prescribed by the CEQ regulations implementing NEPA to serve as a benchmark against which the Proposed Action and alternatives can be evaluated. The No-Action Alternative is defined as the environmental baseline conditions that would result if the RPMP were not formally adopted.

2.2.2 Alternatives Considered and Eliminated from Detailed Study

NEPA's implementing regulations provide guidance on the consideration of alternatives to a federally proposed action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable require detailed analysis.

The purpose of the USAG FWA RPMP is to meet DoD and Army instructions and regulations. Under UFC 2-100-01, *Installation Master Planning*, which provides guidance for RPMP development at installations, USAG FWA is required to prepare and implement an RPMP that addresses sustainable planning; natural, historic, and cultural resource management; healthy community planning; defensible planning; capacity planning; area development planning; network planning; form-based planning; facility standardization; and plan-based programming.

CEQ regulations require inclusion of the No-Action Alternative in an EA. The No-Action Alternative serves as a baseline against which the impacts of the Proposed Action and alternatives can be evaluated. As a result, two alternatives were evaluated in detail: the Preferred Alternative (adopts and implements an RPMP) and the No-Action Alternative (continue implementation based on existing planning principles and development goals), and both are evaluated in this PEA.

2.3 SUMMARY OF ENVIRONMENTAL IMPACTS

Table 2-1 presents a comparative analysis of the Proposed Action and No-Action Alternative for each resource evaluated in this PEA. A detailed discussion of potential effects is presented in Chapter 3.0, Affected Environment and Environmental Consequences. The list below is a general qualitative description of anticipated impacts based on criteria defined for this PEA. Specific impacts criteria thresholds and effects by resource category are detailed in Chapter 3.

Table 2-1. Summary of Environmental Consequences

Resource/Issue	Proposed Action	No-Action Alternative
Air Quality	Short term: minor to moderate through use of BMPs and SOPs Long term: beneficial	Short and long term: minor to moderate through use of BMPs and SOPs
Air Space	Short term: no impact Long term: none to beneficial	Short and long term: no impacts
Biological Resources	Vegetation — Short term: minor to moderate through use of BMPs and SOPs Long term: minor to beneficial Wildlife, Fisheries, and Sensitive Species — Short term: minor to moderate through use of BMPs and SOPs Long term: moderate to beneficial Wetlands and Critical Habitats — Short term: minor to moderate through use of BMPs and SOPs. Long term: none to minor	Same as those for Proposed Action through use of BMPs and SOPs

Resource/Issue	Proposed Action	No-Action Alternative
Cultural Resources	Short and long term: minor to moderate through use of BMPs and SOPs	Same as those for Proposed Action through use of BMPs and SOPs
Energy & Utilities	Short term: none to minor Long term: minor to beneficial	Short and long term: minor to moderate
Geology & Soils	Short term: minor to moderate through use of BMPs and SOPS Long term: minor to beneficial	Same as those for Proposed Action through use of BMPs and SOPs
Land Use	Short term: none to minor through use of BMPs and SOPS Long term: none to beneficial	Short term: none to minor through use of BMPs and SOPs Long term: no impacts
Noise	Short term: minor through use of BMPs and SOPs Long term: beneficial	Short and long term: minor through use of BMPs and SOPs
Public Health & Safety	Short term: none to minor through use of BMPs and SOPs Long term: beneficial	Short and long term: none to minor through use of BMPs and SOPs
Recreation Resources	Short term: none to minor Long term: beneficial	Short term and long term: no impacts
Socioeconomics & Environmental Justice	Short and long term: minor to beneficial	Same as those for Proposed Action
Solid & Hazardous Waste and Pollution	Short term: none to minor through use of BMPs and SOPs Long term: beneficial	Short and long term: none to minor through use of BMPs and SOPs
Transportation & Traffic	Short term: minor Long term: beneficial	Short term: minor Long term: minor to moderate
Water Resources	Short term: minor to moderate through use of BMPs and SOPs Long term: no impacts	Same as those for Proposed Action through use of BMPs and SOPs

*SOPs & BMPs are outlined in Appendix B for reduction of adverse impacts.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the existing environmental conditions at Fort Wainwright, AK. It provides information to serve as a baseline from which to identify and evaluate environmental changes associated with implementation of projects outlined in the RPMP. The environmental components addressed include relevant natural or human environments likely to be affected by the Proposed Action and alternatives.

The affected environment consists of baseline conditions that are used for analysis of the environmental effects from the alternatives described in Chapter 2. A region of influence (ROI) is described for each resource area. The ROI varies among resources and defines the geographic extent of potential effects from the alternatives on the important elements of that resource. Each section in this chapter delineates its ROI and identifies the topics and resources addressed by that section.

Immediately following the affected environment discussion for each resource is the presentation of environmental consequences or effects of each alternative. Changes to the natural and human environments that may result from the Proposed Action and No-Action Alternative were evaluated relative to the existing environment. Given RPMP constraints regarding specific project details, the analyses necessarily focused on qualitative assessment of anticipated environmental impacts of each RPMP component. The potential for significant environmental consequences was evaluated using the context and intensity considerations as defined in CEQ regulations for implementing the procedural provisions of NEPA (40 CFR §1508.27).

The CEQ defines direct effects as those caused by an action and that occur at the same time and place, whereas indirect effects are caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR §1508.8). Impacts are characterized in this EA as:

- **None** – No measurable impacts expected to occur.
- **Minor (less than significant)** – Short-term but measurable adverse impacts are expected. Impacts may have slight effects on the resource.
- **Moderate (less than significant)** – Impact that is not significant but is perceptible and readily apparent and is not short-term; impacts would be noticeable and would have a measureable effect on resource. Additional care in following standard procedures or applying precautionary measures to minimize adverse impacts may be required.
- **Significant** – Adverse impacts would be obvious, both short-term and long-term, and would have serious consequences on a resource. The significant impact cannot be mitigated with practical means to a level below significance.

- **Beneficial** – A positive net impact.

Significance thresholds for each resource are included in Table 3-1. The CEQ guidelines indicate that the significance of an impact is determined by the intensity and the context of the impact. Intensity refers to the severity or extent of an impact, and context relates to the environmental circumstances at the location of the impact. Significance criteria were developed in consideration of the CEQ's guidance for determining significance (40 CFR§1508.27).

Table 3-1. Significance Thresholds for Each Resource Topic

Resource Topics	Significance Threshold
Air Quality	Impacts could be considered significant if they: (a) contribute to or cause an exceedance of a National Ambient Air Quality Standard (NAAQS) pollutant; (b) result in the potential for any stationary source to be considered a major source of emissions as defined in 40 CFR §52.21 (total emissions of any pollutant subject to regulation under the Clean Air Act that is greater than 250 tons per year for attainment areas); (d) or for mobile source emissions, result in an increase in emissions to exceed 250 tons per year for any pollutant; (e) result in the violation of existing Title V permits; or do not otherwise conform to the applicable State Implementation Plan
Airspace	Airspace Impacts could be considered significant if they: (a) substantially restrict movement of other air traffic in the area; create substantial conflicts with air traffic control in the region; (b) change operations within airspace already designated for other purposes; result in a need to designate controlled airspace where none previously existed; or (c) result in a reclassification of restricted airspace from a less restrictive to a more restrictive classification
Biological Resources	Impacts could be considered significant if they: (a) reduce regional wildlife populations below State management levels or eliminate a habitat type from an installation or region; (b) violate the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, or otherwise cause discernible population-level impacts at the installation or regional level; (c) violate state Fish Habitat permit requirements, ignore recommendation arising from consultation with NMFS, or otherwise lead to population-level impacts to any fish species within local waterways would represent a significant impact; (d) eliminate local populations of rare or sensitive plant species, allow the propagation of non-native plant species, eliminate regional native plant species; (e) eliminate more than 25 percent of an installation's vegetative resources; (f) segment habitat such that regional wildlife species are jeopardized; or (g) results in an unpermitted loss of jurisdictional wetland function.
Cultural Resources	Impacts could be considered significant if they adversely affect historic properties, the Ladd Field NHL or the Ladd AFB Cold War Historic District by causing either the physical loss of a contributing resource or the reduction in integrity of the district to such a degree that it would lose its designation as a historic property.
Energy & Utilities	Impacts could be considered significant if: (a) the immediate and/or long-term energy demand of Fort Wainwright would have the potential to exceed the actual or projected capacity of Fort Wainwright or its energy suppliers to provide service and would not produce enough energy to meet the energy demands to support the USAG FWA mission; or (b) the Proposed Action would interfere with Fort Wainwright's ability to absorb intermittent impacts and variance in peak energy generation; or (c) they would substantially exceed the existing utilities capacity of the Installation and require a major upgrades to the infrastructure to meet the demand and could negatively impact other users of the system(s).
Geology & Soils	Impacts could be considered significant if they: (a) result in uncontrolled and irreplaceable erosion and/or melting of permafrost features on the landscape; (b) substantially degrade soils, soil fertility, soil productivity, or geologic resources.
Land Use	Impacts could be considered significant if they: (a) would not be compatible with Fort Wainwright's or surrounding FNSB land use; or (b) not conform to zoning and community land use plans and policies.

Resource Topics	Significance Threshold
Noise	Impacts could be considered significant if they: (a) are from aircraft activity during training route overflights that result in a change to the Noise Zone III (>75 ADNL) contour to extend beyond the boundary of the installation into a noise-sensitive area; or (b) when a maximum flight noise level of 90dBA extends beyond the boundary of the installation into a noise-sensitive area. Significant impacts resulting from small-caliber weapons would occur when a Noise Zone III >104 PK15 (met) contour extends beyond the boundary of the installation into a noise-sensitive area.
Public Health & Safety	Impacts could be considered significant if they: (a) result in mitigated class 2 (serious) or class 1 (critical) safety and health risks as classified by DOD Instruction 6055.1, tables 1-8; (b) violate applicable safety and health regulations and policies; or (c) are capable of causing imminent and substantial human safety concerns resulting in unacceptable risk.
Recreation	Impacts could be considered significant if they: (a) would eliminate the regional availability of a particular recreational opportunity; or (b) result in a long-term closure of an important access point to recreational opportunities off military lands.
Socioeconomics and Environmental Justice	Impacts could be considered significant if the estimated impacts on socioeconomic issues, such as employment, business volume, population, and income, would affect a large number of individuals, groups, businesses, or government entities and/or be readily detectable and observed and/or occur over a wide geographic area and have a substantial influence on social and/or economic conditions. An environmental justice impact is considered to be significant if the impact from an Action Alternative disproportionately and adversely affects a minority or low income community. An impact on a population of children is considered to be significant if the impact from an Action Alternative disproportionately and adversely affects this population of children.
Solid & Hazardous Waste and Pollution	Impacts could be considered significant if they would: (a) violate applicable regulations; or (b) seriously threaten or cause exposure to hazardous materials or hazardous waste capable of causing imminent and substantial endangerment to human health and the environment.
Transportation & Traffic	Impacts could be considered significant if they would: (a) substantially impact transportation systems by causing recurring traffic delays on roadways, require changes to existing rail schedules; or (b) cause discernible degradation of existing roads or rail facilities
Water Resources	Impacts could be considered significant if they would: (a) alter the existing pattern of surface or groundwater flow or drainage in a manner that would adversely affect the uses of the water within or outside the region; (b) degrade surface or groundwater quality in a manner that would reduce the existing or potential beneficial uses of the water; (c) be out of compliance with existing or proposed water quality standards or other regulatory requirements related to protecting or managing water resources; or (d) not comply with the Clean Water Act; or the Safe Drinking Water Act.

This PEA analyzes the potential environmental impacts associated with implementation of development projects outlined in the Fort Wainwright RPMP by applying the significance thresholds listed above. Impacts also are characterized as short term or long term. Short-term effects typically are those that would be temporary and associated with the construction phase but would no longer be perceptible once construction is completed or shortly thereafter. Long-term effects are those that would be permanent or would persist for the operational life of the project.

Appendix B identifies specific SOPs and BMPs to address potential impacts to resource categories. These SOPs and BMPs are intended to avoid or minimize the significance of environmental impacts from proposed development activities. The SOPs and BMPs would be available for use in the siting and design of projects and would assist Fort Wainwright with a systematic approach to reduce, avoid, and minimize potential environmental impacts from implementing proposed development projects at the early planning stages. SOPs and BMPs may

evolve over time as requirements evolve; as such, it is the intent of this PEA to permit Fort Wainwright planners and environmental staff to update and improve the specific SOPs and BMPs listed in Appendix B where such modification would further reduce environmental impacts.

3.1.1 Resource Areas Carried Forward for Analysis

Army NEPA Regulations (32 CFR §651.14) state the NEPA analysis should reduce or eliminate discussion of minor issues to help focus analyses. This approach minimizes unnecessary analysis in the document and discussion during the NEPA process. The CEQ regulations for implementing NEPA (40 CFR §1500.4(g)) emphasizes implementing the scoping process not only to identify significant environmental issues deserving of study but also to deemphasize insignificant issues, narrowing the scope of the analytical process. After consideration of the anticipated impacts associated with the Proposed Action and alternatives, the following resource topics were carried forward for detailed analysis in this PEA:

- Air Quality
- Airspace
- Biological Resources (including wildlife, vegetation, threatened and endangered species and wetlands)
- Cultural Resources
- Energy and Utilities
- Geology and Soils
- Land Use (including facilities and subsistence)
- Noise
- Recreation Resources
- Public Health and Safety
- Socioeconomics and Environmental Justice
- Solid and Hazardous Waste and Pollution
- Transportation and Traffic
- Water Resources

3.1.2 Resource Areas Dismissed from Analysis

After consideration of the anticipated impacts associated with the proposed alternatives, the following resource areas were dismissed from further analysis for the reasons described:

- ***Fire Management*** – The PRMP entails Fort Wainwright's Main Post, which is primarily a built environment, with the exception of the Chena North district. There would be no changes to fire-fighting decisions because of the RPMP. Further, the illustrative plan projects are primarily focused on construction. While the PRMP planning area does entail some training lands in the Chena North District, live-fire training is confined to the biathlon range which has undergone substantial renovations recently. These renovations included expanding the number of targets as well as increasing size of the target berms which further constrains firing activity on the range and lowers the risk of accidental wildfire starts. It is unlikely that there will be any effects to wildfire frequency, magnitude, and duration as a result of the Proposed Action. Therefore, after consideration, fire management was eliminated as a resource area and is not discussed in further detail in this PEA.
- ***Visual Resources*** – All of the RPMP elements consist of development that is consistent with the existing visual character of Fort Wainwright Main Post. There is no potential to impact scenic vistas. No state scenic highways are in the region. There would be no substantial degradation of Fort Wainwright's existing visual character as a result of implementing the RPMP. None of the RPMP elements would entail creating a new source of substantial light or glare that would affect day or nighttime views in the area. Therefore, after consideration, visual resources were eliminated as a resource area. Visual impacts to the Ladd Field NHL and Ladd AFB Cold War District are analyzed and discussed in Section 3.5 "Cultural Resources."

3.2 AIR QUALITY

Air quality is defined as the concentration of specific pollutants of concern in ambient air. The levels of concern are set with respect to the health and welfare of the general public. The ROI for air quality is the Fort Wainwright Main Post and FNSB Air Quality Control Region. Both state and federal air quality regulations apply to the ROI.

3.2.1 Affected Environment

Air quality can be affected by air pollutants produced by two categories of sources: mobile sources, such as vehicular traffic, trucks, or non-road equipment such as those used for construction activities; and stationary sources (fixed or non-mobile facilities), such as combustion and industrial source stacks and exhaust vents from power-generating and other industrial facilities.

Criteria Pollutants and National Ambient Air Quality Standards - The EPA, under the requirements of the 1970 Clean Air Act (CAA), as amended in 1977 and 1990 (CAA

Amendments), has established National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as criteria pollutants (40 CFR §50):

- Carbon monoxide
- Nitrogen dioxide
- Ozone (with nitrogen oxides and volatile organic compounds as precursors)
- Particulate matter (PM) (PM_{10} [less than 10 microns in particle diameter]; $PM_{2.5}$ [less than 2.5 microns in particle diameter])
- Lead
- Sulfur dioxide

The NAAQS include primary and secondary standards (Table 3-2). The primary standards were established to protect human health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Typical sensitive land uses protected by the primary standards are publicly accessible areas used by these populations, such as residences, hospitals, libraries, churches, parks, playgrounds, schools, etc. Secondary standards set limits to protect the environment, including plants and animals, from adverse effects associated with pollutants in the ambient air.

Areas that meet the NAAQS standard for a criteria pollutant are designated as being "in attainment." Areas where a criteria pollutant level exceeds the NAAQS are designated as being "in nonattainment." When a nonattainment area is re-designated as an attainment area, the CAA requires that a maintenance plan be put in place to ensure continued compliance with the corresponding NAAQS. Therefore, a former nonattainment area is also defined as a maintenance area. Where insufficient data exist to determine an area's attainment status, an area is designated unclassifiable.

The CAA and amendments mandate that state agencies adopt State Implementation Plans (SIPs) that target the elimination or reduction of the severity and number of violations of the NAAQS. SIPs set forth policies to expeditiously achieve and maintain attainment of the NAAQS. For those nonattainment areas that are re-designated attainment, the state is required to develop a maintenance plan to ensure that the areas remain in attainment status for the same pollutant.

The CAA and amendments prohibit federal agencies from engaging in, supporting, providing financial assistance for licensing, permitting, or approving any activity that does not conform to an applicable SIP. However, federal agencies must determine that a federal action conforms to the SIP before proceeding with the action.

Table 3-2. National Ambient Air Quality Standards

Pollutant	Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	

Pollutant		Primary/Secondary	Averaging Time	Level	Form
Lead		Primary and Secondary	Rolling 3-month average	0.15 $\mu g/m^3$	Not to be exceeded
Nitrogen Dioxide		Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		Primary and Secondary	Annual	53 ppb	Annual mean
Ozone		Primary and Secondary	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter	$PM_{2.5}$	Primary	Annual	12 $\mu g/m^3$	Annual mean, averaged over 3 years
		Secondary	Annual	15 $\mu g/m^3$	Annual mean, averaged over 3 years
		Primary and Secondary	24-hour	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	Primary and Secondary	24-hour	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		Primary	1-hour	75 ppb(5)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

ppb = parts per billion; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter

Source: U.S. EPA, 2014.

CAA General Conformity - The CAA amendments of 1990 expanded the scope and content of the CAA's conformity provisions in terms of their relationship to an SIP. Under Section 176(c) of the CAA amendments, a project is in "conformity" if it corresponds to an SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving their expeditious attainment.

The EPA published final rules on general conformity (40 CFR §§51 and 93) in the Federal Register on 30 November 1993, and subsequently revised the rules on 24 March 2010. The rules apply to federal actions in nonattainment or maintenance areas for any of the criteria pollutants. The rules specify *de minimis* emission levels by pollutant to determine the applicability of conformity requirements on a project-specific basis.

A conformity applicability analysis is typically done by quantifying applicable direct and indirect emissions that are projected to result due to implementation of the federal action. Indirect emissions are those emissions caused by the federal action and originating in the region of interest, but which may occur at a later time or in a different location from the action itself and are reasonably foreseeable. The federal agency can control and will maintain control over the indirect action due to a continuing program responsibility of the federal agency.

Stationary Sources - Stationary sources of air emissions at the various sites that could be affected by the Proposed Action include electricity generators, fuel tanks, etc. The CAA and amendments have set permit rules and emission standards for pollution sources of certain sizes.

The CAA Title V permit regulation is applicable for major stationary sources but must be evaluated on a project-specific basis.

Mobile Sources - Typical mobile sources include on-road and non-road vehicles, construction equipment, etc. The emissions from these mobile sources are regulated under CAA Title II, which establishes emission standards that manufacturers must achieve. Therefore, unlike stationary sources, no permitting requirements exist for operating mobile sources.

Greenhouse Gas Emissions - In addition to the criteria pollutants, the proposed programmatic action would also generate greenhouse gas (GHG) emissions from construction activities and/or additional stationary sources. GHG emissions are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

Global warming and climate change can affect many aspects of the environment. Under Section 202(a) of the CAA, the EPA Administrator has recognized potential risks to public health or welfare and signed an endangerment finding regarding GHGs (U.S. EPA, 2009b), which finds that the current and projected concentrations of the six key, well-mixed GHG emissions—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations. However, the dominant GHG gas emitted by man-made sources is carbon dioxide, mostly from fossil fuel combustion (85.4 percent) (U.S. EPA, 2009a). This PEA follows CEQ final guidance on the effects of climate change and GHG emissions as they relate to NEPA (CEQ, 2016). Although GHG emissions occur locally, the potential effects of GHG emissions are by nature global in scale and cumulative geographically and over time. However, given the uncertainty of specific projects under the master plan, impacts from specific projects must be evaluated under project-specific NEPA assessments.

Air quality conditions around the Fort Wainwright Main Post where the RPMP would occur are mainly affected by the emissions from existing stationary combustion sources, on-road vehicles, and aircraft and their ground support equipment. Operation of other background sources from highway vehicles, off-base stationary facilities, and construction activities in neighborhoods would also affect ambient air quality conditions.

Stationary Source Title V Permit - Fort Wainwright is regarded as a single source, but it is permitted as two entities and operates under two Title V permits. Permit No. AQ1121TVP02 was issued on January 30, 2015, under the control of Doyon Utilities Inc. for the main stationary sources of emissions on Fort Wainwright including six coal-fired boilers in the Central Heating and Power Plant (CHPP) and a coal preparation plant (ADEC 2015).

Several marginal emissions units also are located on Fort Wainwright, including small backup generators, small diesel boilers for Bassett Hospital, and underground storage tanks listed on Permit No. AQ0236TVP03. This permit was issued on September 19, 2014 under the control of USAG FWA (ADEC 2014).

Both Title V permits are available for review at the Alaska Department of Environmental Quality Division of Air Quality website (http://dec.alaska.gov/air/).

Potential to Emit (PTE) for USAG FWA and Doyon combined are shown in Table 3-3. Actual current emissions are roughly 70% of PTE (Dick, 2017).

Table 3-3. Criteria Air Pollutant Potential to Emit Fort Wainwright (tons per year)

NOx	CO	PM-10	SO_2	VOC	HAPs	Total
1,588.3	929.4	159.5	0.90	75.4	32.7	4,712

Source: ADEC, 2015

*HAP emissions are included in VOCs

NAAQS Nonattainment Status and CAA General Conformity - The US EPA classifies a portion of the FNSB airshed where Fort Wainwright main post is located, as in nonattainment for $PM_{2.5}$. The EPA has also re-designated the entire FNSB where Fort Wainwright is located, from a nonattainment to attainment area for carbon monoxide on 27 September 2004 (69FR44601-44607). Therefore, the CAA general conformity rule applies to both $PM_{2.5}$ and CO.

FNSB Air Quality – A portion of the FNSB, including the City of Fairbanks and the City of North Pole, was designated as a $PM_{2.5}$ nonattainment area in December 2009. These areas exceed the health based 24 hour $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS) of 35 micrograms/cubic meter.

Analysis shows that local emissions from wood stoves, burning distillate oil, industrial sources, and mobile emissions contribute to particulate pollution. For planning purposes, $PM_{2.5}$ is primarily a concern during the winter months (October through March) when extremely strong temperature inversions are frequent and human-caused air pollution impacts increase. Summertime wildland fire smoke is also a health concern, but is considered natural and uncontrollable (ADEC 2016a).

3.2.2 Environmental Consequences

3.2.2.1 Environmental Consequences – Proposed Action

Potential demolition and construction activities under the Proposed Action could cause the following temporary adverse air quality effects:

- Criteria pollutants and GHG emissions from construction activities such as:
    - Use of diesel- and gas-powered equipment such as dozer, loader, crane, etc.;
    - Material delivery and dump trucks; and
    - Construction workers' commute vehicles.
- Fugitive dust would be generated as a result of earth movement.

Since the majority of project-specific actions identified in the RPMP are conceptual at this time, these project-specific actions are dependent on many variables with changes to the military mission, funding availability, and Army Headquarters decisions among those having the greatest effect on future plans. Therefore the project-level air quality impacts cannot be quantitatively addressed in the PEA. However, based on specific elements identified in the RPMP, it is anticipated that potential air quality impacts as a result of the Proposed Action would not be significant because:

- Vision Plan goals of compact districts and versatile buildings—thereby reducing overall facility space and overall reduction in square footage of use, interconnected transportation networks, and improving energy efficiency from new facilities would result in overall air emissions reduction on post.
- New more energy efficient structures would replace older less efficient structures.
- The existing central heat and power plant would remain unchanged.
- Demolition and construction activities in the PRMP are temporary and short in duration similar to those on-going construction activities and they would likely have minor adverse air quality impacts.
- BMPs and SOPs listed in Appendix B would be employed to reduce impacts to air quality to less than significant.

The ADPs do not factor changes in energy production and distribution scenarios; therefore, no changes to air quality due to changes in energy production and distribution scenarios are anticipated.

In regards to ADP projects, all of the projects within the Chena North District are anticipated to have a minor to minor/beneficial impact, with the exception of establishing a western buffer boundary north of Birchwood Housing, which would have no adverse effect on air quality. Projects within the North Post District are also anticipated to have minor to minor/beneficial impacts. Converting the Horseshoe to pedestrian use only will lessen vehicular emissions, and as such is anticipated to be a beneficial effect. Within the Ladd Airfield and West Post district, projects are anticipated to have minor to beneficial effects, with the exception of relocating CRREL, repurposing the Band Building for new Frontier Club, and creating an outdoor food and truck gathering spot, which are anticipated to have no effect on air quality.

Since both the CAA general conformity rule and the CEQ guidance on GHG emissions and climate change analyses are applicable on a project level as compared to a conceptual program level, these analyses are excluded in the PEA, and further NEPA documents on a project level would be considered and prepared in the future, if necessary, with the applicable analyses when project actions become more specific to ensure that no significant air quality impacts would occur.

3.2.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue, as needed, and would undergo project-specific evaluation under NEPA. Existing SOPs and BMPs listed in Appendix B would also be utilized to minimize/control emissions during and after construction, reducing potential adverse impacts. No significant impacts to air quality are thus anticipated; however, beneficial impacts to air quality are not as certain as under the Proposed Action.

3.3 AIRSPACE

The ROI for airspace analysis is the airspace above Fort Wainwright Main Post and FNSB airspace.

The DoD and the Army manage airspace delegated to them by the Federal Aviation Administration (FAA) in accordance with the processes and procedures outlined in DoD Directive 5030.19, DoD Responsibilities on Federal Aviation and National Airspace System Matters (U.S. DoD, 1997) and implemented by AR 95-2, Airspace, Airfields/Heliports, Flight Activities, Air Traffic Control, and Navigation Aids (U.S. Army, 2008a). DoD and the Army collaborate with the FAA to ascertain the minimum requirement for airspace, evaluating any environmental consequences of proposed airspace designations in compliance with both FAA and DoD's NEPA implementing regulations.

The two categories of airspace or airspace areas are regulatory and non-regulatory. Within these two categories, four types of airspace include controlled airspace, special use airspace (SUA), other, and uncontrolled airspace. Controlled airspace is a defined area within which air traffic control service is provided to flights in accordance with the airspace classification (FAA, 2008). Controlled airspace is categorized into five separate classes: Classes A through E. These classes identify airspace that is controlled, airspace supporting airport operations, and designated airways affording en route transit from place to place. The classes also dictate pilot qualification requirements, rules of flight that must be followed, and the type of equipment necessary to operate within that airspace. Uncontrolled airspace is designated Class G airspace.

3.3.1 Affected Environment

The FAA has designated the majority of airspace within Fort Wainwright as restricted airspace for activities associated with Ladd Army Airfield. Ladd Army Airfield has one active runway, several ancillary taxiways, and hangars. In addition to Ladd Army Airfield's use as a military airfield, the Bureau of Land Management–Alaska Fire Service has permitted access to the airfield for basing firefighting aircraft and retardant mixing and loading operations. During the summer wildfire season, the Bureau of Land Management—Alaska Fire Service aircraft are stationed at the airfield, and during emergencies for combating wildfires, these operations take precedence over military training operations.

The airspace surrounding Ladd Army Airfield is classified as Class D when Air Traffic Control (ATC) is open, which refers to airspace restricted from the surface to a ceiling of 2,500 feet

mean sea level (MSL). When ATC is closed the airspace is Class C, which means that it is restricted to a ceiling of 4,000 feet above MSL. There are no set hours of ATC operation and operation restriction when flying; it defaults to automation whenever the tower is closed.

Several commercial and private airports are located nearby Fort Wainwright. This includes Fairbanks International Airport (FAI), as well as numerous smaller airfields. Located five miles west of Fort Wainwright, FAI is the nearest public airport. FAI is a modern commercial terminal with several major airlines offering daily passenger service, and additional airlines adding summer tourist service. Also, several major air cargo companies provide daily cargo services. The five-mile safety radii of Fort Wainwright and FAI overlap and the two towers share responsibility for controlling airspace in the Fairbanks area. Designated SUAs reduce the likelihood of interaction between military aircraft and public, private, or commercial aircraft. Military air training is currently conducted within designated SUAs and restricted operating zones to allow unencumbered training flights to meet mission essential training goals.

3.3.2 Environmental Consequences

3.3.2.1 Environmental Consequences – Proposed Action

RPMP development detailed in the Chena North, North Post, West Post and South Post ADPs would not affect existing airspace use and classifications and, therefore, would result in no significant impacts to airspace. Plans to expand the Upper ASP and improve roads in the Chena North District would not reduce current airspace use as the surface arc for expansion takes into account the horizontal distance and this airspace is part of FWA's Class D airspace which requires permission to enter by either FWA or FAI airports.

Proposed development in the Ladd Airfield district includes new facility construction, renovating and repurposing existing structures, relocating communication equipment, extending the southern runway, and transportation upgrades. All of these plans are in accordance with airfield design criteria set forth in Section 3-13 of UFC 3-260-01, *Airfield and Heliport Planning and Design*. Projects would undergo additional project-specific NEPA review as they are developed and implemented. None of these proposed developments are anticipated to affect existing airspace use or classifications at Fort Wainwright or in the FNSB, or use of existing air assets. During operations, continued adherence to existing airspace management and scheduling operations would minimize potential conflicts within existing airspace. Thus there would be no significant adverse impacts to airspace as a result of the Proposed Action. Minor to beneficial impacts to airspace are anticipated from: Ladd Field short-range plans to relocate the BLM tower and manage trees for airfield clearance requirements; mid-range plans to extend the southern runway for UAS, construct the Shadow facility, and the TUAS launch pad; and the long-range plan to construct the BLM ramp. Renovation and reuse of aging and obsolete existing facilities, as well as re-organizing equipment around the Ladd Airfield would result in long-term, beneficial impacts on airspace as a result of increased efficiencies and safety measures.

In summary, implementation of the PRMP will have no significant adverse impacts to Fort Wainwright or FNSB airspace; and several of the Ladd Airfield projects will have long-term beneficial effects on Fort Wainwright airspace use.

3.3.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue, as needed. Projects would undergo additional project-specific NEPA review as they are developed and implemented, and would be developed in accordance with airfield design criteria set forth in Section 3-13 of UFC 3-260-01, *Airfield and Heliport Planning and Design,* which, in turn, is based on Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace, Subpart D. During operations, continued adherence to existing airspace management, and scheduling operations would minimize potential conflicts within existing airspace. Thus, no significant impacts to airspace are anticipated.

3.4 BIOLOGICAL RESOURCES

Biological resources include both native and nonnative species of plants and animals in the project area. For discussion purposes, these are divided into vegetation, wildlife, threatened and endangered species, and sensitive habitats. Human activity has altered portions of the natural environment at Fort Wainwright through grading, paving, construction of buildings, and grounds maintenance. Data sources for biological resources include the INRMP (USAG FWA, 2013b). Information was also provided by the Fish and Wildlife Service (USFWS, 2016) and the ADFG (ADF&G, 2016).

The ROI used for discussion of biological resources is the Fort Wainwright Main Post where RPMP activities will occur. This ROI includes the area within which potential impacts could occur and provides a basis for evaluating the level of impact.

3.4.1 Affected Environment

Vegetation – Much of the native vegetation in the cantonment has been disturbed by post development and construction. Undisturbed or only minimally disturbed Native plant communities are located in the Chena North district, along the Chena River in the North Post district, and patches of the South Post and West Post districts.

A plant inventory of Fort Wainwright lands that included the Main Post ROI identified 217 nonvascular species and 561 vascular species (plants, ferns and fern allies, common mosses, liverworts, and lichens) (Racine et al., 1997). An ecological survey (Jorgensen et al., 1999) of Fort Wainwright, including Main Post, identified 49 vegetation types. Vegetative communities in the installation consist of:

- forest;
- scrub lands;
- barren lands;

- meadows, bogs, and fens; and
- miscellaneous plant community complexes.

In the Chena North District, deciduous broadleaf forests dominated by Alaskan paper birch (*Betula neoalaskana*) and trembling aspen (*Populous tremuloides*) are found at Birch and Sage Hill and other upland areas. Some of the upland habitats in the Chena North District also support stands of mixed white spruce (*Picea glauca*) and Alaskan paper birch. Balsam poplar (*Populous balsamifera*) dominated forests and tall alder/willow scrub communities can be found along portions of the Chena River. Evergreen needle-leaf forests, woodlands, and scrub-shrub communities dominated by black spruce (*Picea mariana*) occupy the lower slopes of Birch Hill and lowland areas of the Chena North District. Black spruce also occurs on undeveloped portions of the South Post District. These black spruce-dominated communities often occupy wetland sites and are frequently associated with shallow permafrost.

Low shrub communities are interspersed with stands of black spruce and birch in the Chena North District. These low shrub communities tend to occupy wetter, sometimes seasonally flooded, sites within the ROI. Deciduous shrub and wet meadow plants also occur on seasonally flooded sites in the Chena North District such as abandoned channels and depressions. These communities generally include scrub-birch, willow, shrubs as well as sedges (*Carex* spp.), cotton grass (*Eriophorum* spp.) and Bluejoint (*Calamagrostis canadensis*).

Isolated bluffs adjacent to the Chena River floodplain along the base of Birch and Sage Hill support subarctic steppe-like communities (Racine et al., 1997). These typically occur on south-facing slopes and sites too dry to support tree growth and are typically vegetated with open low shrubs, grasses, and forbs, including sagebrush (*Artemesia frigida, A. norvegica*), juniper (*Junipereus communis*), purple reed grass (*Calamagrostis purpurascens*), and Pasque flower (*Pulsatilla patens*) (Racine et al., 1997; Tande, 1997; UAA, 2016). While Stepp Bluff communities in the region support rare and threatened plant species, no threatened plant species occur on the Main Installation ROI (Racine et al., 1997; UAA, 2016). State-listed species of concern associated with Steppe Bluff habitat known to occur at Fort Wainwright include spreading dogbane (*Apocynum androsaemifolium*) and siberian wormwood (*Artemisia laciniata*).

There is only one federally listed plant species in Alaska, the Aleutian shield fern, which is known from only two locations: Atka and Adak islands in the Aleutian Islands. A floristic survey of Ft. Wainwright performed by Racine et al. (1997) found no plants listed as threatened or endangered by the USFWS. There are, however, seven vascular plant species of concern that are known to occur on the Fort Wainwright Main Post. These plants are being tracked by the Alaska Natural Heritage Program because they are thought to be uncommon or rare in Alaska and/or uncommon or rare globally (Alaska Natural Heritage Program 2013). These species are listed below in Table 3-4 and are documented in the survey results of Tande et al. (1997) and Range Training Land Assessment survey efforts.

Table 3-4. Fort Wainwright Main Post Rare Plant Species

Species	Common Name	Global Ranking*	Alaska Ranking**
Apocynum androsaemifolium	spreading dogbane	G5	S3
Artemisia laciniata	siberian wormwood	G4?	S3
Ceratophyllum demersum	coon's tail	G5	S3S4
Cicuta bulbifera	bulblet-bearing wáter hemlock	G5	S3
Cryptogramma stelleri	fragile rockbrake	G5	S3S4
Glyceria pulchella	MacKenzie valley mannagrass	G5	S3S4
Oxytropis tananensis	field locoweed	GNR	S3S4Q

* Alaska Natural Heritage Program Rare Species Global Rankings

G3 Either very rare and local throughout its range or found locally in a restricted range (typically 21-100 occurrences)

G4 Apparently secure globally

G5 Demonstrably secure globally

G#G# Global rank of species uncertain; best described as a range between the two ranks

G#T# Global rank of species and global rank of the described variety or subspecies of the species Q Taxonomically questionable

? Inexact

** Alaska Natural Heritage Program Rare Species State Rankings

S1 Critically imperiled in state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state (typically 5 or fewer occurrences, or very few remaining individuals or acres)

S2 Imperiled in state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state (typically 6 to 20 occurrences, or few remaining individuals or acres)

S3 Rare or uncommon in the state (typically 21-100 occurrences)

S4 Apparently secure in state, with many occurrences

S#S# State rank of species uncertain; best described as a range between the two ranks

SE possibly introduced

Source: USAG FWA, 2013b.

There are no legal ramifications from these listings; rather, they are generated by the Heritage Program to help track the occurrence of these taxa across the state as more botanical work is conducted. The categories listed do not indicate known threats to these species, but they do represent the rather few collections known for each taxa in Alaska and the geographic distribution of those collections. All of these taxa are listed for management in the ecosystem management program for the Fort Wainwright Main Post.

Wildlife - Wildlife habitats at the Fort Wainwright Main Post are limited to scrub bogs, high brush, open low-growing spruce forests, and closed spruce-hardwood forests. Most vertebrate species indigenous to central Alaska can be found on the Fort Wainwright Main Post. Game species found on Fort Wainwright are managed by the ADFG. The ADFG monitors these species to determine population status, reproductive success, harvest, and home ranges. The Fort Wainwright Main Post falls within the State of Alaska Game Management Unit 20B and within the special management area entitled "Fairbanks Management Area" (USAG FWA, 2013b).

Most native North American birds, their eggs, and nests are protected by the Migratory Bird Treaty Act (MBTA) of 1918, as amended. Birds in the ROI identified by the USFWS Information, Planning, and Conservation (IPAC) System as having the potential to be a year-round resident, if suitable habitat is present, include such as species as the bald eagle (*Haliaeetus*

leucocephalus), among others. Bird species identified by the USFWS IPAC System as having the potential to breed within the ROI, if suitable habitat is present, include the upland sandpiper (*Bartramia longicauda*), olive-sided flycatcher (*Contopus cooperi*), rusty blackbird (*Euphagus carolinus*), fox sparrow (*Passerella iliaca*), whimbrel (*Numenius phaeopus*), lesser yellowlegs (*Tringa flavipes*), and solitary sandpiper (*T. solitaria*) (USFWS, 2016).

Some of the game species found on the Fort Wainwright Main Post include moose (*Alces alces*), ruffed grouse (*Bonasus umbellus*), beaver (*Castor canadensis*), spruce grouse (*Falcipennis canadensis*), muskrat (*Ondontra zibithicus*), black bear (*Ursus americanus*) and grizzly bear (*U. arctos*), and sharp-tailed grouse (*Tymmanuchus phasianellus*) (USAG FWA, 2013b).

Large mammals on Fort Wainwright Main Post include moose, black bear, and rare grizzly bear (USARAK, 2004). Fifteen species of furbearers inhabit Fort Wainwright. These include wolverine, coyote, lynx, red fox, pine marten, wolf, muskrat, beaver, four species of weasel, snowshoe hare, and red squirrel. All of these can occur within the Main Post ROI. River otter exist, but they are not common (USARAK, 2004).

Known small mammals in the ROI include five vole species, two lemming species, two species of mice, and four species of shrew. The little brown bat (*Myotis lucifugus*) is found in wooded areas and potentially in abandoned buildings. Sage Hill Pond in the Chena North District is frequently used by these bats. Introduced mammals such as the house mouse and Norway rat, and woodchuck also exist in the cantonment area of the Main Post. Woodchucks are also found on the post; it is uncertain if woodchucks were introduced or arrived in the Tanana Valley naturally (Savory, 2017).

Spruce grouse, ruffed grouse, and ptarmigan (willow, rock and occasionally white-tailed) are common in the region. Grouse hunting is a recreational activity in the Chena North District (for more on recreational hunting see Section 3.11). The variety of nongame birds on lands associated with Fort Wainwright includes at least 58 passerines.

Although no threatened, endangered, or species of special concern were observed, several Priority Species for Conservation (Boreal Partners in Flight Working Group, 1999) were observed. In addition, six species of woodpecker, the rock dove, rufous hummingbird, and belted kingfisher have been observed on these lands.

At least 25 species of waterfowl and 20 species of raptors use Fort Wainwright. Shorebirds, three gull species, and the Arctic tern have been observed (USARAK, 1999). Four species of loon and two types of grebes have been observed to use waterways on Fort Wainwright and associated lands (USARAK, 2004).

There are sixteen species on the Fort Wainwright Ecosystem Management List for the Main Post. These are the lesser scaup (*Aythya affinis*), greater scaup (*A. marila*), olive-sided flycatcher (*Contopus cooperi*), western wood-peewee (*C. sordidulus*), blackpoll warbler (*Dendroica striata*), Townsend's warbler (*D. townsendi*), rusty blackbird, Wilson's snipe (*Gallinago delicate*), varied thrush (*Ixoreus naevius*), white-winged crossbill (*Loxia leucoptera*), little brown

bat, northern waterthrush (*Seiurus noveboracensis*), great gray owl (*Strix nebulosa*), lesser yellowlegs, solitary sandpiper, and Wilson's warbler (*Wilsonia pusilla*) (USAG FWA, 2013b).

The wood frog (*Rana sylvestris*) is the only amphibian species found at Fort Wainwright. There are no reptiles on Fort Wainwright.

Fisheries - The Chena River is a spawning area for chum salmon (*Oncorhynchus keta*), king salmon (*O. tshawytsha*), and arctic grayling (*Thymallus arcticus*). The Chena also contains sheefish, humpback whitefish, round whitefish, Arctic lamprey, least cisco, Alaska blackfish, burbot, longnose sucker, northern pike, slimy sculpin, and lake chub.

Most ponds or lakes on Fort Wainwright do not support fish populations during winter. However, a stocking program provides recreational fishing opportunities for the public during summer. The ADFG stocks River Road Pond (formerly Sage Hill Pond) in the ROI with fish such as rainbow trout, arctic grayling, and arctic char (USAG FWA, 2013b).

Threatened and Endangered Species - The Fort Wainwright INRMP (USAG FWA, 2013b), USFWS IPAC, and the ADFG website were reviewed for the most up-to-date information concerning federally and state threatened and endangered species that have the potential to occur on or adjacent to Fort Wainwright. No federally threatened or endangered animal species or designated critical habitats occur on Fort Wainwright Main Installation (USAG FWA, 2013b; USFWS, 2016).

As discussed above, there are no federally listed endangered or threatened plant species on Fort Wainwright lands or the Main Post ROI (Tande et. al, 1997).

Wetland Resources - Wetlands serve important functions, including habitat for wildlife, collection and retention of sediments, and filtering of pollutants contained within storm water runoff, and provide control of floodwater flows and recharge for groundwater aquifers. Wetland resources are protected under Section 404 of the Clean Water Act (CWA), EO 11990, *Protection of Wetlands*, and EO 11988, *Floodplain Management*. These wetlands are interspersed throughout the installation and are classified as palustrine, riverine, and lacustrine types (USARAK, 2004). Bogs, fens, and marshes are also distributed throughout the installation.

Fort Wainwright's Main Post supports a variety of wetlands, most of which occur on the Chena River floodplain, outskirts of the cantonment area where urbanization activities have not occurred; and north-facing slopes of Birch Hill and other lowlands areas in the Chena North District. Forest wetlands are dominated by needleleaf trees, such as black spruce, and often have an understory of mosses that insulate soils, allowing them to remain frozen for extended periods. Scrub-shrub wetlands, a very common wetland type on the Main Post, occur in a variety of landscape positions and are typically composed of stunted needleleaf trees and broadleaf shrubs. Scrub-shrub wetlands dominated by severely stunted black spruce trees are found in the Chena North District on cold north-facing slopes and lowland areas, where saturated soils underlain with permafrost prevent larger trees from growing. Scrub-shrub wetlands composed of shrub birch and willow tend to form in seasonally flooded drainages, on terraces, and in areas disturbed by fire and mowing. Emergent wetlands are dominated by grasses and sedges and occur in seasonally or permanently flooded flat, low-lying areas. They are found on floodplains, on the

margins of ponds and lakes, in sloughs, and in localized depressions. Emergent wetlands also develop in trails established in scrub-shrub wetlands, where they form web-like complexes with the surrounding scrub-shrub communities (USAG FWA, 2013b). In general, wetlands in the ROI are concentrated in the Chena North District, and in undeveloped patches in the South and West Post Districts.

Within the ROI, other unique and rare habitats include the isolated steppe bluff communities, which support habitat for state listed sensitive plant species as discussed above.

3.4.2 Environmental Consequences

3.4.2.1 Environmental Consequences – Proposed Action

Biological resources were evaluated in terms of compliance with Section 7 of the Endangered Species Act (ESA), and other wildlife laws and authorities. No ESA-listed species or designated critical habitat occur on Fort Wainwright Main Cantonment; therefore, the proposed action would have no effect on listed species or critical habitat. Preparation of a Biological Assessment or further consultation under Section 7 of the ESA regarding this action is not necessary. As projects identified in the plan move into the design and implementation phases, they will be evaluated again for changes to ESA-listed species and critical habitat on the Fort Wainwright Main Cantonment and undergo consultation per Section 7 of the Endangered Species Act, if applicable.

The assessment of potential impacts focused on the proposed location of the facilities and the existing habitat in these areas. Biological resources might be affected directly by ground disturbance or indirectly through such changes as increased construction noise. Impact significance on biological resources was assessed by evaluating aspects such as: potential for loss or alteration of suitable habitat and the proximity of similar habitat; the proportion of the resource that would be affected relative to its occurrence in the region; the sensitivity of the resource to proposed activities; and the duration of ecological impacts.

Vegetation - Construction activities associated with the Proposed Action would primarily affect disturbed/ developed areas in the North Post, Airfield, West Post, and South Post Districts. While most projects within these districts will have no impact to vegetation, there are some with anticipated less-than-significant impacts. Minor impacts to vegetation could occur from: constructing the Riverfront Pavilion/Amenity and Connect Trail in the North Post; replacing the visitor center, constructing a standard ACP at Gaffney Road, and extending 10th Street from Neely Road to Alder Ave in the West Post; and replacing the “Bailey” bridge, constructing loop road, and constructing a compliant ACP in the South Post. Within the Airfield District, plans to manage trees for airfield clearance could constitute a moderate overall impact.

Most of the projects in the Chena North District would have none to minor impacts. Long-range plans to complete a bivouac and road network could comprise a moderate impact, while establishing and expanding a western boundary buffer north of Birchwood Housing would be a beneficial effect.

Actual loss of acreage by vegetation type for each project would be determined once limits of construction and specific project footprints have been identified. Specific BMPs and SOPs listed in Appendix B, such as designing projects to avoid elimination of rare or sensitive plant species and loss of regional plant species, ensuring impacts to vegetation and wildlife habitat remain below the significant threshold.

It is important to note that the RPMP calls for the vegetative buffer to remain along the Chena River bank in the North Post and Chena North Districts. This buffer will preserve existing vegetation along the river banks, and as such will minimize and avoid impact to vegetation along the river and aid in preventing river bank erosion and turbidity if the river's waters.

Overall, vegetation could experience none to minor effects, with some potential for moderate adverse impacts from construction projects, and beneficial to moderate impacts in the Chena North District. Projects involving larger footprints have a greater potential to cause moderate adverse impacts to vegetation. Individual building construction would require smaller footprints and would, therefore, likely have the potential for only minor adverse impacts to vegetation. Small temporary structures would likely have no impacts on vegetation resources due to the nature and size of the project.

Any areas of temporary disturbance that would not be paved or landscaped would be revegetated with the approved seed mix provided in the INRMP (USAG FWA 2013b). Timely attention to revegetation of disturbed sites would help minimize the potential spread of noxious weeds.

Wildlife and Fisheries - Overall, wildlife and fisheries could experience beneficial to moderate adverse impacts from construction projects. In general, projects involving larger footprints and projects that are linear in nature (e.g., roads, fencing, and utility lines) have a greater potential to cause moderate adverse impacts to wildlife and fisheries including increased fragmentation and increased potential of sedimentation into surface waters during construction. Individual building construction would require smaller footprints and would, therefore, likely have the potential for only minor adverse impacts to wildlife and fisheries. Development activities involving grading as well as linear projects also have potential to cause moderate adverse impacts to fisheries through possible disruption of surface water flow (decreasing hydrology) or blocking surface water flows (causing ponding). Small temporary structures would likely have no impacts to wildlife and fisheries due to the nature and size of the project.

The overwhelming majority of the illustrative plan projects in the South Post, West Post, Ladd Airfield, and North Post have no potential to impact fish and wildlife. Projects that may have minor impacts to fish and wildlife in these districts include constructing the Riverfront Pavilion/Amenity and connecting trail in the North Post, and managing trees for airfield clearance and removing the pavement near Building 2074 in Ladd Airfield. In the South Post, replacing the "Bailey" bridge may constitute a moderate impact. BMPs and SOPs listed in Appendix B should be employed to keep impacts less than significant.

Within the Chena North District, short-term plans to establish a buffer on the western boundary, and mid-range plans to expand the buffer would increase wildlife habitat and therefore be a beneficial effect. Short to mid-range projects entailing transportation upgrades, ASP

development, using the soil stockpile area for engineer training, improving the Chena River boat launch, and demolishing buildings and roads to create staging and storage areas, as well as long-term recreation upgrades such as adding rec fields and constructing a new outdoor rec building could result in minor impacts to wildlife. Within this district, dredging Chena Cove would be a moderate, short-term impact to fisheries; completing a bivouac and road network could also result in moderate impacts to wildlife. BMPs and SOPs listed in Appendix B should be employed to keep impacts less than significant.

By employing SOPs and BMPs listed in Appendix B, project design and construction staging could be conducted to reduce or avoid wildlife and fisheries impacts. During project design, projects could potentially be sited away from sensitive habitats (i.e., riparian), avoiding adverse impacts to higher valued habitats and impacts to stream habitat. Those projects that involve unavoidable impacts could reduce or restrict footprints in sensitive areas to reduce the amount of overall adverse impacts.

Species protected under the MBTA and the Bald and Golden Eagle Protection Act have the potential to occur within the ROI. Impacts to these species are not anticipated; however, if determined necessary, conservation measures focusing on avoidance and minimization of adverse impacts to breeding, wintering, and migratory birds would be implemented during project activities. Bird species protected under the MBTA and the Bald and Golden Eagle Protection Act would be avoided to the maximum extent possible. Construction activities would be limited to the nonbreeding season within areas identified as having potential for nesting bird species. If construction activities occur during the general avian breeding season within areas known to have historically supported breeding protected migratory bird species, a pre-construction nesting bird survey would be conducted (within seven days of proposed activity) to identify active nests. If active nests are identified, an avoidance buffer (distance per regulatory guidance and/or discretion of monitoring biologist) would be established and the nest would be monitored until the juvenile birds have fledged.

Wetland Resources - Under the Proposed Action, wetlands could be impacted during construction activities. Ground-disturbing activities within wetlands would be permitted under Section 404 of the CWA. Measures identified as part of the Section 404 permit would be implemented to minimize/mitigate impacts to jurisdictional waters. Therefore, significant impacts on wetlands sensitive habitats are not anticipated.

Adverse impacts to wetlands from construction of these projects would be additionally reduced and minimized through the use of SOPs and BMPs provided in Appendix B.

Overall, wetland resources could experience none to moderate adverse impacts from illustrative plan activities. Projects involving larger footprints and projects that are linear in nature (e.g., roads, fencing, and utility lines) have a greater potential to cause moderate adverse impacts to wetlands. Individual building construction would require smaller footprints and would, therefore, likely have the potential for none to minor adverse impacts to wetland resources. Those activities involving grading as well as linear projects also have potential to cause moderate adverse impacts to wetland hydrology through possible disruption of surface water flow (decreasing

hydrology) or blocking surface water flows (causing ponding). Small temporary structures would likely have no impacts to wetland resources due to the nature and size of the project. In addition, bridge and culvert installation would likely have beneficial impacts to wetlands through directing Soldier movement along bridge structures (avoiding riparian areas that likely contain wetlands) and from allowing necessary surface water flows across the landscape to maintain wetland hydrology.

Nearly all of the proposed projects in the North Post, Ladd Airfield, West Post and South Post, are anticipated to have no effect to wetlands. Only constructing the Riverfront Pavilion/Amenity, managing the trees for airfield clearance requirements, constructing the loop road have the potential for minor impacts; and replacing the "Bailey" bridge could result in moderate impacts.

In the Chena North District, constructing a new ASP, expanding RV services in Chena Cove, and adding active recreational fields could result in minor wetlands impacts. Dredging Chena Cove, improving the boat launch on the Chena River, and constructing a new shopette by new ACP could result in moderate impacts to wetlands.

Adverse impacts to wetlands from construction of these projects would be additionally reduced and minimized through the use of SOPs and BMPs provided in Appendix B. During project design, projects would be sited away from wetland resources, where feasible, avoiding adverse impacts to wetlands. When not feasible to avoid adverse impacts to jurisdictional wetlands, project managers would undertake mitigation measures required as a condition for receiving the CWA Section 404 permit. Additionally, appropriate placement and sizing of culverts or other mechanisms to maintain natural drainage, where necessary, would help avoid impacts to wetland hydrology. Those projects that involve unavoidable impacts could reduce or restrict footprints in sensitive areas and clearly demarcate wetland boundaries to reduce the amount of overall adverse impacts to wetlands. Temporary disturbances can be reduced by activities such as stockpiling wetland soils for reuse to restore sites to their original grades or by timing construction activities during months when sensitive wetland soils are frozen and reducing the extent of temporary disturbance and wetland degradation.

3.4.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue, as needed, and would undergo project-specific evaluation under NEPA. Existing SOPs and BMPs listed in Appendix B would also be implemented to minimize impacts to biological resources during and after construction, reducing potential adverse impacts to vegetation and wildlife to minor. For potential activities within wetlands and floodplains, Fort Wainwright would continue to comply with CWA Section 404 permitting and EO 11990; therefore, overall adverse impacts would be minor. No significant impacts to biological resources are anticipated.

3.5 CULTURAL RESOURCES

Cultural resources for federal agency planning and environmental review purposes are primarily those resources that qualify for the National Register of Historic Places (NRHP) as well as those addressed by other laws protecting archaeological sites and Native American properties. The National Historic Preservation Act of 1966 (NHPA; 54 U.S.C § 300101), as amended, is the principal legislative authority for managing cultural resources. Generally, Section 106 of the NHPA, as amended, and as implemented in 36 CF § 800, requires all federal agencies to consider the effects of their actions on cultural resources listed and/or determined eligible for listing in the NRHP. Such resources are also termed "historic properties." Historic properties are defined as "a district, site, building, structure or object significant in American history, architecture, engineering, archaeology or culture at the national, state, or local level."

Further, the federal agency must afford the Advisory Council on Historic Preservation the opportunity to comment in the event that an undertaking will have an adverse effect on a cultural resource that is eligible for or listed in the NRHP and must consult with the State Historic Preservation Officer and other interested parties in an effort to avoid, minimize, or mitigate adverse effects.

Eligibility for the NRHP is established according to the official criteria of evaluation (36 CFR §60.4) issued by the Department of the Interior. The criteria relate to the quality of significance in American history, architecture, archaeology, engineering, and culture present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

> (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) That are associated with the lives of persons significant in our past; or
>
> (c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) That has yielded, or may be likely to yield, information important in prehistory or history.

Other laws, regulations, and EOs to protect cultural resources on federal lands include:

- The Antiquities Act of 1906 (16 U.S.C. 431 et seq.)
- The Archaeological Resources Protection Act of 1979 (Pub.L. 96–95 as amended, 93 Stat. 721, codified at 16 U.S.C. 470aa–470mm)
- The American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
- EO 13007, *Indian Sacred Sites*

- EO 13287, *Preserve America*
- The Native American Graves Protection and Repatriation Act (NAGPRA; 25 U.S.C. 3001-3013)
- Army Regulation 200-1 *Environmental Protection and Enhancement* details Army policies

3.5.1 Affected Environment

According to the Section 106 NHPA regulations (36 CFR §800), an Area of Potential Effect (APE) is defined as the geographic area or areas in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. For the purposes of this analysis, the term APE is synonymous with ROI for cultural resources.

For the Proposed Action, the ROI for cultural resources encompasses the entirety of the Fort Wainwright Main Post.

Direct effects on cultural resources would be restricted to areas of ground disturbance, such as new road and building construction, and locations adjacent to areas of development. Direct changes, renovations, and modifications to historic buildings, landscaping, and viewsheds can also be direct effects because these actions have the potential to adversely change the integrity of setting, character, feeling, and context of historic properties. Indirect effects, such as visual and auditory, could occur throughout the ROI.

Prehistoric and Historic Context - Table 3-5 summarizes interior Alaska's prehistoric archaeological traditions. For a detailed discussion of these periods and traditions, see the USAG FWA Integrated Cultural Resources Management Plan (ICRMP; USAG FWA, 2013a), Esdale et al. (2015) as well as Anderson (1984) and Dixon (2006).

Table 3-5. Interior Alaska Archaeological Traditions

Period (years BP)	Archaeological Tradition	Key Material Culture
ca. 12,300–8,000	Paleoarctic (including Nenana and Denali Complexes)	Microblade & burin technology (Denali Complex) and tear-drop shaped Chindadn points (Nenana Complex). Shares some technological traits with the American Paleoindian Tradition but has a terrestrial economic focus of large mammals, freshwater fish, and waterfowl.
ca. 6,000–2,000	Northern Archaic	Side-notched projectile points, microblades, distinctive scraping tools. Subsistence economy focused on seasonally abundant game including caribou, fish, and moose.
ca. 2,000–100	Athabaskan	Stemmed projectile points, ground and pecked stone, bone, antler, birch bark, and copper artifacts. House and cache pit features. Broad-based subsistence including large and small mammals, fish, and other freshwater marine resources.

Table 3-6 presents key historical events in the development of Fort Wainwright and interior Alaska. For detailed information on Fort Wainwright's historical context, see the USAG FWA ICRMP (USAG FWA, 2013a), Neely (2001, 2003), Price (2000, 2001, 2004).

Table 3-6. Key Historical Events

Date(s)	Events
1885	Lieutenant Henry Allen (U.S. Army) explores Interior Alaska.
1890s	Klondike gold rush and other stampedes bring over 100,000 prospectors and adventurers to Alaska.
1900s	Gold found in Fairbanks area; town established soon after. Alaska Road Commission (ARC) is established to upgrade existing trails and create new roads. Homesteading and missionary activities.
1910s	Homesteading in Fairbanks. Construction begins on Alaska Railroad
1920s	Alaska Railroad route from Seward to Fairbanks is completed, allowing year-round transportation from the coast to the interior.
1930s	Civil Aeronautics Administration plans for increased development of radio systems and airfield development throughout remote areas of Alaska.
1940s	WW II buildup in Alaska. Completion of Alaska Highway. Establishment of Ladd Airfield, originally as cold weather testing station, later expanded as key transfer point on Alaska-Siberia route of Lend-Lease operations. Ladd Field designated as Air Force Base in 1947.
1950s	Cold War anti-aircraft and ground defense, cold weather training and nuclear attack preparation.
1960s	Ladd Airfield transferred to U.S. Army and renamed after Gen. Jonathan Wainwright. Cold War training, ground defense, and logistical supply.
1970s	Significant decrease at Fort Wainwright due to Vietnam War.
1980s-present	Reassignment of infantry divisions and support troops to Fort Wainwright, to support the existing mission: to support worldwide deployment.

Fort Wainwright's Prehistoric and Historic Archaeological Resources - Sites representative of all of Interior Alaska's prehistoric archaeological traditions (see Table 3-5 above) are known from Fort Wainwright's Training Lands. These are, however, primarily located in the Yukon Training Area, Donnelly Training Area and Tanana Flats Training Area, which are located in other regions of the Tanana Valley far removed from the Fort Wainwright Main Post ROI that is the subject of this analysis.

Cultural resource surveys of the ROI began in the 1970s and 1980s and were reportedly completed in 2014 (Esdale et al., 2015).

Within Fort Wainwright's Main Post, there are eight prehistoric archaeological sites and five historic archaeological sites. These are:

- FAI-00040 (prehistoric)
- FAI-00041 (prehistoric)
- FAI-00042 (prehistoric)
- FAI-00043 (prehistoric)
- FAI-00199 (prehistoric)
- FAI-00200 (prehistoric)

- FAI-00509 (prehistoric)
- FAI-01603 (historic)
- FAI-01604 (historic)
- FAI-01990 (prehistoric)
- FAI-02117 (historic)
- FAI-02197 (historic)
- FAI-02198 (historic)

The sites listed above are primarily located in the Chena North district. Only one of these sites, FAI-00040 is eligible for the NRHP. The rest of the sites have been determined ineligible for the NRHP (Esdale et al., 2015).

Ladd Field National Historic Landmark - Ladd Field was the first Army airfield in Alaska and was a key part of the region's defense buildup for World War II. In 1985, the Ladd Field NHL at Fort Wainwright was listed in the National Register as a historic district of national significance for its role in the Army Air Corps' cold weather testing prior to and during World War II, its role as an air depot commanded by the Air Transport Command, and its role in the Lend-Lease Operations as the transfer point of planes to the Russians for transport along the Alaska-Siberia Route. The period of significance for the Ladd Field NHL extends from 1939 when construction began on the airfield to 1945 when the war ended (Price, 2004; USAG FWA, 2013a; NPS, 1984).

The Ladd Field NHL embodies the pre-World War II and World War II military construction. The historic features that comprise the Ladd Field NHL include wood, concrete, and steel buildings; concrete and cement runways, taxiways, and roadways; timber and steel-frame aviation hangars; and associated utilities (Price, 2004).

The Ladd Field NHL consists of 18 contributing architectural elements. Fourteen of these are building and structures in North Post and at the airfield. The other contributing elements are the north and south runways, parade ground, and underground utilidors. The NHL is centered on the runway, which is its anchoring visual and organizational element. North Post, located directly north of the airfield, consists of a collection of contributing flight service facilities, housing, and administrative buildings. The parade ground at the center of North Post remains an important visual and organizational element of that area (USAG FWA, 2013a).

Ladd Air Force Base Cold War Historic District - The Ladd AFB Cold War Historic District has been determined eligible for listing in the National Register due to its association with the strategic air reconnaissance, air defense, and Arctic research missions of the Cold War and specifically for its role in the early Cold War defense mission of the 46th/72nd Air Reconnaissance Unit and Fighter Intercept Squadrons (Price, 2001; USAG FWA, 2013a). The Ladd AFB Cold War Historic District includes 34 buildings or structures as contributing elements. The district largely comprises the same contributing resources as the Ladd Field NHL, with the addition of several buildings surrounding the airfield that were built during the early Cold War (Price, 2001; USAG FWA, 2013a).

Historic Buildings and Structures - In addition to the Ladd Field NHL and Ladd AFB Cold War Historic District discussed above, USAG FWA has determined two buildings, both of which are

in the West Post, to be individually eligible for the National Register: Building 4391, and Building 4070. Previously, Building 4070 had been part of the Ladd AFB Cold War Historic District (USAG FWA, 2013a).

Traditional Cultural Properties - At the time of Lt. Allen's expedition in 1885, the Lower-Middle Tanana River Valley, including lands now occupied by Fort Wainwright, was inhabited by Athabaskan bands described generally as the Salcha, Big Delta, Goodpaster, Wood River, and Chena Bands (Esdale et al., 2015). USAG FWA is aware that properties of traditional religious and cultural significance to Alaska Native tribes may be present on lands it manages. Efforts have been made to document these sites, utilizing input from indigenous land users. To date, one report has been produced to document the possible properties on lands at Fort Wainwright DTA. The report, Culturally Significant Site Survey: Donnelly Training Area, Alaska, was completed in 2008 and consisted of a series of interviews with tribal members from Upper Tanana tribes. The report did not find any properties of traditional religious and cultural significance, but USAG FWA recognizes these types of reports often cannot be exhaustive. The Army is open to new information on properties of traditional religious and cultural significance on the lands it manages as the information comes available; however, at this time, there are no properties of traditional religious and cultural significance identified in the ROI (USAG FWA, 2013a).

3.5.2 Environmental Consequences

This section presents a general discussion of the potential effects on cultural resources associated with implementation of the RPMP. Additional NEPA and NHPA compliance would be required prior to the implementation of any of the proposed projects. The guidelines and protocols outlined in the Fort Wainwright ICRMP (USAG FWA, 2013a) for compliance with Section 106 of the NHPA would be followed for all future actions. Site-specific impacts to cultural resources would be addressed and avoided, minimized, or mitigated at that time. It is important to note that impacts identified to cultural resources as a result of the proposed projects in this section do not serve as a NHPA determination; consequently, additional NHPA compliance would be completed prior to the implementation of any of the proposed projects.

3.5.2.1 Environmental Consequences – Proposed Action

Under the Preferred Alternative, cultural resources could experience impacts, but these would be less than significant. Impacts on cultural resources are anticipated to be less than significant because of the procedures in place to ensure cultural resources are reviewed prior to implementation of any actions. NEPA and Section 106 NHPA compliance would be completed prior to the implementation of any of the proposed projects specified in the ADPs. NHPA adverse impacts to historic properties would be mitigated per 36 CFR §800, AR 200-1, and the ICRMP. Existing SOPs and BMPs listed in Appendix B; *Design Guidelines for Ladd Field World War II National Historic Landmark Fort Wainwright, Alaska* (Design Alaska and JCA 2012); *Army Installation Design Guide: Fort Wainwright (USAGAK 2006)*; and *Unified Facilities Criteria DoD Building Code (UFC 2016)* would be utilized to avoid, minimize, or mitigate impacts to cultural resources during development, construction, operations, and maintenance, thereby reducing cultural resources impacts to minor.

None of the short, mid, or long-range projects identified in the Chena North illustrative plan have the potential for impacts to known cultural resources. SOPs and BMPS listed in Appendix B will be employed to avoid, minimize, or mitigate impacts to potential inadvertent discoveries.

In the North Post area, short-range plans to convert the horseshoe to pedestrian use only, as well as short, mid, and long-range plans to assess/repurpose/reuse historic buildings in the horseshoe and the housing circle could have minor to moderate impacts to the Ladd Field NHL and Ladd AFB Historic District contributing elements. Long-range plans to construct HQ/admin buildings in the Horseshoe could be a moderate impact. Although it would be an adverse effect under NHPA and require Section 106 consultation, it is considered as moderate for NEPA as the project would not cause either the physical loss of a contributing resource or the reduction in the integrity of the district or NHL that they would lose historic property designations.

In the Ladd Airfield, short-range plans to relocate the BLM tower, construct the frangible fence, remove the pavement near Building 2074, and mid-range plans to construct the HEMTT facility, expand fuel tanks, and aviation support complex activities could have a minor impact to the Ladd Field NHL and Ladd AFB Historic District. Activities associated with renovating Hangar 1 and Building 1558, constructing the Shadow facility, and TUAs launch pad, assessing/reusing/repurposing Building 1565, which is a contributing element to the Ladd AFB Cold War Historic District, could result in minor to moderate impacts to the district.

The proposed ADP projects listed above could result in the introduction of modern buildings and transportation networks within the Ladd Field NHL and Ladd Field AFB Cold War Historic District, which would result in minor impacts to these cultural resources. Adhering to the SOPs, BMPs listed in Appendix B; ICRMP, AR 200-1; NHPA Section 106 procedures codified in 36 CFR §800; *Design Guidelines for Ladd Field World War II National Historic Landmark Fort Wainwright, Alaska* (Design Alaska and JCA 2012); *Army Installation Design Guide: Fort Wainwright (USAGAK 2006)*; and *Unified Facilities Criteria DoD Building Code (UFC 2016)* would allow the Ladd Field NHL and Ladd AFB Cold War Historic District to retain historic significance, integrity, and visual integrity in regards to setting, feeling and character. While there may be effects under Section 106 of the NHPA that would require consultation, they would be considered less than significant impacts under NEPA as they would not cause either the physical loss of a contributing resource or the reduction in the integrity of the district or NHL to the extent that they would lose their designations as historic property.

Extending the southern runway in Ladd Airfield for UAS operation would be a moderate impact. The runway is a contributing element of the both the Ladd Field NHL and the Ladd AFB Cold War District. As is the case with the other Ladd Airfield projects discussed above, although it would be an adverse effect under NHPA and require Section 106 consultation, it is considered minor - moderate for NEPA as the project would not change the view shed nor degrade the integrity of the Ladd Field NHL or Ladd AFB Historic District to a degree that they would lose their historic property designations. Thus, implementation of the RPMP elements in the North Post and Ladd Airfield districts would result in less than significant impacts to the Ladd Field NHL and Ladd AFB Cold War Historic District.

NHPA Section 106 and NEPA reviews will be conducted for each specific short, mid and long-range projects specified in the ADPs. Consultation with stakeholders, the SHPO, the NPS, and the ACHP, as necessary, will occur as each project is developed and executed. SOPs and BMPS listed in Appendix B will be employed to avoid, minimize, or mitigate impacts to historic properties. With the implementation of these requirements and protocols, the impacts would not be anticipated to cause the physical loss of a contributing resources or the reduction of integrity of the district or NHL to the degree that it would lose its designation as a historic property. Therefore, potential impacts in the North Post are anticipated to be less than significant, provided separate NEPA and NHPA reviews are conducted for each future project.

The RPMP has no activities that would impact Building 4070 and 4391, which are the only historic properties in the West Post. There are no known historic properties in the South Post. Both districts have been completely surveyed. Transportation upgrades, road operation, building repurposing and reuse, and ground-disturbing demolition or construction in the South Post have the potential to adversely affect undiscovered historic properties, if any exist. SOPs and BMPS listed in Appendix B will be employed to avoid, minimize, or mitigate impacts to potential inadvertent discoveries.

In summary, implementation of the RPMP would result in less than significant impacts on cultural resources because procedures are in place to ensure cultural resources would be reviewed prior to implementation of any actions. Effects on cultural resources would be identified through the Section 106 review process prior to the implementation of any development projects, and adverse effects would be avoided, minimized or mitigated. Additionally, adherence to the *Secretary of the Interior's Standards for the Treatment of Historic Properties* would ensure that impacts from projects involving historic properties would be avoided or minimized wherever possible.

3.5.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. USAG FWA may or may not implement identified projects and plans. Development and construction projects would still be expected to continue on an ad hoc basis, as needed. Development would be done in isolated, disjointed sections, raising the potential risk for adverse effects to cultural resources. Each project would undergo project-specific evaluation under Section 106 NHPA and NEPA. Existing SOPs and BMPs listed in Appendix B would also be utilized to minimize impacts to cultural resources during and after construction, reducing potential adverse impacts to less than significant. However, conducting development projects in isolated, disjointed sections, increases the potential risk for adverse effects to cultural resources, as it is not as certain that they could follow the cultural heritage vision, goals and objectives found in the RPMP.

3.6 ENERGY AND UTILITIES

This section describes the utility systems (electrical, central heating, water, wastewater, and communication) for Fort Wainwright and surrounding areas. For the purpose of this analysis, the ROI for utilities includes the service area for each provider that serves Fort Wainwright

Energy security is increasingly viewed as essential to ensuring and protecting the long-term viability of installation operations. Safe and reliable access to energy is critical to virtually all activities on Army installations. The Army recognizes the threats to its installations and operations posed by increasing costs of centrally distributed, over-burdened, utility-provided energy grids, as well as the vulnerabilities posed by potential disruption of military installation energy supplies. Therefore, the Army has included energy as part of its Net Zero strategy.

3.6.1 Affected Environment

Doyon Utilities, LLC (Doyon), owns and has exclusive right to operate the utilities on Fort Wainwright, including the electric power generation and distribution system, the water treatment and distribution system, the wastewater collection and treatment system, and the steam and condensate distribution system. Under a 50-year contract with the Army, Doyon will furnish all necessary labor, management, supervision, permits, equipment, supplies, materials, transportation, and any other incidental services required for the complete ownership, operation, maintenance, repair, upgrade, and improvement of these utility systems (USACE, 2008). As a regulated public utility operating under federal contract, Doyon is fully responsible for accomplishing any expansion needed to serve the evolving needs of FWA. During the privatization process, Doyon completed an extensive study and modeling of existing and projected energy requirements at Fort Wainwright and undertook upgrades to existing power distribution technology to ensure full capability for future growth (USARAK, 2008).

Electrical System - Electrical power requirements on the Main Post are met primarily by electricity generated at the Central Heat and Power Plant (CHPP) in Building 3559. The CHPP houses four 5-megawatt (MW) coal-fired, steam-driven turbine generators that produce electricity and steam heat. Process water in the CHPP is cooled by air-cooled condensers. The electrical distribution system distributes power generated at the power plant to most of Fort Wainwright. Supplemental electrical power is available as needed on Fort Wainwright through a tie provided by Golden Valley Electric Association, a nonprofit cooperative in North Pole, Alaska. The annual power requirements on the Main Post range from a high of 18 MW during winter to a low of 10 MW during summer (Doyon Utilities, 2016a). In addition to electricity generated at CHPP, 15 buildings on the Main Post have standby engine generators units with design capacities ranging from 10 to 400 kilowatts (kW) that can augment electrical power supplies (Doyon Utilities, 2016a).

The Fort Wainwright CHPP as operated by Doyon burns approximately 220,000 tons of coal per year (3-year rolling average). The power plan is permitted to burn 336,000 tons, resulting in a substantial 52 percent available headspace in the permitted amount (USARAK, 2009).

Power generated at the CHPP is distributed to Main Post facilities on 10 radial three-phase circuits, which originate from 12.47 kV metal-clad switchgear located inside the CHPP, and conductors primarily carried on overhead poles. The North Post area is served by three main circuits, while the South Post area is served by four different circuits. The switchgear also provides a 12.47 kV tie to GVEA's 69 – 12.47 kV interconnection transformer located at the CHPP substation (Doyon, 2016a).

The electrical distribution system consists of approximately 81.5 linear miles of overhead primary and secondary distribution lines, approximately 4.8 linear miles of underground distribution circuits, approximately 12 linear miles of street lighting circuits, and approximately 14 linear miles of airfield lighting cables. In addition, there are approximately 920 pole-type transformers and 115 pad-mount transformers located throughout the post (Doyon, 2016a).

Central Heating System - Heating requirements on the Main Post are met with steam generated at the Fort Wainwright CHPP, with the steam distributed at 100 pounds per square inch through pipes within the network of underground utilidors (underground utility corridors) and some buried pipelines. The CHPP produces steam using six Wickes coal-fired steam boilers, each rated at 150,000 pounds per hour of steam, that generate super-heated steam at 435 per square inch gauge (psig) and 650 degrees Fahrenheit. Usually, at any one time, four boilers are operating, with one additional boiler kept on standby, and one boiler undergoing a cyclic maintenance program (Doyon Utilities, 2016a). The design boiler efficiency at maximum continuous rating is 81.2 percent. The super heater is rated for 125,000 pph steam at 650°. The CHPP receives 75 percent return of condensate from the FWA condensate return system.

Distribution of steam within the Main Post is accomplished with four 16-inch main steam lines, three of which connect to a 24-inch main on the east side of the CHPP (Doyon, 2016a). The heat distribution system consists of approximately 23.3 linear miles of steam distribution lines in utilidors, with another approximately 5.9 linear miles of distribution lines being direct-buried (Doyon, 2016).

Water System - Two wells in Building 3559 make up the main potable water supply, and together they produce up to 4.9 million gallons per day (MGD). The highest average daily potable water demand (during summer) is approximately 2.7 MGD (Doyon, 2016b). Seven additional groundwater wells are used to augment potable water supply on the Main Post and provide water for other uses, including fire protection. With all nine wells, the overall combined supply is up to 9.3 MGD. Water from the seven supplementary wells is treated only with chlorine, and these wells are used mainly to supply potable water in emergencies. Potable water for general use is stored in a 325,000-gallon concrete tank.

The water treatment plant serving Main Post is housed in Building 3565. The potable water treatment plant has a hydraulic capacity of 3.5 MGD. At times during the summer, the peak water use can exceed the treatment plant’s capacity to produce high quality water; when this occurs, the additional demand is met by adding unfiltered chlorinated water (Doyon, 2016b).

Treated water is distributed to Main Post buildings and hydrants through the network of utilidors (underground utility corridors). The residual heat from the steam lines that are collocated in the utilidor system prevents the water distribution lines from freezing during the winter. The Birchwood Housing development (formerly called 801 Housing) is not on the potable water distribution system, but is instead connected to the Fairbanks water system.

Fire protection for the Fort Wainwright Main Post is provided through a network of about 350 hydrants distributed throughout the area, with water supplied from the system of wells described above (Doyon, 2016b)

Wastewater System - The wastewater collection system at FWA consists of approximately 24.2 miles of sanitary sewer lines and 29 lift stations. Wastewater generated on the Main Post travels by gravity collection lines and lift stations to the southwest corner of Main Post where it flows under Richardson Highway to a main lift station and continues to the Fairbanks wastewater treatment plant, owned and operated by Golden Heart Utilities (GHU) (Doyon, 2016a). The main lift station and meter are owned and maintained by the GHU and are not part of the FWA wastewater system. The lift stations located throughout FWA have local control systems that operate pumps on and off based on the water levels in the wet well and local alarms (Doyon, 2016a). Approximately 69 percent of the wastewater lines at FWA are located in the underground utilidors, while the remaining 31 percent are buried and of a larger diameter to avoid freezing.

The Fort Wainwright Main Post produces about 1.25 MGD of sanitary wastewater during winter and 2.0 MGD during summer. The hydraulic capacity of the Main Post wastewater collection system is 2.5MGD, and the design capacity of the 24-inch conveyance main is 2.0 MGD (Doyon, 2016b).

Storm Water - The majority of the storm water conveyance system on the Main Post is a surficial network of swales and ditches that drain to the Chena River or retention area. FWA has some underground storm water piping, but the system is limited to airfield drainage piping, a small system draining streets on the North Post, and culverts crossing roadways (WCNR, 2013)

Results from the Storm Water Survey and Model (WCNR, 2013) revealed that most of the Main Post's storm water infrastructure prone to flooding and exceeding capacity is located in the old post region and the airfield. The majority of the engineered, subsurface storm sewer network is located in these areas and is generally the oldest-placed prior to 1960-and in the poorest condition with the largest amount of impervious area.

The Siku Basin and the Southern Cross residential areas have also exhibited poor ability to route larger rainfall events. This is primarily due to the very flat topography of the areas, which causes flat or adverse slopes in the surficial ditches and short storm sewer sections. During large summer rainfall events, drop inlets between housing units, as well as street inlets, have exhibited flooding, and ditches have become backlogged with water. During early summer months when snow melt runoff in the river causes very high river stages, backwater from outfalls have cause standing water in ditches and backing up in street inlets (WCNR, 2013).

Communications - The communication system on the Main Post includes multiband fiber optics and copper wiring throughout most facilities. System upgrades have been deferred in those areas of family housing that are planned for future renovation or replacement and would be installed at the time those actions are undertaken (USAGAK, 2005).

3.6.2 Environmental Consequences

This section evaluates potential effects on energy and utilities. Effects are evaluated based on the potential for the proposed projects to increase the demand on existing utilities and public services

and/or create a new demand for utilities and public services. Utilities and public services evaluated in this section include electrical, heating, water, wastewater, and storm water systems.

3.6.2.1 Environmental Consequences – Proposed Action

Under Alternative 1, FWA would adopt the RPMP; and management of the physical development at the Main Post would occur based on planning principles and development goals set forth in the RPMP.

The proposed action would have minor long-term beneficial impacts on utilities, primarily through the removal of older, energy and water inefficient facilities and the construction of new facilities based on improved efficiency standards. The RPMP identifies a number of ongoing or planned upgrades to infrastructure, facilities, and demolition of certain facilities aimed at improving energy efficiency and satisfying the installation's net energy goals. Implementation of these short-term projects and subsequent facility construction could result in additional loads on the existing energy system; however, based on the demolition of existing buildings and the use of sustainable design features found in the Vision Plan and practices in newer buildings, it is not anticipated that FWA would experience noticeable, additional load requirements. Thus FWA energy production would not change or substantially increase. Infrastructure upgrades would instead reduce fuel, energy, water and wastewater needs, maximize the use of existing facilities, and reduce the unnecessary or redundant facilities and infrastructure. Furthermore, incorporating energy and water efficient facilities could eventually reduce loads on the existing system, resulting in long-term, beneficial impacts. It is anticipated that implementation of the various components of the ADPs would have long-term, beneficial impacts on utilities and would increase overall energy security at FWA.

Direct and indirect impacts from transportation-related projects could have far-reaching effects on overall energy consumption and cost. The emphasis on energy efficient, compact districts, and interconnected transportation networks could lower energy consumption, subsequently cutting energy costs. Efforts made to create interconnected transportation networks to support more efficient transportation, reduce traffic congestion, and support the use of other modes of transportation including walking could further reduce energy usage as traffic would run more efficiently and more people opt to walk or bike to their desired destinations. A benefit-cost analysis is required to prove the extent of energy cost reduction; however, it is anticipated that long-term, beneficial impacts would occur.

Development standards used to guide future land use developments propose that low-impact design standards be used for new construction. The use of these standards will create more energy efficient facilities and result in long-term, beneficial impacts on energy.

Under the Proposed Action, new structures would take advantage (to the maximum extent possible) of existing utility service(s) in the areas and typical coordination would be conducted to ensure minimal interruption to surrounding building service. Construction and demolition projects would likely need to modify, remove, or install utilities, such as electricity, water, sewer, and storm drainage. When this occurred, FWA would coordinate with Doyon to provide notification of interruptions in services.

All electrical power and heating needs for new facilities and renovations would be supplied by the central heating and power plant. The existing high-voltage electrical distribution system and steam/condensate heating system would be adequate to serve proposed new facilities and renovations given the use of sustainable and efficient facilities design principals for new facilities. Water for new facilities would be supplied from wells and a water treatment plant within the Main Post and sufficient capacity exists to serve the anticipated domestic water supply needs. The waste water generated under the Proposed Action would be collected and distributed to the regional wastewater treatment plant (GHU Wastewater Treatment Plant) via the existing Fort Wainwright sewage collection system, where the capacity exists for a potential increase in wastewater. However, an increase in the volume of wastewater during the summer period, currently estimated at 2.0 MGD, could potentially exceed the design capacity of the 24-inch conveyance main rated at 2.0 MGD.

Storm water management activities at FWA are mandated by federal and state laws. Management practices required by post storm water permits will ensure against runoff pollution from the demolition of existing facilities and the construction of new facilities and parking lots added as a result of the Proposed Action.

Doyon will continue to manage, control, and perform operations, maintenance, repairs, replacements, and upgrades for all utilities and associated infrastructure as part of daily operations and in response to identified needs. If additional expansion of the utility infrastructure is need, Doyon will be fully responsible and capable to expand the capacity to meet the needs of its customer.

All of the specific illustrative plan projects have either no effect, beneficial, or minor-beneficial effects to utilities, with the exception of relocating the RV Park to Chena Cove in the Chena North District. This would take some expansion of the utilities as there is currently electric in Chena Cove but no dump stations or water hookups for RVs. The resulting impact to utilities would be minor as this infrastructure would need to be put in place but it would likely not exceed the capabilities of the infrastructure and impact other users

Overall, impacts on utilities and services from Proposed Action are anticipated to be long-term and beneficial. Beneficial impacts would occur as a result of improved energy, water, and wastewater efficiency from the demolition of older inefficient facilities, the use of sustainable design features and practices in newer buildings, and reduced vehicle use and subsequent reductions in the use of energy and fossil fuels, all of which would increase energy security for FWA.

3.6.2.2 Environmental Consequences – No-Action-Alternative

Under the No-Action Alternative, the RPMP would not be adopted; and management of the physical development at the Main Post would continue as need with less opportunity for coordination and cohesion between improvements to minimize vulnerabilities to FWA utilities needs. The utilities systems would continue serving the housing and other buildings and facilities on Main Post with adjustments as needed. Use of the various utilities in the cantonment area would continue as at present and as planned for the foreseeable future, in accordance with the

terms of the utilities contract between Fort Wainwright and Doyon. There are sufficient capacities and planned expansions in the utility systems serving Main Post to sustain the existing and foreseeable level of service. No significant impacts to utilities are anticipated from implementation of the No-Action Alternative; however, the beneficial impacts would not be as certain as under the Proposed Action.

3.7 GEOLOGY AND SOILS

The discussion of geology and soils covers features of the physical environment that may be affected by, or have an impact upon, the proposed activities. These include physiography, geology (surface and bedrock), mineral resources, seismicity, and soils (types and properties). Although the discussion of geology includes the regional discussion needed to understand this setting, the ROI is considered to be localized and limited to the proposed ADP districts on the Fort Wainwright Main Post.

3.7.1 Affected Environment

Geology - Silt and sand floodplain deposits from the Chena and Tanana Rivers comprise the geologic materials over most of the ROI south of the Chena River. Windblown silt surface deposits cover most the area and may be many feet thick on lower hillslopes and landforms (USDA, 2006). Birch Creek schist bedrock underlies Birch Hill along the northern edge of the cantonment area and is the primary bedrock unit (Pewe et al., 1966; Jorgenson et al., 1999).

Topography - The topography of the Fort Wainwright cantonment area is relatively flat between the Richardson Highway and the Chena River. In the northern portion of the ROI—the Chena North District—bedrock hills rise steeply from the alluvial plain. Birch Hill is the most prominent of these, and is the major topographically feature in the ROI. Elevation ranges from approximately 450 feet above mean sea level (ASL) on the Main Post to over 1,000 feet ASL in the northern portion of the cantonment area at Birch Hill.

Mineral Resources - Sand and gravel deposits are known to be located beneath the Fort Wainwright cantonment area and may have value as construction material (USDA, 2006). Economic viability of extracting these resources is unknown. Most of the historic gold mining activity occurred outside the current property boundaries (Neely, 2001).

Soils - A soil survey exists for the Main Post area of Fort Wainwright, and may be useful for initial planning purposes. The soils of Fort Wainwright are generally weakly developed as a result of the extreme cold climate and the relatively young parent materials. Unless disturbed by human activity or periodic flooding, most of the soils have an insulating organic mat that has formed at the soil surface.

There are a high percentage of permafrost-affected soils on the installation (USARAK, 2004). Permafrost is discontinuous and occurs at variable depths throughout the area. Shallow permafrost (generally within 40 inches of the soil surface) is common in finer textured sediments, particularly on north-facing slopes and lower landscape positions, but generally absent on steeper south-facing slopes and active floodplains in the area (USDA, 2006).

Permafrost layers occur in varying thicknesses from less than a foot to more than 150 feet, depending on geographic location. Permafrost is particularly susceptible to degradation from human activity as it requires an insulating layer of peat and vegetation to maintain thermal stability in the summer season. If enough vegetation and organic material is removed from the soil surface, permafrost can melt and subsidence (thermokarsting) may occur. As soil-ice content is not evenly distributed within permafrost-affected landscapes, the variability of melting and subsidence often result in hummocky and mounded topography with water collecting in depressions. Soil structure, formerly contained by ice crystals, starts to break down, causing mudflows on sloping ground. Once subsidence begins in a particular area, it generally cannot be reversed, and the surficial permafrost soils are destroyed.

On the alluvial terraces and abandoned floodplains south of Birch Hill, soils have formed in unconsolidated stratified alluvial deposits of interbedded silt, sand, and gravel from the Chena and Tanana Rivers. Swales, drainages, and depressions host poorly stratified silt, sand, and organic matter and are scattered along the Richardson Highway and in parts of South Post. These deposits have high ice content and freeze perennially (Nakata Planning Group, 1987). Northernmost portions of the ROI are in the foothills of the Yukon-Tanana Upland and consist of fractured and weathered bedrock covered by a mantle of windblown loess. On steeper south-facing slopes of Birch Hill, soils are generally well drained, free of permafrost, and often have fractured bedrock in the soil profile. Permafrost-affected soils inhibit drainage on lower slopes and support wetland habitats in some locations.

3.7.2 Environmental Consequences

3.7.2.1 Environmental Consequences – Proposed Action

Geology - The Proposed Action is unlikely to affect the local geology at Fort Wainwright. Sedimentation patterns would not be significantly altered, and no structural movements or changes in seismicity would result. No significant impacts are anticipated.

Soils - Evaluation of potential impacts to soils is based on topographic alterations to the landscape and soil properties including the erodibility, bearing capacity, soil structure, soil-water balance, and presence or absence of permafrost. Permafrost-affected soils have a high bearing strength when frozen, but are subject to slope failure and can be difficult to compact when thawed. Potential impacts would result primarily from ground disturbance (grading, cut-and-fill, compaction, and other earth-moving activities) associated with the demolition of existing structures or construction of new structures or transportation infrastructure. These activities could alter soil profiles and local topography, as grading is required for demolition and construction activities.

Constructing new roads, sidewalks, and trails would disturb soils. Similarly, developing buildings and supporting infrastructure would result in minor to moderate short-term disturbances to soils throughout the installation. As grading, cut-and-fill, and other earth-moving activities would be associated with new construction, direct, short-term impacts to soils would occur under the Preferred Alternative; however, these would be minor to moderate.

The Chena North ADP includes infrastructure upgrades to roads and some facilities that would have temporary minor impacts to soils, such as improving the boat launch on the Chena River, expanding the Upper ASP, road, bivouac and roundabout construction, and developing recreational fields. These would, however, provide long term benefits following project completion in that they would help reduce soil erosion. Short term minor impacts to soils may be expected during earth moving activities for infrastructure upgrades and excavation of contaminated soil during the Tank Farm Remediation. Long term benefits from these projects would include reduced erosion and dust from road improvements. Several proposed construction and demolition projects are anticipated to have minor impacts to soils that may include compaction and erosion, such as closing Trainor Gate ACP and establishing an interim gate on the Johannsen, replacing the ski lodge, replacing the CBRNE Facilities, constructing new ASP, demolishing buildings and roads to create staging and storage areas, shopette construction, constructing installation support and outdoor recreation buildings. These impacts would be temporary and avoided or minimized with appropriate application of SOPs and BMPs listed in Appendix B. The proposed dredging of Chena Cove is anticipated to have moderate temporary impacts as disturbing river sediments would increase water turbidity only during dredging operations.

Area development plans for North Post, West Post and Ladd Airfield include several proposed improvements to transportation infrastructure, demolition of selected buildings, and construction of new facilities. Many of these proposed projects would have moderate, temporary impacts to soils that would be avoided or minimized with the application of appropriate SOPs and BMPs listed in Appendix B.

On South Post, illustrative plans include upgrades to transportation infrastructure, demolition several structures, and construction of new buildings. The majority of these proposed projects will have minor temporary to no significant impacts to geology and soils. Mid-Range plans for the proposed demolition and reconstruction of Baily Bridge are anticipated to have moderate impacts to soils as earth moving disturbances along the river bank may contribute to limited erosion and sedimentation of the Chena River. These impacts would be temporary and avoided or minimized through the application of SOPs and BMPs listed in Appendix B. The proposed Motorpool Expansion on South Post calls for filling Bader Lake (a non-regulated Waters of the U.S.) to accommodate increased motorpool capacity and new support facilities. It is presumed that the soil could come from the clean soil stockpile north of the Chena River. Overall this project would have no impact on geology and soils as it would be filled and be done in a way to minimize erosion. In general, the implementation of SOPs and BMPs listed in Appendix B would reduce the overall impacts to the site-specific projects, resulting in no impacts or minor adverse impacts for the majority of the proposed South Post projects. Most impacts from erosion would occur during construction, as topsoil is removed and stockpiled while roads and structures are built. Paved roads and structures would cause a permanent loss of soil underneath their footprints; however, most of the soil removed during construction would be used for grading and revegetating around the project site. These impacts would be reduced to minor or none by proper

siting, erosion procedures, and post-construction revegetation to prevent topsoil loss, and by adhering to the BMPs and SOPs in Appendix B.

Construction activities disturbing more than 1 acre would be conducted in accordance with the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit, the ADEC Construction General Permit, and development of a Storm Water Pollution Prevention Plan (SWPPP; USAG FWA 2015c). The NPDES and ADEC permits, together with the required SWPPP, would outline construction site management practices designed to protect the quality of the surface water, groundwater, and natural environment through which they flow. The SWPPP would identify specific areas of existing and potential soil erosion, location of structural measures for sediment control, and management practices and controls. Use of these management practices and controls, as well as the SOPs and BMPs listed in Appendix B would reduce the potential for erosion of disturbed soils.

3.7.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, USAG FWA would not implement the RPMP. Construction projects would still continue, as needed, and would undergo project-specific evaluation under NEPA. Construction activities disturbing more than 1 acre would be conducted in accordance with the NPDES General Permit and associated SWPPP. Existing SOPs and BMPs listed in Appendix B would also be utilized to stabilize soils during and after construction, reducing potential adverse impacts to minor. No significant impacts to geology or soils are anticipated under the No-Action Alternative.

3.8 LAND USE

This section describes land use at Fort Wainwright and surrounding areas. The ROI includes the Fort Wainwright Main Post and potentially affected adjacent properties.

3.8.1 Affected Environment

The Fort Wainwright Main Installation contains both urbanized and rural areas that have been developed to include a number of different land uses that are necessary both for force readiness and a complete community. Existing generalized land uses within the installation fall into seven categories (USACE 2008):

(1) Airfield – The airfield land use category is for flight operations including runways, taxiways, airfield support facilities; including airfield operations, aviation refueling, aviation maintenance, and related test facilities.

(2) Community – The community land use category is composed of a mix of uses. Allowable uses include religious, Family support, personnel services, professional services, medical, community, housing, commercial, and recreational services.

(3) Industrial – The industrial land use category is designated for production, maintenance, depot, and storage facilities, as well as activities that generate heavy traffic and pollution.

(4) Professional/Institutional – The professional/industrial land use category provides for non-tactical organizations including military schools; headquarters (HQ); major commands; and non-industrial research, development, test and evaluation facilities.

(5) Ranges & Training – This land use category consists of areas used for training activities and exercises including weapons demonstration and qualification ranges, combat training areas, live-fire training ranges, bivouac sites and maneuver areas.

(6) Residential – This land use category provides space for Family housing and unaccompanied enlisted personnel housing. It also includes Family services and other neighborhood services.

(7) Troop – The troop land use category is assigned to operational facilities for force readiness, support operations for deployable units, and circulation and movement of Soldiers between sleeping, eating, training, and operational facilities.

Each land use type listed above reflects the dominant land use within that area, not minor outliers to the primary use. For example, an industrial land use area may also contain administration, medical, community facilities, and supply and storage areas. Land use types found in each RPMP ADP districts are listed in Table 3-7.

Table 3-7. ADP District Existing Generalized Land Use Categories

ADP District	Land Use Category
Chena North	• Community • Industrial • Ranges & Training • Residential
North Post	• Community • Professional/Institutional • Industrial • Residential • Troop
Ladd Airfield	• Airfield • Industrial
West Post	• Community • Professional • Troop • Residential
South Post	• Community • Industrial • Professional/Institutional • Troop • Ranges & Training

The Chena North District is largely rural and undeveloped. It is primarily range and training land used for maneuver and bivouac training. Industrial uses include the ASP and the historic CANOL tank farm. Community uses are in the form of recreational activities such as skiing (both Nordic skiing on cross country trails and downhill skiing at the Birch Hill ski area), hiking, birdwatching, and sport bowhunting moose. Residential use includes the Siku and Birchwood housing developments in the far southwestern portion of the Chena North area.

The North Post is characterized by a central commons, with streets extending out in a spoke pattern. This area, together with the airfield, makes up the Ladd Field NHL. Family housing units are intermingled with troop housing and professional/institutional facilities in the central commons, with additional family housing units clustered in a residential area to the north, along the Chena River. Additional community uses of the North Post area include trails and paths for walking and jogging, and the Engineer Park recreation area to the east. The railway switching yard and warehouse area in the western area comprise the industrial uses of the north post area.

The Ladd Airfield is runways, hangars, and aviation assets and support facilities. The airfield is a major feature of the cantonment area and contains two parallel runways oriented east-west. The airfield is used primarily for helicopter training and airlift activities, UAV operations and training, and to a lesser extent for fixed-wing aircraft. Support facilities, such as those for operations, maintenance, supply, and storage, are located around the perimeter of the field. The BLM uses some buildings along the north side of the airfield for storage, maintenance, and administration; these buildings serve as the headquarters for the Alaska Fire Service implemented through BLM. The airfield contributes to the Ladd Field NHL, due to its role as a key link in the Alaska-Siberia lend-lease route operation during World War II.

The West Post District primarily contains residential areas and facilities to support family and community living. It is comprised mostly of family-oriented development ranging from housing, small-scale commercial, schools, medical, and recreational areas that serve all ages. The Bassett Army Hospital medical complex is located within the West Post District. This district is also the location of much of the family personnel pedestrian traffic at Fort Wainwright.

The South Post includes Soldier barracks and support facilities, professional/institutional facilities, and community facilities. South Post industrial areas include the central heating and generating plant and associated structures, railway spurs, and other storage, supply, and maintenance facilities. The laundry and public works administrative buildings are also in this area. East and south of the industrial area are the Post Center and Monterey Lakes area (a.k.a. the Brigade Area), containing troop quarters, maintenance, supply, and storage facilities, administration, operations, sports/fitness complex, visitor housing facility, public exchange, commissary, and other community and recreation facilities. To the northeast of this area is the 18-hole Chena Bend Golf Course. West of the golf course is the Lower ASP.

The RPMP ADPs support sustainable development at Fort Wainwright by adopting the planning goals and principles identified in the RPMP. The ADPs are guided by and include form-based codes and the Regulating Plan. Specific development projects in the ADPs will adhere to the Regulating Plan, which is the controlling document and principal tool for implementing the study area form-based code. The Regulating Plan provides clear parameters for allowable uses, height, siting, and basic building elements. Table 3-8 presents Regulating Plan standards for each RPMP district:

Table 3-8. ADP Regulating Plan Standards

ADP District	Regulating Plan Standards
Chena North	• ASP Standard • Biathlon Area Standard • Buffer Zone/Open Area • Communications Standard • Community Support • Engineer Training Area • Installation and Training Support • Joint Recreation-Training Standard • Landfill Standard • Outgrant Area Standard • Recreational Standard • Training Standard • Airfield Restricted Standard
North Post	• Residential/Family Housing Standard • Administrative Standard • Flex Use Standard • Industrial Standard • Open Space Area
Ladd Airfield	• Aviation Operations Standard • Open Space • Mission Flex Use Standard • Aviation Operations Standard • Airfield Support Standard • Deployment Passenger Assembly Standard • BLM Standard
West Post	• Community Support Standard • Residential Standard • Medical Standard • Entry Zone Standard • Vegetative Standard • Small-Scale Commercial Standard • Mixed Use Standard • Recreation Standard • Utilities Standard
South Post	• Medical Support Standard • Installation Support Standard • Industrial Standard • Utilities/Industrial Standard • Maintenance Standard • Maneuver Training Standard • Training/Operational Standard • Training/LVC Standard • Outload Standard • Mixed Use Standard • Working/Living Standard • Golf Course/Public-Private Venture Standard • Open Space

Public Access - USAG FWA recognizes the responsibility to allow public access to military lands in compliance with the Sikes Act, which requires public access to military installations to the extent that such use is consistent with the military mission and the protection of fish and wildlife resources. Public access and recreation on USARAK lands is detailed in the Transformation of U.S. Army Alaska Final Environmental Impact Statement (USARAK 2004) and the Integrated Natural Resource Management Plan (INRMP) for Fort Wainwright (USAGAK 2007; USAG FWA 2013b). The INRMP discusses specific programs to manage public access and provide recreational opportunities on Fort Wainwright lands.

Public access is allowed on many parts of the Fort Wainwright Main Post. Roads and trails are both plentiful, and the open spaces remaining in the Fort Wainwright cantonment area are important contributors to recreation opportunities for post inhabitants and local Fairbanks residents. Birch Hill in the Chena North district is a popular area for cross country and downhill skiing, hiking, birdwatching and sport hunting. The core cantonment area consists of landscaped yards, office buildings, ball fields, and open fields. The Chena River is a popular boating and fishing area. The amount of limitations and restrictions on public use of military lands depends on the type of military use of each area. Use Area descriptions and requirements for public access are detailed in the Transformation of U.S. Army Alaska Final Environmental Impact Statement (USARAK 2004) and INRMP (USAG FWA 2013b). For additional information on potential impacts to recreational activities in the ROI, see Section 3.11 Recreation Resources.

Subsistence - Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as “the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal, or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.” Under Alaska State law, subsistence uses are defined as “the noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption, such as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; and for customary trade, barter, or sharing for personal or family consumption” (AS 16.05.940[33]).

The ROI is a developed non-rural, non-subsistence area. It has no areas of subsistence use as defined by ANILCA or Alaska State law, and there are no current subsistence uses of the ROI.

Surrounding Land Use - Local current and future land use in the areas surrounding the Main Installation and adjacent FNSB areas is addressed in the FNSB Comprehensive Plan (FNSB 2005).

Fort Wainwright’s Main Post is bordered on the west by the City of Fairbanks. The FNSB has designated this area primarily as residential zones and small outdoor recreation zones (parklands), with pockets of commercial, institutional and industrial uses. The residential and recreation uses are compatible with Main Post land uses because they are adjacent to open space

and family housing of similar density. Outside the main gate, the Steese Highway is a primary north-south thoroughfare, and Airport Road is a major Fairbanks traffic artery. Trainor Gate road provides access to the post through the residential neighborhoods outside the northwestern portion of the post.

The northern and eastern areas of the Main Post are zoned primarily for general use and include residential areas. Most of this is FNSB land, though some parcels to the east of the installation are owned by the Alaska Mental Health Trust. These areas are mainly general use areas and, as such, are not subject to any restrictions that would conflict with the Fort Wainwright mission. Areas popular for outdoor recreation and areas of rural agricultural land border Fort Wainwright in this area. There is also residential development to the east of the cantonment area, primarily following the Chena River.

The City of North Pole is located to the south and southeast of Main Post. This is an urban area with primarily residential, commercial, institutional and industrial uses, and secondary open space and agricultural uses (FNSB 2005). Badger Road is a major traffic artery here, and Badger Road gate on the post's southern border provides access to the installation.

3.8.2 Environmental Consequences

3.8.2.1 Environmental Consequences – Proposed Action

With the Proposed Action, Fort Wainwright would implement the RPMP. The potential effects of the Proposed Action on land use within the ROI are presented in this section.

Implementation of the RPMP would ensure that USAG FWA provides modern and efficient facilities to accommodate multiple functions and users, considers functional relationships to adjacent facilities and land uses; and provides sustainable design, functional perimeter parking, and compatible architectural features. This management plan approach is expected to provide a beneficial impact to overall land use within the ROI by identifying areas that need planning attention due to mission, requirement, or command priority and strategically balancing mission growth in light of these resources. Inclusion of network plans such as the Vision Plan, Regulating Plan, ADP, Illustrative Plan, and Transportation Plan will further help delineate focused growth areas within the cantonment, create walkable districts, establish key transportation and land use concepts, and define other significant features that influence development patterns at Fort Wainwright.

Potential future development projects identified to meet the development goals and visions identified for the ADPs are not expected to reach the thresholds for significant adverse impacts to land use and aesthetics, as described above. ADP goals include the following examples of beneficial impacts to land use and aesthetics: leveraging the natural landscape by incorporating the natural topography and natural resources to enhance training capabilities and provide safe recreational spaces for a variety of users (Chena North APD); improving access to recreational areas by expanding recreational opportunities at Birch Hill and along the Chena River (Chena North ADP); and providing a mixed-use campus with energy-efficient, flexible, and adaptable infrastructure well connected by streets and paths that preserve the heritage of the district (North

Post ADP). Specific Regulating Plan land uses are consistent with Fort Wainwright's existing general land use categories. Minor, temporary impacts to land use and aesthetics would likely occur during construction of individual improvement/development projects under the RPMP. These would be temporary, however, with overall long-term beneficial effects.

Most of the RPMP projects are anticipated to have no impacts to surrounding City, Borough and State land uses; they would not have any measurable impacts on surrounding land use plans, policies, and zoning. There are some that would have minor to beneficial impacts, and temporary minor adverse impacts with long-term overall benefits. At the airfield, the extending the southern runway to the east is intended to push the threshold for the UAS away from urban development on the west, resulting in a beneficial impact to residential use of the area. The plans to construct a standard ACP at Gaffney road, and close the Trainor Gate ACP and open an interim ACP at the Johannsen Expressway could result in minor temporary impacts to local traffic flow, with overall long-term beneficial impacts. These would be temporary impacts to local land use, but overall would have no measurable impacts on surrounding land use plans, policies, and zoning. Therefore, these would be less than significant effects

To reduce the risk of wildfires in the vegetated areas of the Chena North District, BMPs and SOPs listed in Appendix B would be adhered to during all operations. Ongoing and future fire mitigation activities (e.g., reducing fuel, thinning wood) and fuel load reduction along vegetated buffers to minimize fire and prevent any potential spreading to surrounding communities would minimize potential fire risks. Therefore, any potential for increased wildfire risk would be a less-than-significant effect.

In summary, land use impacts from implementing the RPMP are anticipated to be beneficial to less than significant. Specific projects would be subject to future NEPA reviews before they are implemented. BMPs and SOPs listed in Appendix B would be employed to avoid or minimize any potential adverse impacts. Land use impacts from implementing the RPMP are not anticipated to have impacts inconsistent with surrounding would have no measurable impacts on surrounding land use plans, policies, and zoning.

3.8.2.2 Environmental Consequences – No-Action-Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue on an as-needed basis and would undergo project-specific evaluation under NEPA. No significant changes to land use at Fort Wainwright, or surrounding FNSB areas would be expected. Existing SOPs and BMPs listed in Appendix B would be utilized to minimize potential impacts. No significant impacts to land use and are anticipated from implementation of the No-Action Alternative; however, the beneficial impacts would not be as certain as under the Proposed Action.

3.9 NOISE

Noise Fundamentals – Noise is definable as unwanted sound. Noise comes from numerous sources. Some noise is caused by activities essential to the health, safety, and welfare of a

community (e.g., emergency vehicle sirens, garbage-collection operations, and construction and maintenance equipment). Other noise, such as traffic or aircraft noise, stems from the movement of people and goods. Although these and other similar activities are necessary to modern life, the noise they produce is sometimes undesirable and may detract from the quality of the living environment.

Noise can also be commonplace in areas near military installations. Military operations are often the sources of sounds (e.g., gunfire, detonations, aircraft flyovers, transport of heavy vehicles, etc.) that are experienced by the military community and the civilians who live and work around these installations.

To capture the intensity of sound levels meaningfully over such a large range as that which the human ear can experience, the logarithmic dB is used; this unit expresses the ratio of sound pressure to a reference standard. Some typical levels of sound in dB are shown in Table 3-9.

A number of factors affect sound as the human ear perceives it. These include the actual level of noise, the frequencies involved, the period of exposure to the noise, and changes or fluctuations in noise levels during exposure. To correlate the frequency characteristics from typical noise sources to the perception of the human ear, the A-weighted decibel, or dBA, is used to evaluate noise impacts.

The Army has developed land use planning guidelines with respect to military noise in terms of noise zones. However, these guidelines are only applicable to aircraft and large and small caliber weapon firing activities, which are not activities addressed by the RPMP.

Table 3-9. Typical Sound Levels

Source of Sound	Sound Pressure Level dB re 20 µPa
M1 Garand Rifle being fired at 1 m	168 dB
Jet engine at 30 m	150 dB
Rifle being fired at 1 m	140 dB
Threshold of pain	130 dB
Jackhammer at 1 m	approx. 100 dB
Major road at 10 m	80-90 dB
Normal conversation at 1 m	40-60 dB
Very calm room	20–30 dB
Leaves rustling; calm breathing	10 dB
Auditory threshold at 1 kHz	0 dB

dB = decibel(s); kHz = kilohertz; m = meter(s); µPa = micropascal(s)

3.9.1 Affected Environment

Sensitive receptors are facilities or land-use areas that are the most sensitive to noise such as residence, school, church, hospital, community center, etc., both on and off installation.

Noise sources around the Fort Wainwright Main Post are mostly associated with neighborhood vehicular traffic along major arterial roadways, large and small caliber weapon firing from live-fire training ranges, and aircraft from Ladd Airfield.

Helicopters such as UH-60 Blackhawks, AH-64 Apache and CH-47 Chinooks from the USARAK Aviation Task Force, particularly from 52d Aviation Regiment and the 1-25th Attack Reconnaissance Battalion based at Fort Wainwright, the MQ-IC Gray Eagle from the 25th Aviation Regiment Company D, and BLM Alaska Fires Service aircraft during the summer months, are the main aircraft noise sources at the installation.

Large transient aircraft such as C-5 and C-17 use the airfield infrequently.

Fort Wainwright receives occasional noise complaints each year from the surrounding community. Most documented complaints are inquiries about noise sources and when noise is expected to cease. Fort Wainwright staff has found that advanced public notice of training schedules decreases the number of calls to the Public Affairs Office, the department responsible for managing noise complaints.

3.9.2 Environmental Consequences

3.9.2.1 Environmental Consequences – Proposed Action

Under the Proposed Action with the implementation of the RPMP, increase in noise within the ROI is anticipated during temporary demolition and construction periods associated with each short-, mid-, and long-range project action. Noise levels related to the construction equipment operating activities would vary with the type of equipment being used. Table 3-10 shows typical noise levels for various types of heavy construction equipment. Because not every type of equipment would be used at a given time, noise levels would vary over the duration of each project action. Noise levels generated by construction equipment (or by any point source) decrease at a rate of approximately 6 dB per doubling of distance away from the source. For instance, at a distance of 200 feet from a noise source, the noise levels would be about 12 dB lower than the 50-foot reference distances shown in Table 3-10. The noise impacts from operation of equipment and vehicles would be essentially temporary and would be less than significant.

Table 3-10. Typical Construction Equipment Noise Levels (dBA at 50 Feet)

Equipment Type	Typical Noise Levels[1]
Earthmoving:	
Loaders	85
Backhoes	80
Dozers	85
Scrapers	89
Graders	85
Truck	88
Pavers	89
Roller	74
Material Handling:	
Concrete Mixers	85
Concrete Pumps	82
Cranes	83
Derricks	88
Stationary:	
Pumps	76
Generators	81
Air Compressors	81
Impact:	
Pile Drivers (impact)	101
Pile Drivers (Sonic)	96
Jack Hammers	88
Pneumatic Tools	85
Other:	
Saws	76
Rock Drill	98

Source: Federal Transit Administration, 2006.

[1]dBA at ~50 feet.

Nearly all the PRMP illustrative plan projects are anticipated to have these minor, temporary noise impacts. BMPs and SOPs found in Appendix B would be employed to reduce and minimize temporary construction-related impacts.

Establishing and expanding a western boundary buffer in the Chena North District would dampen noise effects from Fort Wainwright operations on adjacent City of Fairbanks neighborhoods. As such, this would constitute an overall long-term beneficial impact. PRMP projects that would facilitate and encourage pedestrian transport such as converting the Horseshoe in North Post to pedestrian use, constructing a pedestrian overpass bridge in West Post would reduce vehicular noise in the area, and therefore constitute long-term, overall beneficial noise impacts. Deactivating the Lower ASP in the South Post would also reduce military vehicular traffic and activity, thereby having long-term beneficial noise effects.

Within the Ladd Airfield District, constructing a Shadow UAS Facility and TUAS Launch Pad, although these are UAS support facilities, would not have impacts to noise. The Shadow and Raven UAS are much smaller aircraft than the Gray Eagle UAS. The Gray Eagle noise contour analysis did not change any of the noise contours in the airfield (USAG FWA 2012b, 2012c). It is expect that the much smaller Shadow and Raven UAS would have even smaller contours and not expand the overall contours. The FWA Operational Noise Management Plan indicates that these aircraft would be unlikely to cause noticeable increases to existing noise contours. Therefore no impacts are anticipated.

In summary, PRMP development activities are anticipated to have temporary, minor impacts to noise, with some overall beneficial effects. Once construction was completed, noise contours would return to normal levels. BMPs and SOPs listed in Appendix B would be employed to minimize and reduce temporary construction-related noise effects. As discussed above several of the projects, particularly those that facilitate pedestrian use of the installation and walkable districts would have overall long-term benefits to installation noise.

3.9.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue, as needed, and would undergo project-specific evaluation under NEPA. Existing SOPs and BMPs listed in Appendix B would also be utilized to minimize/control noise during and after construction, reducing potential adverse impacts. No significant impacts to noise are anticipated; however, the long-term beneficial impacts to installation noise contours are not as certain as under the RPMP.

3.10 PUBLIC HEALTH AND SAFETY

This section describes the affected environment and environmental consequences for human health and safety. The ROI for health and safety analyses is the Fort Wainwright Main Post.

3.10.1 Affected Environment

Human health and safety includes those facets of military activities, construction activities, and materials that potentially pose a risk to the health, safety, and well-being of the public, military personnel, civilian employees, and dependents. Aspects of military activities and construction activities that can present risk to human health and safety include vehicle operation, vehicular accidents, occupational and construction safety hazards, unexploded ordnance (UXO), and hazardous materials and hazardous waste handling and management. Additional risks can be presented by wildlife that reside in and around Fort Wainwright and can potentially come into contact with military and civilian personnel. Of particular concern are bears, moose, wolves, and other large mammals that can potentially harm humans, pets, and property.

Fort Wainwright has implemented public health and safety policies and procedures to eliminate, avoid, or reduce the associated risks to its workers and the public. These policies include the following basic components:

- Comply with applicable federal, state, DoD, and Army laws and regulations addressing health, safety, and risk management.
- Develop local regulations and detailed BMPs and SOPs (found in Appendix B), which further implement these laws and regulations, and focus on unique risk factors and mission requirements at Fort Wainwright.
- Establish an installation safety office with the proper resources and authority to effectively implement Fort Wainwright's health and safety policies and procedures, and that is properly integrated with other Army and local civilian safety and emergency response organizations.
- Provide effective, mission-focused training and guidance to Fort Wainwright personnel.
- Encourage proactive employee participation in safety and health programs, and charge leaders at all levels with the responsibility for planning and conducting mission activities in a safe manner.

Fort Wainwright's health and safety policies and procedures operate in compliance with a number of regulations and guidance documents, including:

- Occupational Safety and Health Act of 1970 (29 U.S.C. 651-678) and implementing regulations at 29 CFR;
- AR 40-5. *Preventive Medicine*;
- AR 75-15. *Policy for Explosive Ordnance Disposal*;
- AR 200-1. *Environmental Protection and Enhancement*;
- USARAK Pamphlet 200-1. *Hazardous Materials and Regulated Waste Management*;
- AR 385-10. *The Army Safety Program*;
- AR 385-63. *Range Safety*;
- AR 385-64. *U.S. Army Explosives Safety Program*;
- Field Manual 100–14. *Risk Management*;
- Department of the Army Pamphlet 40-501. *Hearing Conservation Program*;
- Department of the Army Pamphlet 40-503. *Industrial Hygiene Program*;
- DoD Directive 4715.11. *Environmental and Explosives Safety Management on DoD Active and Inactive Ranges within the United States*; and
- DoD Directive 6055.9–STD. *DoD Ammunition and Explosives Safety Standards.*

These regulations have guided the development of BMPs and SOPs, which installation users are required to follow. Appendix B discusses these BMPs and SOPs relevant for construction projects to ensure Human Health and Safety is maintained.

Vehicle Safety - Accident rates were assessed as part of the Six-Year Transportation Plan Update (USKH, 2009). Fort Wainwright Military Police provided accident data for a timeframe extending from January 2005 through October 2007. The accident information included time of occurrence and location information, with limited information regarding severity. From the available severity data, it appeared that less than 15 percent of the collisions that occurred on Fort Wainwright during the time period involved injuries. The low occurrence of injury accidents is likely due to the relatively low vehicle speeds on Post.

The top five accident locations and top five accident corridors on Fort Wainwright were identified and prioritized based on accident frequency as follows:

1. Gaffney Road Gate: Twenty-seven accidents occurred at the main gate during the three year period. This exceeds the total number at the other four locations combined. The majority of these are most likely rear-end collisions, which is typical of controlled facility entrances.
2. Badger Road Gate: Five accidents occurred at this gate during the three year period. It is expected that the contributing factors behind these collisions are similar to those identified for the Gaffney Road Gate.
3. Neely Road/10th Street: This intersection experienced four accidents over the three year study period. Neely Road provides an approach to and from base housing and the Badger Gate, and carries high traffic volumes. Traffic volumes combined with potential sight-distance limitations, and bicycle and pedestrian crossings, are likely the reason behind the number of accidents at the intersection.
4. Gaffney Road/9th Street and Gaffney Road/River Road: Both of these intersections had three accidents during the three year period. These two intersections provide an approach to and from base housing and the Trainor Gate, and carry high traffic volumes. Traffic volumes combined with potential sight-distance limitations, and bicycle and pedestrian crossings, are likely the reason behind the number of accidents at these intersections.
5. Alder Avenue/Meridian Road and Oak Street/Meridian Road. Both of these intersections had two accidents over the three year period. Vehicles traveling at high speeds combined with the propensity for rolling stops to occur from Meridian Road onto Alder Avenue (because of drivers normally expecting low volumes) are the most likely reason for the at these intersections.

The remaining locations experienced one accident or less each year.

Overall, 230 collisions were recorded by Military Police between January 2005 and October 2007. The number of accidents near the Gaffney Road gate decreased from 18 in 2005 to 4 accidents in 2006 after the installation of the roundabout at the visitor center driveway. The

number of accidents on Neely Road showed a marked increase in 2007, which corresponds to new development along the corridor. The rest of the areas experienced consistent occurrences of collisions over the study period.

Construction Safety - Demolition and construction projects are an ongoing activity on Fort Wainwright. Contractors performing construction activities are responsible for following Occupational Safety and Health Administration (OSHA) regulations. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and use and availability of Material Safety Data Sheets. Industrial hygiene is the responsibility of contractors, as applicable. Contractors are responsible for reviewing potentially hazardous workplaces; monitoring exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; recommending and evaluating controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and ensuring a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures or engaged in hazardous waste work.

Safety concerns regarding hazardous materials and wastes are addressed in detail in Section 3.13, Hazardous Materials/ Hazardous Waste. Hazardous materials and hazardous waste would continue to be managed and disposed of in accordance with relevant federal, State, and Army regulations and guidance governing such materials. Remediation programs for past contamination would remain in place under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) enforcement until environmental authorities assess adequate cleanup.

Flight Safety - Applicable airfield safety clearances and imaginary surfaces at Fort Wainwright have been established in accordance with airfield design criteria set forth in Section 3-13 of UFC 3-260-01, *Airfield and Heliport Planning and Design*. In turn, UFC 3-260-01 is based on Federal Aviation Regulations Part 77, *Objects Affecting Navigable Airspace*, Subpart D. These standards include dimensions, clearances, and grades for airfield operational areas including the primary surface, clear zones, accident potential zones, and approach/departure clearance surfaces.

FWA has established procedures to maintain separation between FWA aircraft, U.S. Air Force (USAF) traffic, and civilian traffic. Safety concerns regarding plane and helicopter operations within airspace utilized by general aviation community in Alaska are addressed in detail in Section 3.3, Airspace. Under the RPMP several projects are proposed to improve safety at Ladd Army Airfield, including the extension of the south runway by approximately 1,600 feet for a total length of 8,800 feet, ramp improvements, and the construction of an aircraft deicing facility.

Force Protection and Physical Security - Fort Wainwright is a fenced, access-controlled facility. Base personnel and visitors access the installation through vehicle access gates. Delivery trucks and other commercial vehicles pass through a gate specifically for inspection of commercial vehicles. Within Fort Wainwright, access is further restricted to the flight line areas.

Antiterrorism standards (per UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*) must be incorporated into inhabited new construction and major renovation work.

Standoff distance must be coupled with appropriate building hardening to provide the necessary level of protection to personnel. These standards apply to new and existing DoD buildings.

Conventional construction may be used for new buildings without specific analysis of blast effects where conventional standoff distances can be met, except as otherwise required by the standards. When such distances cannot be achieved, a competent engineer should analyze the building and apply hardening measures, as needed, to mitigate the distance deficit. For existing buildings, effective standoff distances should be achieved when possible. When effective standoff distances cannot be met, lesser standoff distances are allowed when the required level of protection can be shown to be achieved through building hardening, other mitigating construction, or retrofit.

3.10.2 Environmental Consequences

3.10.2.1 Environmental Consequences – Proposed Action

Under the Proposed Action, the RPMP would be adopted, and management of the physical development at the Main Post would occur based on the proposed planning principles and development goals. Implementation of transportation and bicycle-and pedestrian-related projects, including road improvements, installation of roundabout, turn lanes, new Access Control Points, sidewalks, and pedestrian facilities, would contribute to public safety through designing safe streets and intersections and improvements to the walking and biking environment. The development of improved pedestrian facilities and sidewalks would also contribute to public health through enhanced wellness and increased walkability. Impacts from these transportation related improvements would be beneficial and long-term.

During demolition, construction, or renovation activities for each project, safety practices would be in accordance with relevant regulations established by the Army, OSHA, and other federal and state agencies (e.g. BLM, 2013). Construction sites would be fenced and only accessible to workers and other persons with a need to be there. Thus, any risks to the safety of workers and passers-by would be minimized and no unusual risks would be created.

FWA will continue its program of coordination with local civilian aviation interests and the USAF to reduce potential conflicts in corridors used by both military and civilian air traffic. As a result, there would be no impacts to airfield safety, as airfield improvements would be coordinated with flight operations. There would be long-term beneficial impacts to airfield safety from implementation of runway and ramp improvements as well as a new deicing facility. See Section 3.3 for additional information on anticipated impacts to Airspace.

The design and construction of new facilities at Fort Wainwright would comply with the requirements set forth in UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings, as applicable. Thus, the Proposed Action would not have significant adverse impacts on safety.

Overall, long-term beneficial to minor beneficial impacts to human health and safety could occur from implementation of development projects identified in the RPMP. The implementation of transportation and pedestrian related projects would help reduce vehicle accidents and pedestrian

vehicle conflicts and improve the walking environment of the Main Post. Improvements to airfield facilities would reduce avian related safety risks. During construction activities, Fort Wainwright would follow established BMPs and SOPs listed in Appendix B for the handling and transfer of hazardous materials and would comply with occupational health and safety standards. No public adverse health and safety impacts would be anticipated as construction sites would be on Fort Wainwright and would be closed to the public.

3.10.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP and public health and safety improvements would not be as certain as they would be in the event that the RPMP is formally adopted. This could result in a reduction in any beneficial impacts from projects associated with outlined in the development goals. Additionally, current needs and mission requirements would drive ad hoc development of public health and safety improvements with the chance for less coordination and cohesion between improvements, also resulting in a potential reduction in any beneficial impacts. Existing SOPs and BMPs listed in Appendix B would be utilized as well as compliance with OSHA standards to minimize potential safety impacts to minor. Overall, under the No-Action Alternative no significant impacts to health and safety are anticipated; however, the long-term beneficial effects are not as certain as under the Proposed Action.

3.11 RECREATION RESOURCES

This section analyzes potential impacts to recreation on Fort Wainwright. The ROI for recreational impacts analysis is the Fort Wainwright Main Post.

3.11.1 Affected Environment

USAG FWA Morale, Welfare and Recreations (MWR), and the DPW Environmental/Natural Resource Office are the two entities responsible for overseeing recreational opportunities within the ROI. The goal of the MWR program is to give service members and their families a variety of recreational activities. Numerous recreation activities do exist on the Main Post, including both indoor activities at sports, fitness, and recreation centers, as well as outdoor activities. A variety of indoor activities are available such as bowling, working out/exercising, skating, library and family activities. Common outdoor activities include skiing, snowboarding, fishing, hunting, birdwatching, jogging, and biking. USAG FWA MWR maintains the following recreational facilities:

- 1 golf course
- 1 bowling center
- 1 ski and snowboard area and lodge
- 1 skeet and trap range
- 1 ice rink

- 1 family community center
- 2 physical fitness centers
- 1 swimming pool
- 1 library
- 1 auto skills center
- 1 outdoor recreation center
- 1 Warrior Zone center
- 1 privatized lodging facility
- 1 privatized housing community center

USAG FWA's primary mission is to deploy combat-ready forces to support joint military operations worldwide and serve as the Joint Forces Land Component Command to support Joint Task Force Alaska. USAG FWA also recognizes the responsibility to allow public access to military lands in compliance with the Sikes Act, which requires public access to military installations to the extent that such use is consistent with the military mission and the protection of fish and wildlife resources.

Traditionally, there have been ample opportunities for the public to participate in recreational activities on Fort Wainwright lands. Public access and recreation on USAG FWA lands is detailed in the Transformation of U.S. Army Alaska Final Environmental Impact Statement (USARAK 2004), the Integrated Natural Resource Management Plan (INRMP) for Fort Wainwright (USAGAK 2007; USAG FWA 2013b), USAG FWA Regulation 190-13, the 2014 Outdoor Recreation Regulation Supplement (USARAK 2014). The INRMP discusses specific programs to manage public access and provide recreational opportunities on Fort Wainwright lands. These include implementation of an outdoor recreation management plan to maintain and enhance recreational opportunities, outdoor recreation monitoring to determine impacts of recreation on ecosystems, and specific measures to manage outdoor recreation in light of increased recreational use.

Public outdoor recreation is allowed on many parts of the Fort Wainwright Main Post. Roads and trails are both plentiful, and the open spaces remaining in the Fort Wainwright cantonment area are important contributors to recreation opportunities for post inhabitants and local Fairbanks residents. Running, hiking, skiing, hunting, and fishing are some the main outdoor recreational activities occurring on Fort Wainwright Main Post lands. Trapping is not allowed in the Main Post. Birch Hill in the Chena North district is a popular area for cross country and downhill skiing and snowboarding. The training areas in the Chena North district are used for bowhunting moose. The Chena River, and ponds in the Chena North and North Post are popular fishing and boating spots. Other outdoor recreational activities on Fort Wainwright Main Post lands include hiking, biking, birdwatching and berry picking.

To facilitate access to military lands, USAG FWA uses the U.S. Army Recreation Tracking (USARTRAK) "isportsman" system (https://usartrak.isportsman.net/). All recreational users on Fort Wainwright 16 years of age or older must register for the Recreation Access Permit (RAP) and sign in to the USARTRAK system before recreating. The "isportsman" system allows recreational users to use their RAP to remotely check in to installations and training areas. USARTRAK message systems are maintained by Range Control and have information on the latest training area closures and construction.

3.11.2 Environmental Consequences

3.11.2.1 Environmental Consequences – Proposed Action

With implementation of the RPMP, recreational use of Fort Wainwright lands within the ROI would continue, to the extent that such use is consistent with the military mission and the protection of fish and wildlife. Formal adoption of the RPMP would provide a framework and guiding principles for future recreation activities. Each ADP outlines recreation components that are intended to be consistent with the overall goals of the RPMP. In particular, the Chena North ADP goals include improving recreational opportunities by improving access to recreational areas by expanding recreational opportunities at Birch Hill and along the Chena River and through improving local MWR facilities.

Potential future development projects identified to meet the development goals and visions identified for the ADPs are not expected to reach the thresholds for significant adverse impacts to recreation. ADP goals include beneficial impacts to recreation by leveraging the natural landscape by incorporating the natural topography and natural resources to enhance training capabilities and provide safe recreational spaces for a variety of users (Chena North APD); improving access to recreational areas by expanding recreational opportunities at Birch Hill and along the Chena River (Chena North ADP); and providing a mixed-use campus with energy-efficient, flexible, and adaptable infrastructure well connected by streets and paths that preserve the heritage of the district (North Post ADP). In the Chena North ADP replacing the existing ski lodge and facilities at Birch Hill, dredging Chena Cove and upgrading recreational services/RV services, improving the boat launch on the Chena River, adding rec fields, and constructing the outdoor recreation building would all have beneficial impacts to recreation. In the West Post ADP, creating a park with disc golf, soccer field and basketball court would be a beneficial impact to recreation.

Minor, temporary impacts to recreation would likely occur during construction of individual improvement/development projects under the RPMP, such as replacing the "Bailey" bridge and constructing a road to the new bridge; however, these would be less than significant. Existing SOPs and BMPs listed in Appendix B would be utilized to minimize these potential temporary environmental impacts.

Overall, the Proposed Action would result in long-term beneficial effects to recreation. With the approval of the RPMP, information regarding all of the ADPs would be combined into a single guiding document and would help to create a more unified recreation resource that would be

more functional, walkable, and better connected; be more usable for all users; help to establish identifiable visual character; be more environmentally sustainable; and have few identifiable negative impacts.

3.11.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue, as needed, and would undergo project-specific evaluation under NEPA. Recreational features to improve quality of access to recreational activities for each specific ADP would be proposed and constructed on an ad-hoc basis. Minor, temporary impacts to recreation would likely occur during construction of individual improvement/development projects; however, these would be less than significant. Existing SOPs and BMPs listed in Appendix B would be utilized to minimize potential environmental impacts. No significant impacts to recreation activities on Fort Wainwright are expected to occur; however, the long-term beneficial effects are not as certain as with the Proposed Action.

3.12 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The ROI for socioeconomics is defined as the geographical area within which the principal direct and secondary socioeconomic effects of actions associated with the Proposed Action would likely occur and where most consequences for local jurisdictions would be expected. The Proposed Action would occur within Fort Wainwright, which is located within the city of Fairbanks and in proximity to the city of North Pole, and also within the FNSB. The ROI for employment and population effects is the FNSB.

The Community of Comparison, or ROI, for the environmental justice analysis is defined as FNSB, focusing on areas where potential environmental effects may occur due to implementation of development projects outlined in the Fort Wainwright RPMP. Potential environmental impacts from the Proposed Action and No-Action Alternative would primarily occur within the boundary of Fort Wainwright and nearby neighborhoods.

3.12.1 Affected Environment

3.12.1.1 Socioeconomics

Population - On average, the population of the ROI was 97,219 between 2010 and 2014. Between 1990 and 2000 the population of the ROI increased 6.6 percent (77,720 to 82,840), while between 2000 and 2014 the population increased 19.9 percent up to 99,319. Overall, the ROI experienced a 27.8 percent growth in population between 1990 and 2014. Based on population projections developed by the Alaska Department of Labor and Workforce Development, the rate of population growth is expected to increase approximately 13.1 percent between 2015 and 2035 (U.S. Department of Commerce, 1990, 2000, 2016a; ADLWD, 2016a, 2016b). Fort Wainwright is home to over 8,500 soldiers and civilians and also supports more than 8,100 family members and dependents living both on and off the base (USAG FWA, 2015g).

Income - The Census Bureau sets poverty thresholds that vary by family size to determine the level of poverty for a given area. On average, between the years 2010 and 2014, the percentage of individuals living below the poverty level in the ROI was lower than in the state of Alaska or the United States as a whole. In the Fairbanks North Star Borough, approximately 8.0 percent of the population lived below the poverty level, which is lower than the state (10.1 percent) and national percentage (15.6 percent) (U.S. Department of Commerce, 2016a).

Labor Force - Labor force participation averaged 46,486 persons in the ROI in 2015 (U.S. Department of Labor, 2016). A majority of the ROI's workforce works within the city of Fairbanks along Highways 2 and 3. This population resides throughout a wider area of the ROI, including the suburbs of Fairbanks and the city of North Pole (U.S. Department of Commerce, 2016b).

Unemployment - In 2015, the ROI had an unemployment rate of approximately 5.4 percent, which was lower than the state of Alaska's unemployment rate of approximately 6.5 percent. The unemployment rate in the ROI increased slightly between 2008 and 2010, then declined annually from 2010 through 2015. These trends are similar to those experienced throughout Alaska with unemployment increasing slightly from 7 to 8 percent between 2008 and 2010 and steadily declining between 2010 and 2015 (U.S. Department of Labor, 2016).

Employment by Industry - Major industries in terms of percentage of total non-farm employment in the ROI include military, state and local government, retail trade, accommodation, and food services. The construction industry saw the largest employment growth from 2013 to 2015 at 24.1 percent. Construction constitutes 7.1 percent of the total non-farm workforce in the ROI in 2015. From 2011 to 2013, this industry saw a decline in employment (U.S. Department of Commerce, Bureau of Economic Analysis, 2016). The North America Industry Classification System Code 47-2061, construction laborers, is forecast to see an overall employment increase of approximately 2 percent between 2014 and 2024, providing support that construction labor could reasonably come from the ROI (ADLWD, 2016a, 2016b).

Housing - A total of 5,773 housing units were available for rent in the Fairbanks North Star Borough on average between 2010 and 2014. This is 64.3 percent higher than the 3,514 rental-housing units that were available in the ROI in 2000. Although renter-occupied housing stock increased during this time from 13,711 to 14,868 housing units, vacancy declined from 10.6 to 8.1 percent between 2000 and 2014, leading to a lower overall number of available units (U.S. Department of Commerce, 2000, 2016). For the years 2010 to 2014, the rental vacancy rate averaged 8.3 percent. Fort Wainwright has 1,600 permanent on-base military family units in six neighborhoods on the installation (USAG FWA, 2015g). Total housing units in the Fairbanks North Star Borough numbered 41,736 in 2014 (U.S. Census Bureau, 2016a). Fort Wainwright currently has 1,799 total available units on Post, with 96 percent occupancy. The current requirement is to have 1,869 units by 2017.

Law Enforcement and Fire Protection - The Fort Wainwright Military Police and Fort Wainwright Fire Department provide security and fire protection on and off Fort Wainwright. The area surrounding Fort Wainwright is served by the Fairbanks Police Department. North Pole

Police, Fairbanks Airport Police, and the Division of Alaska State Troopers provide support when necessary to the Fairbanks Police Department (ADLWD, 2016b).

The Fairbanks Fire Department, North Pole Fire Department, and the Fairbanks International Airport Fire Department can provide mutual support for the Fort Wainwright Fire Department. The Fairbanks Fire Department has 44 full-time employees and four fire engines located at two staffed stations in Fairbanks (City of Fairbanks, 2016).

Medical - Bassett Army Community Hospital is located on Fort Wainwright and is designated as a Class I medical activity under the U.S. Army Medical Activity jurisdiction of Alaska (U.S. Army, 2016). Patients can be transported to regional hospitals in Anchorage or Seattle, depending on the severity of their injuries.

Education - A youth center, an elementary school (Arctic Light Elementary), two child development centers, and one school-age services center are located on Fort Wainwright and primarily reside on the western side of the installation (USAG FWA, 2016a; Arctic Light Elementary School, 2016). According to the Fairbanks North Star Borough School District (of which Arctic Light Elementary at Fort Wainwright is a part), the district currently has approximately 13,000 students, with an additional student capacity of approximately 3,300 students (USAG FWA, 2015).

3.12.1.2 Environmental Justice

EO 12898 (February 1994), directs federal agencies, to the greatest extent practicable and permitted by law, to achieve environmental justice by identifying and addressing disproportionately high and adverse human health or environmental impacts of proposed federal actions on minority and low-income populations. Guidance from CEQ on NEPA (CEQ 1997) along with new guidance from the U.S. Environmental Protection Agency (U.S. EPA) released in June 2016 (U.S. EPA, 2016) outlines ways to effectively identify and address concerns of environmental justice.

EO 12898 defined a minority population as individuals who are American Indian or Alaska Native, Asian or Pacific Islander, Black, or Hispanic, and "where the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis" (CEQ, 1997). Low-income populations are defined as those below the U.S. Census Bureau's annual poverty measure.

The June 2016 Technical Guidance for Assessing Environmental Justice in Regulatory Analysis (U.S. EPA, 2016) also refers to EO 12898's direction to analyze human health risks of populations that principally subsist on fish and wildlife. It is important to consider overlap among subsistence, low-income populations, and indigenous populations when evaluating potential environmental justice concerns (U.S. EPA, 2016). Impacts to Alaska Native populations may be different from impacts on the general population due to a community's distinct cultural practices (CEQ 1997). EO 12898 recognizes the importance of research and

analysis with respect to multiple and cumulative exposures to an environmental hazard or a disproportionately high adverse impact resulting from a federal action.

Meaningful public involvement indicates all potentially affected populations have an opportunity to participate and contribute to decisions that will affect their environment. It may be necessary to give special attention to minority populations, low-income populations, and tribes to ensure their meaningful involvement (U.S. EPA, 2016).

Under NEPA, the identification of disproportionately high and adverse human health or environmental impacts does not preclude a proposed action from going forward, nor does it compel a conclusion that an action is environmentally unsatisfactory. Rather, the identification of such an impact should heighten agency attention to alternatives, mitigation strategies, monitoring needs, and preferences expressed by the affected community or population (CEQ 1997).

In addition to environmental justice issues are concerns pursuant to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. This EO directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children.

Although an environmental justice analysis is not mandated by NEPA, DoD has directed that NEPA will be used as the primary mechanism to implement the provision of the EOs.

Minority and Low Income Populations - Demographic information from the U.S. Census Bureau was used to extract data on minority, low-income, and child populations within the area. The census reports both ethnicity and household income status. Minority populations included in the census are identified as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, or some other race.

Information on minority populations by census tract based on the 2010-2014 U.S. Census American Community Survey 5-Year Estimates is presented in Table 3-11.

Table 3-11. Percent Minority, Low-Income, and Persons under 18 Years of Age Populations

	Population	Percent of Population under 18	Percent Minority	Percent of Population Below Poverty Level
Alaska	710,321	25.2%	33.3%	10.1%
Fairbanks North Star Borough	97,581	25.6%	23.0%	8.4%
Census Tract 1	1,926	16.2%	31.3%	**12.4%**
Census Tract 2	3,264	20.2%	25.9%	**16.9%**
Census Tract 3	4,222	21.0%	**49.6%**	**17.7%**
Census Tract 4	4,780	23.2%	**34.5%**	9.1%
Census Tract 5	2,826	24.0%	28.9%	9.1%
Census Tract 6	4,405	24.8%	28.9%	**11.6%**
Census Tract 7	4,243	20.4%	32.6%	**15.2%**

	Population	Percent of Population under 18	Percent Minority	Percent of Population Below Poverty Level
Census Tract 8	6,209	**26.8%**	**36.6%**	7.7%
Census Tract 9	5,756	23.4%	15.5%	5.2%
Census Tract 10	1,633	20.6%	20.2%	**15.6%**
Census Tract 11	8,552	**37.4%**	29.9%	**12.0%**
Census Tract 12	6,640	**25.5%**	15.7%	2.3%
Census Tract 13	6,561	14.9%	13.6%	6.7%
Census Tract 14	7,587	**27.8%**	14.7%	5.8%
Census Tract 15	11,607	**29.8%**	16.3%	3.0%
Census Tract 16	4,838	**27.9%**	21.7%	9.8%
Census Tract 17	1,159	**29.3%**	3.5%	**12.9%**
Census Tract 18	2,743	**36.3%**	30.8%	1.6%
Census Tract 19	10,368	15.8%	9.4%	4.8%

Source: U.S. Department of Commerce, 2016a.

Bold values represent disproportionately high populations compared to the State of Alaska.

Three census tracts (3, 4, and 8) have a disproportionately high percentage of minority population in comparison to the State of Alaska with a minority population of 33.3 percent (U.S. Census Bureau, 2016a).

The 2010-2014 U.S. Census American Community Survey poverty status is used to define low-income status. As shown in Table 3-11, eight census tracts (1, 2, 3, 6, 7, 10, 11, and 17) have a disproportionately high percentage of population below the poverty level in comparison to the State of Alaska with 10.1 percent of the population below the poverty level (U.S. Department of Commerce, 2016a).

Youth populations, for consideration of EO 13045, are defined as persons under the age of 18. Based on the 2010-2014 U.S. Census American Community Survey, eight census tracts (8, 11, 12, 14, 15, 16, 17, and 18) have a disproportionately high percentage of youth population in comparison to the State of Alaska with a youth population of 25.2 percent (U.S. Department of Commerce, 2016a) (see Table 3-11).

Census tract 8 has a disproportionately high percentage of youth and minority populations. Census tracts 11 and 17 have a disproportionately high percentage of youth and low-income populations. Census tract 3 has a disproportionately high percentage of minority and low-income populations.

3.12.2 Environmental Consequences

Estimated impacts to employment, business volume, population, and income as well as impacts to community and emergency services, such as housing, and law enforcement, medical services, and fire protection are assessed in this section.

3.12.2.1 Environmental Consequences – Proposed Action

Socioeconomics - Under the Proposed Action, the construction and operation of projects would be implemented based on the planning principles and development goals set out in the RPMP.

The Proposed Action would have a positive economic impact if local contractors and workers are hired to design and/or build the new facilities and projects included in the Proposed Action. The increase in local spending would support the employment of the construction workforce and Fort Wainwright employees that already live in the ROI. Increases in the salaries and income of this workforce may provide slightly higher household spending in the ROI. This would have further positive effects on the local economy as contractors' money is spent at restaurants, gas stations, stores, construction material suppliers, hotels, and other nearby businesses within the ROI. These positive effects would continue as projects are implemented and construction activities continue for periods of several months to several years.

If any of these projects were to require construction workers to temporarily relocate to either ROI during the construction period, the population within that ROI would increase in the short term. If any of these projects were to require adding additional military or civilian positions for their operation, long-term impacts on the population in either ROI would occur if these positions are filled by persons relocating to the ROI for these jobs.

On post and off post housing would not be affected as personnel increases from the Proposed Action, including non-uniformed employment, uniformed employment, and dependents, are anticipated to be minimal. The proposed demolition of the Birchwood housing units would not affect Post housing demand as these units are not currently included in Post housing numbers. Furthermore, the anticipated increase in units by an additional 70 units by 2017 would offset any possible increase in personnel associated with the implementation of the RPMP. Within Fairbanks, for the years 2010 to 2014, the rental vacancy rate in the ROI averaged 8.3 percent. Any potential increase in personal or construction workforce associated with the Proposed Action would likely have no effect on the number of rental vacancies or rental prices in Fairbanks.

Government and emergency services would only be affected to the extent that they would be required to assist during the construction period if construction workers need medical care or construction projects require additional fire or police support. Schools in the ROI are not expected to be affected under the Proposed Action as the number of personnel assigned to Fort Wainwright is not expected to change.

Overall, impacts on socioeconomics under the Proposed Action would be beneficial as a result of economic growth associated with the procurement of goods and services.

Environmental Justice - An environmental justice impact is considered to be significant if the impact disproportionately and adversely affects a minority or low income community. In addition, an impact on a population of children is considered to be significant if it disproportionately and adversely affects this population of children.

As noted in Section 3.12.1.2 above, in 2014, approximately 8.0 percent of the population in the borough lived below the poverty threshold, which is lower than the state (10.1 percent) and national (15.6 percent) figures. As described in Section 3.12.1.2, the eight census tracts that the ROI is located within (1, 2, 3, 6, 7, 10, 11, and 17) have a disproportionately high percentage of the population below the poverty level in comparison to the State of Alaska. Similarly, four of the census tracts for the ROI have relatively high minority populations–tracts 1, 3, 10, and 11. However, it is not anticipated that the Proposed Action would have an adverse or disproportionate impact on these populations because all projects would be located within the boundaries of FWA. While it is anticipated that there would be beneficial impacts to local businesses, employment, and income associated with the Proposed Action, these are expected to be minor (minimally impacting local business volume, employment, and personal income) and beneficial and affect all ROI residents equally. Therefore, no environmental justice impacts are anticipated as a result of this alternative.

As future projects are identified, sited, and implemented, FWA will consider whether minority or low income populations or children adjacent to the installation could be disproportionately affected.

3.12.2.2 Environmental Consequences – No-Action-Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue, as needed, and would undergo project-specific evaluation under NEPA. The construction of these projects would have short-term, beneficial impacts to employment, income, and sales in the ROI during the construction period. If any of these projects were to require construction workers to temporarily relocate to the ROI during the construction period, the population within the ROI would increase in the short term. If any of these projects were to require adding additional military or civilian positions for their operation, long-term impacts to population in the ROI would occur if these positions are filled by persons relocating to the ROI for these jobs. Spending by temporary construction workers or permanent employees who relocate to the ROI to fill these positions would have a beneficial impact on employment, income, and sales in the ROI because these persons would spend their incomes within the ROI. No significant impacts to socioeconomics are anticipated from implementation of the No-Action Alternative.

3.13 SOLID AND HAZARDOUS WASTE AND POLLUTION

The ROI for solid and hazardous waste and pollution analysis is the Fort Wainwright Main Post because potentially affected resources under the RPMP would be confined to this localized area.

3.13.1 Affected Environment

Hazardous waste is defined as a solid waste or combination of wastes that, due to concentrations, or physical, chemical or infectious characteristics, may significantly cause an increase in mortality or incapacitating illnesses, or may pose significant risk to human health or the environment when improperly used, stored or managed. A hazardous waste is considered such if

it has not been excluded from regulation as a waste under 40 CFR §261.4(b). Examples of hazardous waste present on Fort Wainwright may include solvents, antifreeze, deicing fluids, petroleum products such as oils, hydraulic oils, grease, and fuels, as well as paints and batteries. Hazardous wastes may not be limited to chemical products, and can also include items such as pressurized cylinders and medical/biohazards.

The USAG FWA must manage its hazardous materials and wastes in accordance with the Resource Conservation Recovery Act, as amended by the Hazardous and Solid Waste Amendments to comply with federal regulations. Per the Resource Conservation Recovery Act, Fort Wainwright is registered with the EPA under the facility identification number AK6210022426. The USAG FWA must also comply with military regulations, state regulations, and employee safety standards for hazardous materials and wastes.

Hazardous wastes generated by facilities and routine activities at Fort Wainwright include used rifle bore patches/wadding, used batteries, used solvents, contaminated or excess fuels, used antifreeze, used oil, spill clean-up materials, and contaminated soil (USAG FWA, 2013a). These wastes are accumulated temporarily at the generating facilities in accumulation points, such as hazardous waste satellite accumulation areas or hazardous waste accumulation areas. Appropriate Army personnel transport accumulated hazardous wastes off the installation (USAG FWA, 2013c).

The three turn-in facilities for hazardous wastes and materials include the Hazardous Materials Control Center at Building 3030, Defense Logistics Agency – Disposition Services at Fairbanks Environmental Branch, and the Hazardous Waste Management Contractor at Building 3489. The Logistics Readiness Center manages the Hazardous Materials Control Center and is also responsible for monitoring the use of hazardous materials. The Defense Logistics Agency – Disposition Services is responsible for determining hazardous material sale or reuse and disposing of hazardous waste off the installation. The Hazardous Waste Management Contractor is responsible for providing hazardous waste identification labels for each hazardous materials accumulation container and establishing a contracted waste pick up with the Defense Reutilization Marketing Office (USAG FWA, 2013c).

Army-related industrial activity in Main Post has, to an unknown degree, contributed to groundwater pollution; generally associated with leaking underground storage tanks (USTs), facilities where chemicals were stored, and places where chemicals were dumped during the early history of the post. These areas are currently included in an intensive monitoring program. Pollution is generally localized to each site, and there is no indication of deep groundwater pollution. The recent trend has been toward water quality improvement as Army restoration projects mitigate damage to groundwater quality. Practices that have led to groundwater contamination have been discontinued; for example, underground storage tanks have been removed and all petroleum, oils, and lubricants are now stored in above-ground tanks surrounded by containment berms.

Due to past contamination of localized areas, primarily within the Main Post area, Fort Wainwright is classified as a Comprehensive Environmental Response, Compensation, and

Liability "Superfund" site. Remediation is ongoing. Groundwater management consists of restoration projects associated with individual sources of pollution, generally associated with the "Superfund" designation.

There are currently 56 contaminated sites in the ROI listed on the Alaska Department of Environmental Conservations contaminated sites database with an open designation, denoting that some form of remediation or environmental monitoring is currently underway. These sites include a wide range of contaminant sources affecting soil and groundwater on the main base. In addition to the open sites, there are several sites listed as conditionally closed, indicating that the site may require further cleanup efforts if specific criteria are met, and many which have been given a cleanup complete designation, indicating that remediation has been completed to satisfactory levels and that no further remedial activities are warranted.

Fort Wainwright is a permitted Large Quantity Generator (LQG) of Hazardous Waste. LQGs generate 1,000 Kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste. Waste streams include wastes from the motor pool, hospital and hangars and power plant. Medical and biohazard wastes are handled separately by the hospital. The Post power plant also manages its own hazardous waste streams. Major guidelines for LQGs include:

- LQGs may only accumulate waste on-site for 90 days. Certain exceptions apply.
- LQGs do not have a limit on the amount of hazardous waste accumulated on-site.
- Hazardous waste generated must be managed in tanks, containers, drip pads or containment buildings subject to the requirements found at 40 CFR §265, subparts J, I, W and DD, respectively.
- LQGs must comply with the hazardous waste manifest and pre-transport requirements at 40 CFR §262 subpart B and 40 CFR §§262.30 through 265.33.
- LQGs must comply with the preparedness and prevention requirements at 40 CFR §265(c), the contingency plan and emergency procedures at 40 CFR §2659(d), and the land disposal restriction requirements at 40 CFR §268.
- LQGs must submit a biennial hazardous waste report.

Fort Wainwright has one Class I landfill, however this landfill does not have the capacity for accepting and storing hazardous materials other than asbestos containing materials (ACM). With a Class I designation, this landfill is authorized to accept municipal solid wastes, inert waste, sewage solids, regulated ACM and non-regulated ACM. The Alaska Department of Environmental Conservation completed a compliance visit to the landfill in October 2016, and the landfill received a score of 95, indicating that the landfill scored highly with regards to ADEC standards. Although the landfill is capable of accepting ACM wastes, it has been reported that it currently does not accept ACM or any wastes, other than coal ash from the power plant. The landfill is currently scheduled for closure to occur during the 2020 season.

Contractors currently transport solid wastes to offsite municipal landfills in the Fairbanks North Star Borough area, and housing areas have their own waste contracts.

Given the age of structures on base, there is the likelihood that ACMs and Lead-Based Paints (LBP) will be encountered during routine upgrades and building retrofits. There is also the possibility that Polychlorinated Biphenyls (PCBs) may be encountered on base. These wastes would require analysis on a case-by-case/site specific basis, and are discussed below.

Asbestos-Containing Material - ACM and ACM abatement are regulated by the EPA and OSHA. Asbestos fiber emissions into the ambient air are regulated in accordance with Section 112 of the Clean Air Act (CAA), which established the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Under NESHAP, the owner of a structure must, prior to demolition or renovation of buildings with ACM, provide notice to the regulator with CAA authority (either the EPA or its state counterpart). The NESHAP regulations (40 CFR §61) address the demolition or renovation of buildings with ACM. OSHA 1910-1001 addresses protection of workers working around asbestos; OSHA 1910-1101 addresses workers that actively remove ACM. The Asbestos Hazard Emergency Response Act, Public Law (P.L.) 99-519 and P.L. 101-637, addresses worker protection for employees who work around or remediate ACM.

Demolition or renovation of buildings with ACM has a potential for releasing asbestos fibers into the air. Asbestos fibers could be released due to disturbance or damage to various building materials, such as pipe insulation, acoustical ceilings, floor tiles, sprayed-on fire proofing, and other materials used for sound proofing or insulation. The current practice is to manage or abate ACM in active facilities and abate any ACM that has been identified as a hazard to human health, following regulatory requirements and prior to facility demolition or renovation. Removal of ACM occurs when there is a potential for asbestos fiber release that would affect human health or the environment.

Due to the construction date of many structures on Fort Wainwright, it is possible for ACM to be present on interior and exterior surfaces. The EPA issued a ban on Asbestos in 1989 with a phase out rule in 1991.

Lead-Based Paint - Human exposure to lead has been determined by agencies such as OSHA and the EPA to pose an adverse health risk. Sources of exposure to lead are dust, soils, and paint. In 1973, the Consumer Product Safety Commission (CPSC) established a maximum lead content in paint of 0.5 percent by weight in a dry film of newly applied paint. The use of LBP declined after 1978 when the CPSC lowered the allowable lead content in paint to 0.06 percent by weight from its 1973 level of 0.5 percent. This change was made under the Consumer Safety Act of 1977, P.L. 101-608, as implemented by 16 CFR §1303. The DOD implemented a ban of LBP use in 1978; however, it is possible that facilities painted prior to or during 1978 may contain LBP. Typically, the Army does not actively pursue removal of LBP. Instead, it is managed in place and removed as necessary.

Due to the construction date of some structures on Fort Wainwright (prior to 1978), it is possible for LBP to be present on interior and exterior surfaces.

Polychlorinated Biphenyls - The disposal of PCBs is regulated under the federal Toxic Substances Control Act (TSCA) (15 U.S.C. Section 2601, et seq., as implemented by 40 CFR §761), which banned the manufacture and distribution of PCBs, with the exception of PCBs used in enclosed systems. By federal definition, PCB equipment contains 500 parts per million (ppm) PCBs or more, whereas PCB-contaminated equipment contains PCB concentrations equal to or greater than 50 ppm, but less than 500 ppm, and PCB items contain from 5 to 49 ppm PCBs. TSCA regulates, and the EPA enforces, the removal and disposal of all sources of PCBs containing 50 ppm or more; the regulations are more stringent for PCB equipment than for PCB-contaminated equipment.

PCBs are not known to be present in transformers at Fort Wainwright. However, PCBs may be present in ballast units of older fluorescent light fixtures. While not defined as PCB equipment or PCB-contaminated equipment, these ballasts could leak or spill and result in a release of PCBs.

Installation Restoration Program - USAG FWA administers an Installation Restoration Program (IRP) to identify, investigate, and remediate contamination from regulated hazardous substances. Contaminant source areas are managed by interagency agreements designed to enact the IRP and address stakeholder concerns. The Army, EPA, and State of Alaska have signed Federal Facility Agreements for Fort Wainwright. These agreements outline Institutional Controls, which are administrative measures to control property access and usage and are applicable to known or suspected contaminated sites within Fort Wainwright. These Institutional Controls (i.e., limitations on the location and depth of excavations, water use, property transfer agreement restrictions, etc.) are designed to supplement active contaminant reduction and remediation actions, as appropriate, for short-term and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants and safeguard human health and safety and environmental resources.

Standard operating procedures are currently used at Fort Wainwright, both by the base and third party contractors, to minimize and prevent adverse impacts to human health and the environment by the use, handling and storage of hazardous materials. Use and handling of hazardous materials may include use during construction projects, during remediation of existing known contaminant sources and general management, control and storage of new and spent materials. In general, hazardous materials are handled in accordance with all applicable local and state laws governing the proper use, handling and disposal of such materials. Such control programs in place at Fort Wainwright include Resource Conservation Recovery Act (RCRA), Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Defense Environmental Restoration Account (DERA), Defense Environmental Restoration Program (DERP), the IRP, and Military Munitions Response Program (MMRP). These programs, along with any current executive orders, are the basis for the storage, handling and maintenance of hazardous wastes, as well as the directives for funding and restoration of previously contaminated sites.

The Base-wide Spill Prevention, Control, and Countermeasure Plan (SPCC) documents facility information, petroleum storage information, calculates potential for future spills, to include volume, rates and control procedures. It also discusses engineering controls and inspection protocols, as well as training for staff in charge of these categories.

The base also utilizes third party consultants as hazardous waste management services contractors, who are responsible for management of hazardous waste accumulation facilities, and the identification, consolidation, packaging, and transport of hazardous wastes in support of base missions.

Fort Wainwright implements its Environmental Management System (EMS), which outlines practices for sustainable acquisition and building, recycling programs, and energy and water conservation.

Solid wastes can fall into both hazardous and non-hazardous categories. For the purposes of this assessment, solid wastes include anything other than hazardous wastes, to include demolition materials which are not listed as a hazardous material, and municipal wastes (food wastes, paper products, and other general household-type wastes).

With a Class I designation, the base landfill is authorized to accept municipal solid wastes, inert waste, sewage solids, as well as some hazardous materials. Although the landfill is capable of accepting these wastes, it currently does not accept any wastes other than coal ash from the power plant. The landfill is currently scheduled for closure to occur during the 2020 season.

Contractors currently transport solid wastes to offsite municipal landfills in the Fairbanks North Star Borough area, and housing areas have their own solid waste contracts.

3.13.2 Environmental Consequences

3.13.2.1 Environmental Consequences – Proposed Actions

Evaluation of potential impacts of the Proposed Action on Solid And Hazardous Waste is based on the types and durations of anticipated waste streams; ability for hazardous materials to enter the environment through natural pathways (surface waterways, soil infiltration and groundwater impacts), as well as the hazardous materials ability to disperse within each media (the materials ability to sorb to soil or solubility in water). An impact would be considered significant if it were to substantially affect water or soil quality due to the potential release to the environment.

Construction projects would be subject to applicable requirements of a Construction Site Storm Water NPDES permits, as well as SWPPP and SPCC plans. The SWPPP specifies management practices to be used to minimize soil erosion, resulting in minimal pollution and sedimentation of downstream watercourses. Additionally, third party contractors will also typically prepare SOPs for hazardous material specific to the type of work that they are conducting, and they will adhere to the BMPs and SOPs listed in Appendix B. The SPCC plan documents hazardous materials to be used on a given site, and the appropriate steps to minimize its potential to adversely affect the environment or human health. With adherence to these documents and well as general best practices, the Proposed Action would not have significant impacts on or in the vicinity of Fort Wainwright construction projects.

Asbestos-Containing Material - Under the Proposed Action, ACM would likely be encountered during demolition and renovation activities. Demolition and renovation activities would be subject to applicable federal, state, and local regulations to minimize the potential risk to human

health and the environment. ACM waste generated as a result of demolition and renovation activities would be disposed in accordance with applicable regulations at an off-site landfill permitted to accept this type of material. Management of ACM and ACM waste in accordance with applicable regulations and managed through abatement and/or leaving undisturbed, would preclude any significant adverse impacts.

Lead-Based Paint - Under the Proposed Action, LBP would likely be encountered during demolition and renovation activities. Workers conducting demolition and renovation activities would be advised, to the extent known, of the type, condition, and amount of LBP present at the project site. Demolition and renovation activities would be subject to applicable federal, state, and local regulations to minimize the potential risk to human health and the environment. Any LBP waste generated as a result of demolition and renovation would be disposed off-site in accordance with applicable regulations. Management of LBP and LBP waste in accordance with applicable regulations and managed through abatement and/or leaving undisturbed, would preclude any significant adverse impacts.

Polychlorinated Biphenyls - PCBs may be present in older light ballasts; however, these are not regulated as PCB equipment or PCB-contaminated equipment. Therefore, significant adverse impacts from PCBs are not anticipated.

Routine upgrade, maintenance, and construction projects have the potential to cause adverse impacts to water ways and adjacent soils through directly or cumulatively degrading surface water and soil quality by the introduction of hazardous materials into the environment. To avoid significant adverse impacts, USAG FWA adheres to environmental stewardship construction guidelines (SOPs and BMPs listed in Appendix B) that have been developed for construction to reduce overall adverse impacts from routine projects. All construction projects will be required to adhere to standards imposed by state and federal regulations. Based on the adherence to the BMPs and SOPs listed in Appendix B, impacts related to these potential hazardous materials would be minimized to the extent possible, and therefore would result in little adverse impacts. Many projects would also be beneficial in that many of these would improve roadways and transportation routes throughout base. This allows for safer transportation of required hazardous materials to and from future construction projects.

In summary, by adhering to the BMPs and SOPs listed in Appendix B, SWPP and SPPC plans, and lead and asbestos abatement plans, overall effects from solid and hazardous waste associated with the implementation of the PRMP are anticipated to be less than significant, with some beneficial effects in regards to the safer transportation of hazardous materials and solid waste**.**

3.13.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue, as needed, and would undergo project-specific evaluation under NEPA. Construction activities disturbing more than 1 acre would be conducted in accordance with the NPDES General Permit and associated SWPPP, as well as the current SPCC plan. Existing SOPs and BMPs listed in Appendix B would also be utilized to maintain and document hazardous waste streams during and after construction, reducing potential adverse

impacts to none or minor. No significant impacts resulting from hazardous material storage, handling or use are anticipated under the no-action alternative. As with the proposed alternative, many of the construction projects would have beneficial impacts with regards to solid and hazardous waste and the use and transport of those materials.

3.14 TRANSPORTATION AND TRAFFIC

3.14.1 Affected Environment

The ROI for the analysis of traffic and transportation includes the area within the Fort Wainwright Main Post and the roadways immediately surrounding FWA.

3.14.1.1 Off-Installation Transportation

Road Network -The major state roads serving Fairbanks and Fort Wainwright include George Parks Highway, Richardson Highway, and Steese Highway. The George Parks Highway is one of the most important arterials for transportation within Alaska and connects FWA to Anchorage and the Matanuska-Susitna Valley in the south, the principal metropolitan areas in Alaska. The Richardson Highway connects Fairbanks to the port community of Valdez, 368 miles to the southeast. The Steese Highway, known as the Steese Expressway within Fairbanks, extends 161 miles to the north of Fairbanks to the community of Circle.

Within Fairbanks, Airport Way is the main east-west arterial accessing the Main Post. At its eastern terminus, Airport Way enters the installation through the Main Gate, becoming Gaffney Road. College Road and the Johansen Expressway/Geist Road also provide major east-west access to the installation through the northern part of Fairbanks. Traffic levels on Airport Way, Richardson Highway, and Steese Highway are generally moderate. However, noticeably heavier traffic during peak hours and the summer tourist season can cause congestion at major arterial intersections. Peak hours for Fairbanks (and Fort Wainwright) are typically 7:00 a.m. to 8:00 a.m., and 4:30 p.m. to 5:30 p.m. (USACE, 2008).

Regional Air Transportation - Ladd Army Airfield in the central area of Main Post has two parallel runways, the 8,552-foot north runway and the 7,800-foot south runway, which is used only when the north runway is closed for maintenance. The airfield can support the range of military aircraft, including C-5s (USAGAK, 2005).

The Class B airfield is used primarily by Aviation Task Force. Helicopters are the main type of aircraft using the airfield, with occasional fixed-wing aircraft usage. The BLM also uses the airfield for fire protection throughout Alaska (USACE, 2008).

Fairbanks International Airport, five miles west of the Main Post on Airport Way, is the nearest commercial airport. The airport has an 11,800-foot main runway, a 6,500-foot secondary runway, a 3,500-foot winter (ski) graveled runway, and a 5,400-foot water lane (float plane) runway (USAGAK, 2005). The airport can handle up to a Boeing 747-400, although the most commonly used large aircraft is the Boeing 757. Fairbanks International Airport also coordinates operations with the Fort Wainwright control tower and air operations management.

A number of major airlines provide year-round daily passenger service, while others provide mainly summer tourist service. Several air cargo carriers operate year-round daily service. The airport also provides parking facilities and airspace management for a variety of local privately owned fixed-wing and rotary-wing aircraft.

Off-installation Rail Network - The Alaska Railroad (AKRR) provides seasonal passenger and year-round freight and vehicle service between Anchorage and Fairbanks, which is the railroad's northern terminus. Most northbound freight to Alaska arrives by sea at either the port of Anchorage or the port of Whittier for transfer to the railroad. The Alaska Railroad provides a connection to Seward, 80 miles to the south of Anchorage, the nearest port with intermodal capability.

Off-installation Bus Network - The Fairbanks North Star Borough (FNSB) operates the Metropolitan Area Commuter System (MACS) fixed-route transportation system serving the Borough. The MACS fixed route service operates Monday through Friday with ten routes circulating throughout the Fairbanks area, with service to North Pole via the Green line and Salcha via the Black Line. The Gold Line provides service within the Main Post and scheduled stops include Bassett Hospital, Arctic Lights Elementary School, and Last Frontier Community Activity Center. A valid military ID or visitor pass is required to get off the bus while inside FWA. During peak hours of service, there are twelve MACS buses operating ten routes. In total, the system provided 550,224 trips in FY 2015 (FTPG, 20015). The MACS transit center is located in downtown Fairbanks and is a transfer point for the various routes as well as a heated facility where passengers can wait for the bus.

The FNSB Transportation Department also operates Van Tran door-to-door paratransit service as a complement to the MACS fixed-route service. Van Tran service operates five vans with nine person capacity and gives priority to ADA-certified disabled passengers within a ¾-mile zone around all MACS fixed routes (FTPG, 20015).

3.14.1.2 On-Installation Transportation

Access Control Points (ACP) - FWA is a controlled access installation and anyone aged 16 years and above must present a valid state or federally issued picture identification to access the Main Post (USAG FWA, 2016b). There are four Access Control Points (ACP) to Fort Wainwright with the primary access from Airport Way - a four-lane roadway that provides a direct connection to the Main Gate. The Main Gate has a multiple-lane checkpoint with a visitor center.

The four entrances to Fort Wainwright include:

- Main Gate – Located on Gaffney Road and open 24 hours, 7 days a week.
- Trainor Gate – Located on Trainor Road and open from 5:30 a.m. to 9 p.m., 7 days a week.
- Richardson Gate – Located on Richardson Highway and closed to all but special traffic requests.

- Badger Gate – Located on Badger Road and open from 5:30 a.m. to 10 p.m., 7 days a week.

Gates may be opened or closed depending upon weather, traffic, increase in the federal threat level and/or at the discretion of the Garrison Commander.

Based on counts from October 2007, the peak hour volumes for each gate are included in Table 3-12.

Table 3-12. Gate Peak Hour Volumes, October 2007

Access Control Point or Gate	AM Peak Hour Volumes	PM Peak Hour Volumes
Main Gate	1308	1382
Trainor Gate	508	545
Badger Gate	331	430

Source: USKH, 2009

Trainor Gate does not currently meet AT/FP standards and is not well suited to accommodate a large throughput due to its single lane configuration and experiences traffic back-up when railroad activity interrupts traffic flow east of the gate.

Main Post Roadways - Within the Main Post, 14 primary roadways support the majority of commute traffic (work and school-related) in Fort Wainwright, with the remaining secondary roadways supporting shorter trips within the base i.e., local traffic. The Main Post contains approximately 30 miles of paved roads and 10 miles of gravel/clay unpaved roads (Figure 3-1). All of the paved and unpaved roads serving the Main Post are in good condition. Graveled roads serve facilities such as the landfill, tank farm, northeast ammunition storage area, and training areas. Adequate parking exists in all active areas of the Main Post (USACE, 2008).

Gaffney Road is the main base arterial that extends from the Main Gate through to Marks Road on the eastern portion of FWA. The road is comprised of a four-lane section to Marks Road for directional traffic, dropping to two lanes continuing east to the Badger Road Gate entrance. Posted speeds range between 20 and 35 mph. A separated pedestrian trail is also located along the north side of Gaffney Road between the Main Gate and Apple Road (USKH, 2009).

The remaining roadways of FWA consist primarily of two-lane roads with either adjacent paved shoulders or sidewalks. Posted speeds range from 20 mph (in school zones) to 25 mph, with Alder Avenue being the only two-lane roadway with a posted speed limit of 35 mph. The primary north-south routes are 599th Street, 600th Street, 9th Street, Whidden Road, Meridian Road, River Road, Santiago Avenue, Luzon Avenue, Apple Road, Marks Road, 102nd Street, 61th Street, 103rd Street, and Ketcham Road (USKH, 2009).

Figure 3-1. Fort Wainwright Road Map

Sidewalks are located intermittently throughout the base, principally in residential areas. These sidewalks lie adjacent to one or both sides of roadways. Various bike and pedestrian pathways on the base connect residential and recreational areas to the west, northeast, and north of the study area.

Traffic volumes were developed for 25 key intersections using 2005 and 2007 traffic count data as part of the Six-Year Transportation Plan Update (USKH, 2009). The highest traffic volumes recorded on the installation was on Gaffney Road west of Meridian Road where traffic volumes range from 1,000 to 1,700 vehicles during the PM peak hour. The peak direction on Gaffney Road is eastbound entering the installation in the morning and westbound exiting the installation during the evening. Montgomery Road, Neely Road, Santiago Road, and Meridian Road carry more than 400 vehicles during the AM and PM peak hours, depending on the location. The remaining study roadways carry fewer than 400 vehicles during the AM and PM peak hours (USKH, 2009).

To estimate how well the existing infrastructure accommodates the current and future traffic demand, a traffic analysis was conducted as part of the Six-Year Transportation Plan Update (USKH, 2009). The operation of roadway intersections is generally expressed in terms of level of

service (LOS). The LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, as the best operating conditions, to LOS F, or the worst operating conditions. LOS E represents "at-capacity" operations. When traffic volumes exceed the intersection capacity, stop-and-go conditions result, and operations are designated as LOS F. Table 3-13 presents the level of service designations and their associated control delay factors. These levels are based primarily on the Highway Capacity Manual (Transportation Research Board, 2000).

Table 3-13. Road Transportation Level of Service

LOS	Description	Average Control Delay per vehicle (seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths	≤10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop and individual cycle failures are noticeable	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences	55.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths	>80.0

Source: Transportation Research Board, 2000.

The level of service for key intersections on Fort Wainwright is provided in Table 3-14 and discussed below.

The weekday peak hour data were analyzed to determine existing levels of service at the 25 key intersections under various traffic flow conditions. The Gaffney Road and 599th Street intersection operates at LOS F during the AM peak hour, and the Gaffney Road and 10th Street intersection operates at LOS F in the PM peak hour. The Montgomery Road and Santiago Avenue intersection operates at LOS F in both the AM and PM peak hours. The three other intersections along Montgomery Road—at Meridian Road, Luzon Avenue, and Ketcham Road—operate at LOS C or better during both peak hours. The remaining 19 intersections also operate at LOS C or better during both peak hours (USKH, 2009).

Table 3-14. Baseline Intersection Analysis

Intersection	AM Peak Hour		PM Peak Hour	
	Average Control Delay per vehicle (seconds)	LOS	Average Control Delay per vehicle (seconds)	LOS
Gaffney Road at 599th Street	147.6	F	39.0	E
Gaffney Road at 600th Street	2.0	A	5.1	A
Gaffney Road at 602nd Street	2.2	A	4.5	A
Gaffney Road at 9th Street	3.0	A	5.5	A
Gaffney Road at 10th Street	31.2	D	53.4	F
Gaffney Road at Whidden Road	15.7	C	16.1	C
Gaffney Road at River Road/Meridian Road	17.1	B	20.7	C
Montgomery Road at Meridian Road	7.7	A	7.2	A
Montgomery Road at Santiago Avenue	205.4	F	182.6	F
Montgomery Road at Luzon Avenue	9.9	A	11.2	B
Montgomery Road at Ketcham Road	18.5	C	16.1	C
River Road at Trainor Gate Road	10.5	B	13.1	B

Source: USKH, 2009.

Rail Network - The AKRR main line serving Fairbanks and the Main Post crosses the city north of the Chena River and enters the Main Post, paralleling Trainor Road at Trainor Gate. It crosses the Chena River, provides loops and spurs to the South Post industrial area and to the North Post warehouse area, and connects to the Fairbanks industrial spur. The railroad provides freight service to Fort Wainwright for ammunition, household goods, and fuel. Trains that transport coal to supply Fort Wainwright's coal-fired power plant make four round trips per week, for a total of 25 round trips per week for freight and coal transport. The track also connects with the Fairbanks industrial spur (USAGAK 2007).The spur to Fort Wainwright does not provide passenger service.

3.14.2 Environmental Consequences

3.14.2.1 Environmental Consequences – Proposed Action

Under the Proposed Action, FWA would adopt the RPMP and new transportation projects would be implemented in accordance with the plan's goals and objectives.

During the construction, demolition, and renovation activities, truck and construction-related vehicle traffic is expected to increase on some of the roadways serving Main Post and local housing communities. Construction-related traffic would likely use the Main Gate, Badger Road Gate, and, to a lesser extent, the Trainor Road Gate to access project locations. It is assumed that the construction and demolition related vehicles would use the main and secondary roads presently serving Main Post and local roads presently serving the affected community areas. If

construction trips occurred at the same time as peak commuting times for installation employees, traffic congestion impacts could be more acute in the areas near construction. The construction-related traffic would be localized and would be temporary, lasting as long as the project activity. The anticipated increase in truck traffic to deliver building materials would minimally impact relative existing traffic conditions and not adversely affect the level of service on local roadways. Proper coordination (including notifications, signage, temporary reroutes/lane closures, etc.) should minimize delays during construction activities and reduce any short-term impacts that may occur.

Because authorized permanent party personnel are not anticipated to increase significantly as a result of the Proposed Action, a significant decrease in the level of service on roadways within Fort Wainwright and local roadways is not anticipated.

Within the Main Post, RPMP transportation-related development goals seek to create a connected network of streets that provides alternative routes for transportation, accommodate all transportation users through the implementation of interconnected transportation networks, installation of Access Control Points (ACPs), and the development of walkable districts. Pedestrian- and bicycle-related development goals seek to make walking and biking more accessible with the addition of pedestrian facilities that provide connectivity between existing and new pedestrian facilities, controlled crossings, and pedestrian access between areas of common work or recreational interest. The closure of Trainor ACP in the Chena North District, and construction of a new ACP at Canol Road would improve traffic flow and the safety of students and parents in the nearby elementary and middle schools by minimizing the amount of vehicles. Proposed on-base vehicle parking projects and parking improvement projects would also result in a beneficial effect to on-base traffic/vehicle parking. These improvements would lead to long-term, beneficial effects on transportation by themselves with improved transportation options, improved safety, and improved network connectivity which increases access and can decrease congestion.

Beneficial impacts under Proposed Action would be more certain than under the No-Action Alternative because proposed projects would be completed in conjunction with each other at a system-wide level (e.g., transit, pedestrian) with adoption of the RPMP, and projects would occur in an orderly deliberate manner consistent with the RPMP vision, goals and objectives to ensure that benefits are realized.

The overall implementation of the Proposed Action would result in beneficial impacts on all modes of transportation within the installation, and beneficial impacts on traffic with the proposed upgrades to Fort Wainwright roadways (road bed improvements, installation of ACPs, parking areas, turn lanes, sidewalks, pedestrian improvements, and traffic circles) reducing congestion and maximizing traffic flow thereby improving traffic flow on the installation.

3.14.2.2 Environmental Consequences – No-Action-Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPRP and construction projects would continue as needed. Similarly to the Proposed Action, future construction activities at FWA would likely increase traffic congestion both on FWA roadways

and on the surrounding roads as a result of construction worker trips and materials delivery and may also result in road closures on FWA. It is anticipated, however, that overall increases in traffic and potential road closures would be relatively small in nature when compared to existing traffic and existing infrastructure, so adverse impacts would be short and less than significant.

Current transportation-related issues, including traffic congestion during rush hour and conflicts between pedestrians and vehicles would persist and could potentially worsen. This would likely affect those intersections identified as having the highest levels of congestion on the Main Post, including Gaffney Road at 599th Street, Gaffney Road at 10th Street, and Montgomery Road at Santiago Avenue, all of which received an LOS score between a D to an F for morning an evening traffic. If these intersections, and others on the Main Post, experienced an increase in daily traffic under the No-Action Alternative there could potentially be additional impacts to traffic circulation on the Main Post.

Under the No-Action Alternative, transportation improvements would not be as certain as they would be in the event that the RPMP is formally adopted, resulting in a potential reduction in any beneficial impacts from projects. Additionally, current needs and mission requirements would drive ad hoc development of transportation facilities with the chance for less coordination and cohesion between improvements, also resulting in a potential reduction in beneficial impacts from proposed projects.

Overall, impacts to traffic and transportation under No-Action would be adverse, but less than significant, because of continued traffic congestion and conflicts between pedestrian and vehicles.

3.15 WATER RESOURCES

The Fort Wainwright Main Post lies within the Tanana River drainage basin, with the Chena River as its main tributary. The Chena River is mainly used for recreational purposes, with no listed use as a drinking water source.

The water resource evaluation includes surface water features (e.g., lakes, streams, rivers), groundwater, floodplains and storm water in relation to the Fort Wainwright area. The ROI for surface water, floodwater, and storm water resources includes Fort Wainwright and extends downstream to the primary tributaries. The ROI for groundwater includes those aquifers that underlie or are directly adjacent to Fort Wainwright.

The Clean Water Act (CWA) mandates that each state develop a program to monitor and report on the quality of its surface and groundwater and prepare a report describing the status of its water quality. Section 303(d) of the CWA requires that Alaska maintains a list of any “impaired” water bodies that do not meet water quality standards. Alaska’s water quality standards (18 AAC 70) apply to surface water bodies in an attempt to preserve them for nature and public use. The standards are applied to waterways based on their designated use. The water bodies in the installations all fall under the freshwater protected water classes: Class A: Water supply; Class B: Water Recreation; and Class C: Growth and Propagation of Fish, Shellfish, other Aquatic Life

and Wildlife. USAG FWA is committed to applying these standards to both jurisdictional and non-jurisdictional waters.

3.15.1 Affected Environment

The Fort Wainwright Main Post lies within the Tanana River drainage basin, with the Chena River as its main tributary. The Chena River is mainly used for recreational purposes, with no listed use as a drinking water source.

The water resource evaluation includes surface water features (e.g., lakes, streams, rivers), groundwater, floodplains and storm water in relation to the Fort Wainwright area. The ROI for surface water, floodwater, and storm water resources includes Fort Wainwright and extends downstream to the primary tributaries. The ROI for groundwater includes those aquifers that underlie or are directly adjacent to Fort Wainwright.

Surface Water - The Fort Wainwright areas surface water resources are diverse and include numerous rivers, streams, ponds, and lakes. The Tanana and Chena Rivers drain the Main Post area. The volume of flow fluctuates dramatically by season. During the long period of freeze, usually from October to May, flow is limited to seepage of groundwater from aquifers into the local surface waters. Many small streams freeze solid (zero discharge) during winter. Snowmelt typically begins in March or April and reaches its peak in June. Flow is greatest during June and July. By the end of July, most snow has melted, and a steady flow during August and September is sustained by rainfall. The Chena River is non glacier-fed and reaches peak flow before the Tanana River, which is fed by meltwater from glaciers and snowfields in the Alaska Range (Nakata Planning Group 1987). The Chena River, from the Chena Slough to the confluence with the Tanana River, has been classified by the state of Alaska as Class A (suitable for agriculture, aquaculture, and industrial), Class B (suitable for water recreation), and Class C (suitable for growth and propagation of fish, shellfish, other aquatic life, and wildlife). The pH of the Chena River is slightly above neutral during winter and slightly below neutral in summer (Frey, Mueller and Barry, 1970).

Generally, the overall surface water quality on Fort Wainwright is good. The Chena River, which runs through the Main Post has been classified for Class A, B, and C uses. However, the portion that runs through Fairbanks and Fort Wainwright has been on Alaska's 303(d) list since 1990 for turbidity and sediment. Additionally, petroleum products were added as an impairment, likely due to urban runoff. Seeps from contaminated soil and contaminated groundwater contributed petroleum hydrocarbons and other pollutants to the Chena River. As a result, the Alaska Department of Environmental Conservation (ADEC) added a 15-mile long segment of the Chena River to Alaska 1994 CWA section 303(d) list of impaired waters for petroleum hydrocarbons/oil and grease and sediment. The impaired segment extended from the mouth of the Chena River upriver to Fort Wainwright. ADEC removed it from the list of impaired waters in 2010 for petroleum hydrocarbons/oil and grease, however; it remains on the impaired waters list for sediment (EPA, 2011). The Chena River receives both sheet (surface) and point (outfall) flow from Post. Water quality on post is monitored carefully through implementation of the SWPPP (USAG FWA 2015c).

Groundwater - Groundwater is one of Fort Wainwright's most valuable natural resources. With the exception of naturally occurring metals, groundwater quality is good in the Fort Wainwright area. Much of Main Post is underlain by a shallow aquifer composed mainly of sand and gravel deposited by running water. Groundwater in the aquifer is recharged by the Tanana River, though the Chena River and direct infiltration of precipitation also contribute small amounts. Groundwater potential is best along the alluvium of the Tanana River, where wells are capable of yielding 3,000 gallons per minute at less than 200 feet in depth.

Army-related industrial activity in Main Post has, to an unknown degree, contributed to groundwater pollution; generally associated with leaking underground storage tanks (USTs), facilities where chemicals were stored, and places where chemicals were dumped during the early history of the post. These areas are currently included in an intensive monitoring program. Pollution is generally localized to each site, and there is no indication of deep groundwater pollution. The recent trend has been toward water quality improvement as Army restoration projects mitigate damage to groundwater quality. Practices that have led to groundwater contamination have been discontinued; for example, underground storage tanks have been removed and all petroleum, oils, and lubricants are now stored in above-ground tanks surrounded by containment berms.

Due to past contamination of localized areas, primarily within the Main Post area, Fort Wainwright is classified as a Comprehensive Environmental Response, Compensation, and Liability "Superfund" site. Remediation is ongoing. Groundwater management consists of restoration projects associated with individual sources of pollution, generally associated with the "Superfund" designation.

Groundwater in the Fort Wainwright area contains high levels of metals, especially iron. Elevated arsenic levels are prevalent in the upland areas (Harding Lawson Associates, 1996). These are naturally occurring levels and are not related to human-caused pollution (U.S. Army Corps of Engineers, 1994).

Floodplains - The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Mapping (FIRM) indicates *t*hat the Chena River is a regulatory floodway, and as such must not be altered so that a 100 year discharge can be conveyed within base flood elevation specifications. A large portion of Fort Wainwright is protected from anticipated 100 year flood events via the Chena River Lakes Flood Control system in place to protect Fort Wainwright and the greater Fairbanks area. Additionally, FEMA has recently revised the flood maps for the Chena River, confining the flood zone to the Chena River Channel and directly adjacent lands. However; many drainage ditches associated with storm water management at Fort Wainwright discharge to the Chena River in the vicinity of the airfield. High water events in this area have the potential to backlog the drainage system with water, impeding water flow and overloading localized areas. The last 100 year flood event on Fort Wainwright was recorded in 1967 and is what prompted the Chena River Lakes Flood Control System.

EO 11988, *Floodplain Management*, states that structures should not impede or channelize stream flow. This EO also requires that alternatives to development within a floodplain be

considered. In the event that there are no practicable alternatives for development within a floodplain, a Finding of No Practicable Alternative (FNPA) is required to demonstrate that all practicable measures have been taken to minimize adverse impacts to the floodplains.

Storm Water - The majority of the storm water is conveyed throughout Fort Wainwright via ditching and swales, or open channel flow, as well as some closed conduit conveyance systems in the airfield and North Post areas, as well as culverted road crossings. The main system is also equipped with various outfall points along the Chena River and Badger Pond as well as various retention areas throughout the base. Because the area is flat and tied to the Chena River, river stage has a significant impact on infiltration capacity of nearby soils as well as water levels and conveyance capacities of connected storm water channels (WCNR, 2013). In the study conducted by the Warner College of Natural Resources, they concluded that areas in and adjacent to the airfield and old post areas are not adequate for storm water retention and conveyance due to their age (installation prior to the 1960s), and subsequent structural condition. The study also notes that insufficient capacity of the network during peak rainfall events could result in flooding of the airfield and old post areas, as well as the Siku Basin and Southern Cross housing areas.

Storm water at Fort Wainwright is not treated prior to discharge into the Chena River or Badger Pit, other than a small amount of sediment capture in retention basins. This makes it an important system to protect during new construction, maintenance activities and ongoing upgrades at Fort Wainwright. It is also an important component to consider during the installation of new construction and associated load on the storm water system.

Storm water runoff is an item of critical environmental importance at Fort Wainwright; runoff is closely monitored (WCNR 2013). Per Fort Wainwright's SWPPP (USAG FWA 2015c), runoff is monitored from each outfall quarterly. Inspection involves visual assessments of the water quality, to include color, odor, and the presence of solids, sediments, foams and oil sheens. In addition to visual assessments, analytical data is gathered to determine if the outfalls comply with applicable regulations, and corrective actions if the results to not comply with applicable regulations.

3.15.2 Environmental Consequences

Evaluation of potential impacts of the Proposed Action on water resources is based on surface and subsurface water availability, quality, and use; existence of floodplains; and associated regulations. An impact would be considered significant if it were to substantially affect water quality; substantially reduce water availability or supply to existing users; threaten or damage hydrologic characteristics; or violate established federal, state, or local laws and regulations. The potential impact of flood hazards on a proposed project is important if such an action occurs in an area with a high probability of flooding. Impacts would be considered to be negative if the Proposed Action alters significantly the ground surface and shallow subsurface to a point that natural water pathways are impeded or severely obstructed.

3.15.2.1 Environmental Consequences – Proposed Action

Surface Water - Ground-disturbing activities, and consequently surface water characteristics, would be subject to applicable requirements of a National Pollutant Discharge Elimination System (NPDES) permit and existing Fort Wainwright SWPPP (USAG FWA 2015c). The SWPPP specifies management practices to be used to minimize soil erosion, resulting in minimal pollution and sedimentation of the Chena River and other downstream watercourses.

Routine upgrade, maintenance and construction projects have the potential to cause adverse impacts to water resources through directly or cumulatively degrading surface water quality standards or through altering patterns or velocity of flood water movement. In order to avoid these adverse impacts, USAG FWA will adhere to environmental stewardship construction guidelines (SOPs and BMPs listed in Appendix B) that have been developed for surface water and floodplain construction to reduce overall adverse impacts from routine projects. All construction projects will be required to adhere to standards imposed by State and Federal regulations. Based on the adherence to the BMPs and SOPs listed in Appendix B, impacts to surface water would be minimized to the extent possible, and therefore would not result in substantial adverse impacts.

Projects such as the dredging of Chena Cove in the Chena North District, improvements for the boat launch on the Chena River and reconstruction of the "Bailey" bridge in the South Post District would be considered moderate impacts due to disturbance of localized river and riparian areas within and adjacent to the project limits and potential increased turbidity in the Chena River, however; these would be of temporary duration. Projects such as the removal of pavement near Building 2074 and the demolition of buildings and roads to expand the western boundary buffer, would be minor and beneficial by decreasing man-made structures and impermeable surface completions, and increasing surface area to accommodate natural water infiltration.

The Proposed Alternative would not have significant adverse impacts to surface water on or in the vicinity of Fort Wainwright construction projects, and would, as a whole, be minor to moderate and temporary in duration.

Groundwater - Ground-disturbing activities would be subject to applicable requirements of a Construction Site Storm Water NPDES permit and SWPPP. The SWPPP specifies management practices to be used to minimize soil erosion, resulting in minimal pollution and sedimentation of downstream watercourses. Thus, the Proposed Action would not have significant impacts to groundwater on or in the vicinity of Fort Wainwright construction projects.

Routine upgrade, maintenance and construction projects have the potential to cause adverse impacts to groundwater through directly or cumulatively degrading surface water quality standards or through altering patterns or velocity of flood water movement, and subsequent migration into groundwater. However, with use of BMPs and SOPs listed in Appendix B, along with Water NPDES permit and SWPPP permit stipulations, these impacts would be minimized. No significant adverse impacts to groundwater quality or characteristics would be anticipated under the Proposed Action.

Floodplains - EO 11988, *Floodplain Management*, requires federal agencies to avoid, to the maximum extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. EO 11988 was recently amended by EO 13690, which requires federal agencies to update their flood-risk reduction strategies and expand the flood elevation and hazard areas they use when deciding where and how new development, redevelopment, and construction occurs. Following guidelines set forth in EO 13690 as well as application of BMPs and SOPs listed in Appendix B, no significant adverse impacts to existing floodplains would be anticipated under the Proposed Action. FEMA has recently adjusted the floodplain maps, resulting in a reduction of floodplains in the vicinity of Fort Wainwright.

Storm Water - Demolition/dismantlement activities could increase sedimentation and compromise water quality in on- and off-site drainages. However, ground-disturbing activities would be subject to applicable requirements of a NPDES permit and SWPPP. The SWPPP specifies management practices to be used to minimize soil erosion, resulting in minimal pollution and sedimentation of storm water swales and, by extension, downstream watercourses. Therefore, no significant adverse impacts to storm water, particularly in the long-term, are anticipated. Projects such as the removal of pavement near Building 2074 and the demolition of buildings and roads to expand the western boundary buffer, would be minor and beneficial by decreasing man-made structures and impermeable surface completions, and increasing surface area for natural water infiltration, thus reducing the load on the storm water system.

3.15.2.2 Environmental Consequences – No-Action Alternative

Under the No-Action Alternative, Fort Wainwright would not implement the RPMP. Construction projects would still continue, as needed, and would undergo project-specific evaluation under NEPA. Construction activities disturbing more than one acre would be conducted in accordance with the NPDES General Permit and associated SWPPP. Existing SOPs and BMPs listed in Appendix B would also be utilized to stabilize soils during and after construction, reducing potential adverse impacts to minor. No significant impacts to water resources are anticipated.

By adhering to established BMPs and SOPs listed in Appendix B, overall effects to surface water, groundwater, floodplains, and storm water runoff would be similar as under the Proposed Action; however, the beneficial impacts would not be as certain as under the Proposed Action.

4.0 CUMULATIVE ENVIRONMENTAL CONSEQUENCES

In addition to identifying the direct and indirect environmental impacts of their actions, the CEQ's NEPA regulations require federal agencies to address cumulative impacts related to their proposals. A cumulative impact is defined in the CEQ regulations (40 CFR §1508.7) as "the impact on the environment which results 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

This section describes the process used to identify potential cumulative impacts related to the Proposed Action and discusses those impacts for each of the resources addressed in Chapter 3.

4.1 PROCESS FOR IDENTIFICATION OF CUMULATIVE IMPACTS

CEQ has published guidance for assessing cumulative impacts in Considering Cumulative Effects under NEPA (CEQ 1997b). In summary, the process outlined by CEQ includes identifying significant cumulative effects issues, establishing the relevant geographic and temporal (time frame) extent of the cumulative effects analysis, identifying other actions affecting the resources of concern, establishing the cause-and-effect relationship between the proposed projects and the cumulative impacts, determining the magnitude and significance of the cumulative effects, and identifying ways in which the proposed RPMP might be modified to avoid, minimize, or mitigate significant cumulative impacts.

Issues to be addressed in this cumulative impacts analysis were determined based on the identification of resources that would be affected by the alternatives under evaluation. These resources were identified based on the analysis of direct and indirect effects that have the potential to combine with other past, present, or reasonably foreseeable future actions to produce a larger impact. If the analysis demonstrated a resource would not be directly or indirectly affected, it was not included in the cumulative impacts analysis because the proposed projects would not add to cumulative impacts.

The geographic extent of the cumulative impacts analysis generally coincides with the ROI of each resource. The CEQ regulations specify that cumulative impacts analyses encompass past, present, and reasonably foreseeable future actions. As a practical matter, the impacts of past actions are already reflected in the conditions that currently exist, as described in the affected environment sections of chapter 3. Where appropriate and feasible, those sections note past activities that may have cumulatively contributed to the current condition of the environment. Past, present, and reasonably foreseeable future actions considered in the analysis are identified here. In general, this PEA considered present and reasonably foreseeable future actions as those that are under construction, are the subject of a plan or proposal, or have identified funding. Actions beyond that become increasingly speculative and difficult to assess.

4.2 IDENTIFIED PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

4.2.1 Past Actions

Past actions considered as part of the cumulative effects analysis are outlined in the following documents:

Environmental Assessment: North Pole Road/Rail Crossing Reduction Project (ARRC, 2012) – This project entails the construction of a number of rail crossings on a portion of ARRC's Eielson Branch through North Pole, Alaska. The proposed project is referred to as the North Pole Road/Rail Crossing Reduction Project. The project study area is located in the Fairbanks North Star Borough (FNSB) and involves one segment of a realignment project previously considered (the Eielson Branch Realignment) and is also Phase 1 of the much larger Fairbanks Area Rail Line Realignment project.

Fairbanks North-Star Borough Regional Comprehensive Plan (FNSB, 2005) – This is a planning document that provides the foundation for future growth coupled with responsible stewardship of major attributes of the community. It provides the framework for citizens and officials to make decisions related to land use, and to form the basis for ordinances and programs to guide land use and development. It is also a guide for responding to change in the community. It details the vision that will guide the Borough through the next few decades. Goals, strategies and actions are provided in order to implement the vision.

Final Environmental Impact Statement: Disposition of Hangars 2 and 3 (USAG FWA, 2013c) – This Environmental Impact Statement (EIS) analyzes the impacts from demolition of two historic World War II-era hangars at Fort Wainwright, Alaska. The EIS also looks at other disposition options and a "No-Action" alternative. Both buildings have been found to be unsafe for occupancy and have no remaining military purpose. The hangars are contributing resources within the Ladd Field National Historic Landmark and Ladd AFB Cold War Historic District, and their loss would be a significant impact to cultural resources. All other impacts would be less than significant. Mitigation measures are described to minimize adverse impacts on cultural resources.

Environmental Assessment: New Mission Beddown and Construction, Clear Air Force Station (AFS), Alaska (DoD Missile Defense Agency, 2012) – This Environmental Assessment (EA) evaluates the potential for environmental impacts of the proposal to conduct four inter-related projects to beddown new mission requirements and upgrade the Early Warning Radar (EWR) and associated facilities at the Solid State Phased-Array Radar System (SSPARS) at Clear Air Force Station (AFS), AK. The projects are scheduled to be implemented from Fiscal Year (FY) 13 through FY 16.

Fairbanks Metropolitan Area Transportation System (FMATS) Non-motorized Transportation Plan (FMATS, 2012) – This is the first non-motorized transportation plan (NMTP) prepared for the Fairbanks Metropolitan Area Transportation System (FMATS) metropolitan planning organization (MPO). It details plans to add roughly 4 miles of shared use paths, 8 miles of

shoulders, 10 road-miles of sidewalks, increased signage, and improvements at over 14 crossings. In addition to these infrastructure improvements, policy and program changes will help to create a more bicycle and pedestrian friendly culture with increased acceptance of these modes as viable forms of transportation and better understanding between motorized and non-motorized travelers

Fairbanks International Airport (FAI) Airport Master Plan (ADOT&PF, 2014) – This plan is a comprehensive study of the Fairbanks International Airport. It compares the existing and forecasted aviation demand with existing conditions and facilities to identify the need for future development. The plan describes near-, mid- and, long-term development plans and identifies the triggers necessary to begin those projects. This framework cost-effectively guides airport development while also considering potential environmental, airspace use, and socioeconomic impacts.

State of Alaska Department of Transportation and Public Facilities (ADOT&PF) Interior Alaska Transportation Plan (ADOT&PF, 2010) – This document is a component of the Statewide Long Range Transportation Plan. The most recent State Plan was adopted February 29, 2008 and is titled Let's Get Moving 2030 (LGM 2030). The Interior Alaska Transportation Plan was adopted by the Commissioner of the Alaska Department of Transportation and Public Facilities as a component of LGM 2030.

Final Environmental Impact Statement: Stationing and Training Increased Aviation Assets Within U.S. Army Alaska (USARAK, 2009) – This EIS evaluates the Army proposal to station and train a new aviation unit in Alaska. The new unit was created by reorganizing and augmenting existing Army aviation assets in Alaska to create a front-line aviation unit with increased capacity. This would involve the stationing of additional Soldiers and helicopters, constructing a number of facilities at Fort Wainwright, and increasing aviation training on Army lands and within airspace in Alaska.

4.2.2 Present and Reasonably Foreseeable Future Actions

Present and reasonably foreseeable future actions considered as part of the cumulative effects analysis are outlined in the following documents:]

Final Environmental Impact Statement: Alaska Railroad Corporation Construction and Operation of a Rail Line between North Pole and Delta Junction, Alaska (STB, 2007) – This EIS reviews the proposed construction and operation of approximately 80 miles of new rail line from North Pole to Delta Junction and related support and passenger transport facilities.

State of Alaska Department of Transportation and Public Facilities (ADOT&PF) Statewide Transportation Improvement Program (STIP) 2016-2019 (ADOT&PF, 2015) – This document serves as the ADOT&PF blueprint for the state's federally funded surface transportation for 2016-2019, and is used as an investment to ensure safe and efficient transportation networks for the movement of goods and people, statewide access and connectivity, and access for exploration and development of Alaska's resources.

Environmental Assessment: Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System (USAG FWA, 2015) – This is the NEPA analysis related to stationing and operation of the Gray Eagle UAS. The purpose of the Proposed Action is to provide the necessary airfield and support facilities for the 25th Avn Rgt CO D to operate the Gray Eagle Unmanned Aircraft System (UAS) in Interior Alaska within existing restricted airspace.

Fairbanks Metropolitan Area Transportation System, Fairbanks Metro 2040: "A Roadmap to 2040" (FMATS, 2015) – The 2040 update of the Fairbanks Metropolitan Area Transportation System (FMATS) Metropolitan Transportation Plan lays out a long-range vision for the transportation system in the Fairbanks metropolitan area. The plan presents goals, current and planned uses, management, operations, maintenance and forecasts of future funding options.

Final Environmental Impact Statement: United States Air Force F-35A Operational Beddown – Pacific (USAF, 2016) – The Air Force proposes to beddown operational F-35A squadrons (Ops #2) in the Pacific Air Forces Area of Responsibility (PACAF AOR), arriving at this decision through a deliberative process. The Proposed Action would base up to 54 F-35A aircraft (or 48 Primary Assigned Aircraft and 6 Backup Aircraft Inventory) within the PACAF AOR, specifically at Eielson Air Force Base (AFB) in Alaska. The proposal also includes additional military and civilian personnel, and construction and/or modification of facilities for aircraft maintenance and operation. The F-35As would conduct training at the base and primarily in existing northern Joint Pacific Alaska Range Complex (JPARC) airspace: Birch Military Operations Area (MOA), Buffalo MOA, Delta 1/2/3/4 MOAs, Eielson MOA, Fox 1/2/3 MOAs and Air Traffic Control Assigned Airspace (ATCAA), Paxon MOA/ATCAA, and Yukon 1/2/3/4/5 MOAs/ATCAAs, as well as Restricted Areas 2202, 2205, and 2211. No new airspace would be established as part of this Proposed Action.

Final Environmental Impact Statement: BLM Eastern Interior Proposed Resource Management Plan and Final Environmental Impact Statement (BLM, 2016) – This EIS analyzes implementation of the Proposed Resource Management Plan (PRMP) which is provides a framework for the future management direction and appropriate use of the Eastern Interior Planning Area, located in Interior Alaska. The document contains both land use planning decisions and implementation decisions to guide the BLM's management of the four planning subunits: Fortymile, Steese, Upper Black River (Draanjik), and the White Mountains.

4.3 CUMULATIVE IMPACTS TO RESOURCE AREAS

4.3.1 Air Quality

Neither the Proposed Action nor the No Action alternative would be expected to have any significant adverse cumulative air quality impacts in conjunction with other actions in the region. Emissions from demolition and construction projects would be minimized by controlling fugitive dust and implementing established BMPs and SOPs listed in Appendix B for controlling emissions; these emissions would only have temporary effects and would not result in significant impacts. After construction activities are completed, operations at these facilities would not

result in significant air quality emissions. While Fairbanks has generally poor air quality and has been classified as a $PM_{2.5}$ nonattainment area, the contribution of the Proposed Action to air quality in the ROI would not result in a significant cumulative adverse impact on overall air quality in the region when considered in conjunction with other past, present, and reasonably foreseeable future activities.

FNSB air quality would benefit from the Fairbanks Metropolitan Area Transportation System (FMATS) Non-motorized Transportation Plan. Implementation of the RPMPs energy efficiency building projects and pedestrian friendly projects would help reduce emissions and therefor have a beneficial contribution of Fort Wainwright activities to cumulative air quality impacts in the ROI. Therefore, cumulative impacts from the combination of past and present activities and the Proposed Action would be beneficial to less than significant.

4.3.2 Airspace

Impacts from Infrastructure and Operational Support for the 25th Aviation Regiment Company D Unmanned Aircraft System would be less than significant. While the USAF F-35 beddown at Eielson AFB and *FAI Airport Master Plan* would impact regional airspace use, implementation of the RPMP or the No Action alternative would have no impacts on airspace use or classification at or in the vicinity of Fort Wainwright, FNSB, or the region. Renovation and reuse of aging and obsolete existing facilities, as well as re-organizing equipment around the Ladd Airfield under the RPMP would result in long-term, beneficial impacts on airspace as a result of increased efficiencies and safety measures. Thus, implementing the RPMP is not anticipated to have significant cumulative impacts on airspace use or classifications when considered in conjunction with other past, present, and reasonably foreseeable future activities. The No Action alternative is likewise not anticipated to contribute to cumulative impacts to the airspace.

4.3.3 Biological Resources

Cumulative impacts on biological resources considered in conjunction with other past, present, and reasonably foreseeable future activities would be less than significant. Construction activities at Fort Wainwright associated with the RPMP and No Action alternative and the construction of new transportation infrastructure would have short-term impacts on biological resources but would not cause substantial degradation of biological resources such as vegetation communities, wetlands, fish and wildlife, and/or federally listed endangered or threatened species. Overall, the cumulative impacts on biological resources associated with the Proposed Action and No Action alternative are likely to be less than significant because habitat would not be permanently converted or experience a net loss and a species' population would not be lost or impaired. Implementation of either alternative may affect biological resources directly by ground disturbance or indirectly through changes such as increased construction noise. SOPs and BMPs are expected to reduce potential impacts to minor. These minor impacts would be additive to impacts resulting from other actions that may affect biological resources in the project area. Through the use of SOPs and BMPs listed in Appendix B, none of the past, present, or foreseeable future projects would result in cumulative impacts that were more than minor for biological resources.

4.3.4 Cultural Resources

Past adverse effects on World War II and Cold War NHLs and Historic Districts in Alaska include the deterioration of resources due to environmental conditions, passage of time, and intentional demolition of resources. Proposed demolition and new construction at Fort Wainwright for Stationing and Training of Increased Aviation Assets, and the Gray Eagle UAS, could also diminish the overall integrity of setting, feeling, and association of the Ladd Field NHL and Ladd AFB Cold War Historic District at Fort Wainwright.

Implementing the RPMP is anticipated to have minor impacts to cultural resources. NHPA Section 106 and NEPA reviews will be required for future actions in the ROI, including the implementation of projects proposed in the short-, mid-, and long-range implementation plans. Consultation with stakeholders, the SHPO, the NPS, and the ACHP, as necessary, will occur as each project is developed and executed. SOPs and BMPs listed in Appendix B will be employed to avoid, minimize, or mitigate impacts to historic properties. Cumulative impacts to archaeological sites are anticipated to be minor.

RPMP activities would result in the introduction of modern buildings and transportation networks within the Ladd Field NHL and Ladd AFB Cold War Historic District, which would be a minor impact to cultural resources. Combined with the past, present, and reasonably foreseeable future actions discussed above, the impacts from the Proposed Action would constitute minor, cumulative impact to cultural resources. Adhering to the SOPs and BMPs listed in Appendix B along with the ICRMP, AR 200-1 and Section 106 NHPA procedures codified in 36 CFR §800; *Design Guidelines for Ladd Field World War II National Historic Landmark Fort Wainwright, Alaska* (Design Alaska and JCA 2012); *Army Installation Design Guide: Fort Wainwright (USAGAK 2006)*; *Unified Facilities Criteria DoD Building Code (UFC 2016)* would allow both the Ladd Field NHL and Ladd AFB Cold War District to retain historic significance and integrity. Thus, implementation of the RPMP is unlikely to contribute significantly to cumulative impacts to the Ladd Field NHL or Ladd AFB Cold War Historic District at Fort Wainwright when combined with other actions at Fort Wainwright.

4.3.5 Energy and Utilities

Impacts on energy as a result of the Proposed Action would be beneficial because of increased energy security, removal of energy inefficient facilities, reduced vehicle use, and new energy efficient facilities. While demand would be expected to increase as a result of cumulative construction projects and could place an additional demand on the energy systems, it is not expected that these actions would exceed the available energy capacity. The Army took steps to prepare the energy system at Fort Wainwright for future growth by conveying them to a private utilities contractor in August 2008 to own, operate, and upgrade. The Army has planned for the growth expected from the projects in the cumulative analysis; therefore, the implementation of the projects would only have a minor impact on energy demand and utilities. The cumulative impacts on energy would be less than significant under the RPMP when considered in conjunction with other past, present, and reasonably foreseeable future activities.

The cumulative impacts on utilities, such as electrical, heating, and wastewater services, would be less than significant under the RPMP and No Action alternative when considered with other past, present and reasonably foreseeable future actions. While demand would be expected to increase as a result of cumulative construction projects and could place an additional demand on utility systems, it is not expected that these actions would exceed the available utility capacity.

4.3.6 Geology and Soils

There would be no cumulative impacts on soils and geology under the Proposed Action and No Action alternative when considered in conjunction with other past, present, and reasonably foreseeable future activities. None of the actions considered as part of the cumulative effects analysis— the Alaska Railroad Corporation Construction and Operation of a Rail Line between North Pole and Delta Junction, the ADOT&PF STIP, the Infrastructure and Operational Support for the 25th Aviation3780 Regiment Company D Unmanned Aircraft System, the Fairbanks Metropolitan Area Transportation System, Fairbanks Metro 204 plan, The USAF F-35A Operational Beddown, and the BLM Eastern Interior Resource Management Plan—would affect geology or soils on the Fort Wainwright Main Installation**.** Adoption of the RPMP would not result in significant impacts to soils, soil fertility, soil productivity, or geologic resources in the ROI. Hence, there would be no cumulative impacts on soils and geology under the Proposed Action and No Action alternative when considered in conjunction with other past, present, and reasonably foreseeable future activities

4.3.7 Land Use

The Proposed Action is anticipated to have minor to beneficial impacts on land use and aesthetics. Future actions at Fort Wainwright would comply with Army and federal land use guidelines. All future projects would follow land use designations as defined in AR 210-20, as well as neighboring land uses and applicable Fort Wainwright regulations. No cumulative effects on land use would occur because Army land use designations would not change and No-Action would cause neighboring land uses to change. Adhering to the BMPs and SOPs listed in Appendix B for present and future actions would result no significant cumulative impacts to land use. Proposed RPMP activities would be compatible with federal, state, regional, and local land use plans and policies, such as the *BLM Eastern Interior Proposed Resource Management Plan*, the *Fairbanks North-Star Borough Regional Comprehensive Plan, the Fairbanks Metropolitan Area Transportation System (FMATS) Non-motorized Transportation Plan, The FAI Master Plan, the Fairbanks Metropolitan Area Transportation System, Fairbanks Metro 2040: "A Roadmap to 2040"*, and the ADPT&PF Statewide and Interior plans. The objectives and goals of the proposed RPMP are consistent with the local, state, and federal plans reviewed. When considered in conjunction with other past, present, and reasonably foreseeable future activities, cumulative impacts to land use in the region are anticipated to be beneficial to less than significant.

4.3.8 Noise

Construction and demolition activities for multiple development projects occurring at the same time and in the same vicinity could have short-term cumulative effects on the noise environment. Most installation development activities would occur at different times and different locations over several years; as a result, development activities would result in short-term, localized increased noise levels. While noise is expected to increase as a result of cumulative construction projects, it is not expected that these combined actions would result in noise levels that exceed the compatibility standards for noise zones at Fort Wainwright or the City of Fairbanks, or would produce occupational noise levels that exceed 75 dB for an 8-hour da. Thus, no significant cumulative noise impacts under either alternative would be anticipated when considered in conjunction with other past, present, and reasonably foreseeable future activities.

4.3.9 Public Health and Safety

Neither implementation of the RPMP nor the No Action alternative would have significant cumulative impact on human health and safety at or in the vicinity of Fort Wainwright. During demolition, construction, or renovation activities for each project, safety practices would be conducted in accordance with relevant regulations established by the Army, OSHA, and other federal and state agencies. Construction sites would be on post, fenced, and only accessible to workers and other persons with a need to be there. Thus, any risks to the safety of workers and passers-by would be minimized and no unusual risks would be created.

The design and construction of new facilities at Fort Wainwright would comply with the requirements set forth in UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, Thus, neither alternative is anticipated to have significant cumulative impacts on human health and safety when combined with other actions in the region.

4.3.10 Recreation Resources

Implementation of the RPMP would have minor to beneficial to recreation activities. Implementation of the RPMP would provide more integrated recreation opportunities and tie together existing opportunities in a consistent approach throughout the installation. Combined with past, present and reasonably foreseeable future activities, neither implementation of the RPMP nor the No Action alternative would have significant adverse cumulative impacts on recreational activities at the Fort Wainwright installation.

4.3.11 Socioeconomics and Environmental Justice

Upgrades at Fort Wainwright combined with upgrades at other nearby military facilities would increase role of the military in the Fairbanks North Star Borough economy and would benefit contractors specializing in military support services. Positive cumulative effects to the local economy would continue for months and years.

Cumulative impacts to government and emergency services as well as schools in the ROI are not expected as the number of personnel assigned to Fort Wainwright is not expected to change significantly as a result of the Proposed Action or No Action alternative. No disproportionately

high and adverse cumulative effects to minority, low-income, or youth populations would be expected.

No significant cumulative impacts to socioeconomics or environmental justice are anticipated from implementation of the RPMP or No Action alternative when considered in combination with other actions in the ROI. When considered in conjunction with other past, present, and reasonably foreseeable future activities affecting the socioeconomic environment in the Ft. Wainwright area, the contribution of the Proposed Action to cumulative effects on the socioeconomic environment would be minor to moderate and beneficial in that improvements carried out on the base under the PRMP contribute to beneficial cumulative effects on commercial uses in the area and supports strong, healthy community living.

4.3.12 Solid and Hazardous Waste and Pollution

Cumulative impacts to Solid and Hazardous Waste and Pollution occurring under the Proposed Action and No Action alternative combined with past, present, and reasonably foreseeable future actions would be less than significant. Construction activities at Fort Wainwright associated with the RPMP and the construction of new infrastructure associated with Fairbanks Metropolitan Area Transportation System upgrades, and the State of Alaska ADOT&PF Statewide Transportation Improvement projects, would result in less than significant impacts for solid waste, largely as a result of debris generated by the construction of new facilities and transportation infrastructure, and demolition.

Remediation of existing environmental contamination would continue, consistent with federal and state regulations and Fort Wainwright's BMPs and SOPs listed in Appendix B, and hazardous waste generated during the construction or operation of the new infrastructure would be subject to existing regulations that minimize the risk of harm to human health and the environment.

4.3.13 Transportation and Traffic

Implementing the RPMP would result in short-term, minor, cumulative impacts associated with an increase in traffic and construction workers from the proposed upgrades to Fort Wainwright roadways and parking. Additional traffic volume from cumulative impacts would have a minimal effect on travel times, intersection operations, and Main Post access control point delays during morning and evening peak hours, but would not result in a decrease in the level of service to the road system. Implementation of the RPMP would have overall long-term beneficial traffic impacts. For all proposed upgrades under the RPMP to Main Post roadways, the Army contractor would implement measures for the protection and diversion of general traffic (watchman, flagmen, barricades, temporary lighting, signing), minimizing interference with general traffic on post, and investigating the adequacy of existing roads and bridge allowable limits. There would be no significant cumulative impacts to transportation from implementation of the RPMP combined with other actions in the ROI.

4.3.14 Water Resources

When considered together with past, present, and future actions, overall cumulative impacts on water resources would be minor under the Proposed Action and No Action alternative. Construction activities at Fort Wainwright associated with the RPMP, and Gray Eagle UAS stationing, as well as the construction of new transportation infrastructure associated with City of Fairbanks, ADOT&PF, and ARRC transportation infrastructure construction would result in short-term impacts on surface water resources from sedimentation but would not result in degradation of surface or groundwater quality or the loss of floodplains. Over the long term, the cumulative impacts would be less than significant because surface and groundwater resources are protected by existing federal, state, and Army regulations, and development would avoid floodplains and other hydrologically sensitive areas to the extent practicable.

5.0 OTHER CONSIDERATIONS REQUIRED BY NEPA

5.1 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF NATURAL OR DEPLETABLE RESOURCES

NEPA requires an analysis of significant, irreversible effects resulting from implementation of a proposed action. Irreversible and irretrievable resource commitment refers to the use of nonrenewable sources and the effects these resources would have on future generations. Irreversible effects would result primarily from the consumption or destruction of a resource that could not be reversed. Irretrievable resource commitments would involve a loss or gain in the value of an affected resource that could not be reversed. Resources that are irreversibly or irretrievably committed to a project are those that are typically used on a long-term or permanent basis; however, those resources used on a short-term basis but cannot be recovered (e.g., non-renewable resources such as metal, wood, fuel, paper, and other natural or cultural resources) are also irretrievable. Human labor is also considered an irretrievable resource. All such resources are irretrievable in that they are used for one project and thus become unavailable for other purposes. An impact that falls under the category of the irreversible or irretrievable commitment of resources is the destruction of natural resources that could limit the range of potential uses of that resource.

Proposed RPMP activities would result in an irreversible or irretrievable commitment of resources such as labor, fuel, and demolished materials. These commitments of resources are neither unusual nor unexpected, given the nature of the Proposed Action. The Proposed Action would not result in the destruction of environmental resources such that the range of potential uses of the environment would be limited, and they would not affect the biodiversity of the region.

5.2 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE HUMAN ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM NATURAL RESOURCE PRODUCTIVITY

NEPA requires consideration of the relationship between short-term use of the environment and the impacts that such use could have on the maintenance and enhancement of long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Such impacts include the possibility that choosing one option could reduce future flexibility to pursue other options, or that choosing a certain use could eliminate the possibility of other uses at the site.

Implementation of the RPMP would not result in any such environmental impacts because they would not pose long-term risks to health, safety, or the general welfare of the communities surrounding the project area that would significantly narrow the range of future beneficial uses,

provided appropriate BMPs and SOPs identified in Appendix B of this PEA are implemented. Natural resources would not be depleted and biological productivity would not be affected because implementation of the RPMP would not result in significant cumulative impacts on any biological resources.

5.3 ENVIRONMENTAL STEWARDSHIP GUIDELINES

Environmental stewardship guidelines— BMPs and SOPs to reduce and minimize potential environmental impacts from the alternatives analyzed in this PEA—are provided in Appendix B.

5.4 ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED AND ARE NOT AMENABLE TO MITIGATION

This PEA has determined that RPMP activities would not result in any significant immitigable impacts; therefore, any probable adverse environmental effects could be avoided or mitigated provided BMPs and SOPs identified in Appendix B are implemented.

6.0 CONCLUSION

Table 6-1 presents a summary of the comparative analysis of the Proposed Action and No-Action Alternative for each resource evaluated in this PEA. A detailed discussion of potential effects is presented in Chapter 3.0, Affected Environment and Environmental Consequences.

Based on the analysis performed in this PEA, implementation of the Proposed Action, in general, would have less than significant direct, indirect, and cumulative effects on the quality of the natural or human environment. A detailed impact analysis would be conducted as part of future tiered NEPA reviews as further details are developed.

Table 6-1. Summary of Environmental Consequences

Resource/Issue	Proposed Action	No-Action Alternative
Air Quality	Short term: minor to moderate through use of BMPs and SOPs Long term: beneficial	Short and long term: minor to moderate through use of BMPs and SOPs
Air Space	Short term: no impact Long term: none to beneficial	Short and long term: no impacts
Biological Resources	Vegetation — Short term: minor to moderate through use of BMPs and SOPs Long term: minor to beneficial Wildlife, Fisheries, and Sensitive Species — Short term: minor to moderate through use of BMPs and SOPs Long term: moderate to beneficial Wetlands and Critical Habitats — Short term: minor to moderate through use of BMPs and SOPs. Long term: none to minor	Same as those for Proposed Action through use of BMPs and SOPs
Cultural Resources	Short and long term: minor to moderate through use of BMPs and SOPs	Same as those for Proposed Action through use of BMPs and SOPs
Energy & Utilities	Short term: none to minor Long term: minor to beneficial	Short and long term: minor to moderate
Geology & Soils	Short term: minor to moderate through use of BMPs and SOPS Long term: minor to beneficial	Same as those for Proposed Action through use of BMPs and SOPs
Land Use	Short term: none to minor through use of BMPs and SOPS Long term: none to beneficial	Short term: none to minor through use of BMPs and SOPs Long term: no impacts
Noise	Short term: minor through use of BMPs and SOPs Long term: beneficial	Short and long term: minor through use of BMPs and SOPs

Resource/Issue	Proposed Action	No-Action Alternative
Public Health & Safety	Short term: none to minor through use of BMPs and SOPs Long term: beneficial	Short and long term: none to minor through use of BMPs and SOPs
Recreation Resources	Short term: none to minor Long term: beneficial	Short term and long term: no impacts
Socioeconomics & Environmental Justice	Short and long term: minor to beneficial	Same as those for Proposed Action
Solid & Hazardous Waste and Pollution	Short term: none to minor through use of BMPs and SOPs Long term: beneficial	Short and long term: none to minor through use of BMPs and SOPs
Transportation & Traffic	Short term: minor Long term: beneficial	Short term: minor Long term: minor to moderate
Water Resources	Short term: minor to moderate through use of BMPs and SOPs Long term: no impacts	Same as those for Proposed Action through use of BMPs and SOPs

*SOPs & BMPs are outlined in Appendix B for reduction of adverse impacts.

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Federal

U.S. EPA, Region 10
U.S. Fish and Wildlife Service

State

Alaska Department of Fish and Game
Alaska State Historic Preservation Officer

Department of Defense

U.S. Army Garrison Fort Wainwright, Alaska

Tribal Organizations

Native Village of Tetlin

Nenana Native Association

Native Village of Tanacross

Village of Dot Lake

Northway Village

Healy Lake Village

Tanana Chiefs Conference

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Ms. Leslie Hadjukovich
Special Assistant to U.S. Senator Sullivan

Ms. Rhonda Boyles
Special Assistant to U.S. Representative Young

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Bureau of Land Management

BLM-AFS:

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Alaska Fire Service Manager
Bureau of Land Management

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U.S. Army Corps of Engineers

Ms. Jennifer Pederson Weinberger
Cultural Resources Team Manager
National Park Service

Ms. Janet Clemens
NHL Program Coordinator
National Park Service

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U.S. Fish and Wildlife Service

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Natural Resources Conservation Service

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Alaska Department of Natural Resources
Office of History and Archaeology

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Alaska Department of Fish and Game

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Alaska Department of Transportation and Public Facilities

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Alaska Department of Natural Resources

The Honorable Bill Walker
Governor of Alaska

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Fairbanks North Star Borough

The Honorable Jim Matherly, Mayor
City of Fairbanks, Alaska

The Honorable Bryce Ward, Mayor
City of North Pole, Alaska

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City of Fairbanks, Alaska

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Planner III
Department of Community Planning
Fairbanks North Star Borough

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Chair, Historic Preservation Commission
Fairbanks North Star Borough

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Mr. Donald Charlie, First Chief
Nenana Native Association

Mr. Herbert Demit, President
Native Village of Tanacross

Ms. Tracy Charles-Smith, President
Village of Dot Lake

Mr. Howard Sam, President
Northway Village

Ms. Melissa Erickson, First Chief
Healy Lake Village

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Liaison, Realty Specialist
Tanana Chiefs Conference

Mr. Ronald K. Inouye, President
Tanana Yukon Historical Society