DEPARTMENT OF THE ARMY
UNITED STATES ARMY GARRISON
FORT RICHARDSON AND FORT WAINWRIGHT, ALASKA

RANGE COMPLEX AND TRAINING LAND UPGRADES
FINAL FINDING OF NO SIGNIFICANT IMPACT
AND PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

CONTRACT NO. W91ZLK-06-D-0010

MARCH 2010

DEPARTMENT OF THE ARMY
UNITED STATES ARMY GARRISON
FORT RICHARDSON AND FORT WAINWRIGHT
ALASKA

RANGE COMPLEX AND TRAINING LAND UPGRADES PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

FORT RICHARDSON

MARCH 2010

APPROVED BY:

TIMOTHY R. PRIOR
Colonel, U.S. Army
Commanding

24 MAR 2010
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FINAL FINDING OF NO SIGNIFICANT IMPACT UNITED STATES ARMY GARRISON FORT RICHARDSON

The National Environmental Policy Act of 1969 (NEPA) requires Federal agencies to consider the potential environmental impacts prior to undertaking a course of action. Within the Department of the Army, NEPA is implemented through regulations promulgated by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] Parts 1500-1508), with supplemental requirements provided under Army Regulations 32 CFR Part 651, *Environmental Analysis of Army Actions*. In adherence with NEPA, CEQ regulations, and 32 CFR Part 651, the U.S. Army Garrison (USAG), Alaska has prepared a Programmatic Environmental Assessment (PEA) to consider environmental effects to USAG Alaska's range and training lands within its two stand-alone garrisons, Fort Richardson (FRA) and Fort Wainwright (FWA), that could result from implementation of the Proposed Actions.

Description of Proposed Actions: The continued use of U.S. Army Alaska (USARAK) range and training lands to support the Army mission requires routine maintenance, upgrades, and in some cases new construction of facilities to continue to provide Soldiers with a high quality training environment. USAG FRA proposes to adopt the following three Proposed Actions, each intended to maximize the efficiency and effectiveness of environmental review of range and training land projects, and thereby promote the USARAK's mission to provide its Soldiers with the best facilities and training possible:

- Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training.
- Proposed Action 2 – Sustainable Range Planning for Small Arms Complex (SAC) Ranges Using Adaptable Use Zones.
- Proposed Action 3 – Environmental Stewardship Range Construction Guidelines.

In addition, USAG FRA considered the No Action Alternative, where the decision-maker would elect to not implement the programmatic approaches and management of USARAK ranges would continue under the status quo.

USAG FRA also considered other alternatives including creation of new SAC ranges either off-Installation or within Installation lands were considered and eliminated because they either did not satisfy the purpose and need or objectives of the proposed projects, they did not support the Army's mission or they would result in greater environmental impacts.

Preferred Alternative: USAG FRA's preferred alternative is implementation of all three Proposed Actions.

Procedure: An analysis of the potential environmental impacts associated with the three Proposed Actions and the No Action Alternative is presented in the *United States Army Garrison Fort Richardson and Fort Wainwright, Alaska, Range Complex and Training Land Upgrades Programmatic Environmental Assessment, March 2010*. The findings of the EA have been incorporated into this final decision document. Early in the process, USARAK garrisons and agency stakeholders were informed of the Proposed Actions, and their comments were solicited. Solutions responsive to concerns and questions were integrated into elements of the Proposed Action Alternatives. Public review of the PEA and Draft Finding of No Significant Impact (FNSI) was conducted from December 28, 2009 through January 26, 2010. At total of five comments (four agencies and one interest group) were received during this period. The primary comments raised during this period by the agencies involved regulatory compliance of the Proposed Actions and questions regarding how the Army will adhere to existing regulations (i.e., wetlands and hazardous substance management) and existing memorandums of understanding

(i.e., bison management). These issues have been incorporated in to the Final EA document and Appendix A.2 of the EA contains USARAK's responses to these comments.

Discussion of Anticipated Environmental Effects: Implementation of the Proposed Actions would result in impacts to the natural, cultural and human environment within FRA range and training lands. FRA is located just north of Anchorage and exercises authority over the range and training lands associated with FRA. Table A summarizes the intensity of impacts on a variety of resources that can be anticipated under each Proposed Action and the No Action Alternative. Most of the impacts anticipated would be none to minor for these resources from implementation of the Proposed Actions. Moderate adverse impacts would be anticipated for soils, surface water and floodplains under Proposed Action 1. Proposed Action 2 could cause moderate adverse impacts for surface water, floodplains, cultural resources and noise. Mitigation measures required to avoid significant adverse impacts are outlined in the subsection below. The cumulative effects analysis determined that, provided mitigation measures are followed, the Proposed Actions would not contribute to adverse significant cumulative impacts.

Table A: Potential Environmental Effects of the Proposed Actions

Resource/Issue	No Action	Proposed Action 1: Streamlined Range Construction Projects	Proposed Action 2: Range Planning with Adaptable Use Zones	Proposed Action 3: Environmental Stewardship Range Construction Guidelines	Collective Actions[1]
Soils	Minor	Minor to Moderate with use of BMPs[2]	Minor to Moderate with use of BMPs[2]	Minor to Moderate	Minor to Moderate
Surface Water and Floodplains	None to Minor	Minor to Moderate with use of BMPs[2]	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate	Minor to Moderate
Wetlands	Minor	Minor to moderate with use of BMPs[2]	Minor with use of BMPs[2] and mitigation	Minor	Minor to Moderate
Vegetation	Minor	Minor with use of BMPs[2]	Minor with use of BMPs[2]	Minor to Moderate	Minor to Moderate
Wildlife & Fisheries	Minor	Minor with use of BMPs[2]	Minor to Moderate with use of BMPs[2]	Minor	Minor to Moderate
Land Use, Energy and Utilities	None	Minor	Minor	Minor to Moderate	Minor
Public Access, Recreation and Subsistence	None	Minor	Minor	Minor	Minor to Moderate
Fire Management	None	Minor	Beneficial	Beneficial	Beneficial
Cultural Resources	Minor	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate with use of mitigation	Minor to Moderate
Noise	None	Minor	Minor to Moderate	Minor to Moderate	Minor to Moderate
Human Health and Safety	Minor	Minor to Moderate with use of BMPs[2]	Beneficial	Minor to Moderate	Minor to Moderate

[1]The term "Collective Actions" refers to the decision to implement all three Proposed Actions.
[2]Best management practices (BMPs) are outlined in Chapter 3 for reduction of adverse impacts.

Mitigation Measures: The following measures, which are identified in Chapters 3.0 and 5.0 of the *U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades PEA*, will be undertaken as part of the Proposed Action 2 to avoid significance of impact.

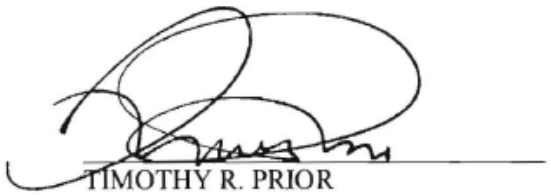
- (Proposed Action 2) Restriction of ground disturbing activities adjacent to streams or surrounding waterbodies within the proposed SAC range adaptable use zones to maintain a vegetative buffer for controlling sediment transport and prevent sedimentation into surface waters. The proposed buffer (commonly 75 feet from the surface water resource) would consider type of proposed activity, proximity to surface water resources, soil types, slope and existing natural vegetative buffers.
- (Proposed Action 2) Implementation of a Special Area Management Protocol (SAMP) within the proposed FRA SAC Range Adaptable Use Zone to determine the function and location of existing wetland resources and quality of vegetation communities (habitat) for use as a planning tool. Using the SAMP, USAG FRA would use site fingerprinting, which involves clearing and grading only those areas necessary for construction activities. Site fingerprinting could be used during site planning to concentrate development in areas where past development has occurred to help preserve wetlands and maintain vegetation cover within the proposed SAC range adaptable use zones. In addition, the SAMP could be used to develop a general wetland permit for range and training land construction activities. This permit would allow both the Army and United States Army Corps of Engineers (USACE) to quantify and monitor wetland impacts within the proposed SAC range adaptable use zones and develop project-specific mitigation measures to avoid significance of wetland impacts.
- (All Proposed Actions) Areas unsurveyed for cultural resources would be surveyed and the resources identified during the survey would be evaluated before any construction or other soil disturbing activities occur at that location. Those resources determined to be National Register of Historic Places (NRHP) eligible would be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska State standards for archaeology.

Other standard operating procedures (SOPs) and best management practices (BMPs) contained within Proposed Action 3 will be undertaken by USAG FRA for all Proposed Actions as a means to reduce or avoid impact. All identified SOPs and BMPs representing additional mitigation measures will also be undertaken as part of the Proposed Action.

Conclusions: Based on the review of the information contained in the PEA, USAG FRA has determined through this FNSI that the implementation of the Proposed Actions would not significantly affect the quality of the environment within the meaning of NEPA Section 102(2)(C). The preparation of an environmental impact statement (EIS) for the Proposed Action is not required.

Point of Contact: For further information, please direct requests to Ms. Carrie McEnteer, Directorate of Public Works, ATTN: IMPA-FWA-PWE (McEnteer), 1060 Gaffney Road #4500, Fort Wainwright, AK 99703-4500. The EA and FNSI are available at http://www.usarak.army.mil/conservation/NEPA_home.htm.

Approved by:



TIMOTHY R. PRIOR
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FINAL FINDING OF NO SIGNIFICANT IMPACT UNITED STATES ARMY GARRISON FORT WAINWRIGHT

The National Environmental Policy Act of 1969 (NEPA) requires Federal agencies to consider the potential environmental impacts prior to undertaking a course of action. Within the Department of the Army, NEPA is implemented through regulations promulgated by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] Parts 1500-1508), with supplemental requirements provided under Army Regulations 32 CFR Part 651, *Environmental Analysis of Army Actions*. In adherence with NEPA and 32 CFR Part 651, the U.S. Army Garrison (USAG), Alaska has prepared a Programmatic Environmental Assessment (PEA) to consider environmental effects to USAG Alaska's range and training lands within its two stand-alone garrisons, Fort Richardson (FRA) and Fort Wainwright (FWA), that could result from implementation of the Proposed Actions.

Description of Proposed Actions: The continued use of U.S. Army Alaska (USARAK) range and training lands to support the Army mission requires routine maintenance, upgrades, and in some cases new construction of facilities to continue to provide Soldiers with a high quality training environment. USAG FWA proposes to adopt the following three Proposed Actions, each intended to maximize the efficiency and effectiveness of environmental review of range and training land projects, and thereby promote the USARAK's mission to provide its Soldiers with the best facilities and training possible:

- Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training.
- Proposed Action 2 – Sustainable Range Planning for Small Arms Complex (SAC) Ranges Using Adaptable Use Zones.
- Proposed Action 3 – Environmental Stewardship Range Construction Guidelines.

In addition, USAG FWA considered the No Action Alternative, where the decision-maker would elect to not implement the programmatic approaches and management of USARAK ranges would continue under the status quo.

USAG FWA also considered other alternatives including creation of new SAC ranges either off-Installation or within Installation lands were considered and eliminated because they either did not satisfy the purpose and need or objectives of the proposed projects, they did not support the Army's mission or they would result in greater environmental impacts.

Preferred Alternative: USAG FWA's preferred alternative is implementation of all three Proposed Actions.

Procedure: An analysis of the potential environmental impacts associated with the three Proposed Actions and the No Action Alternative is presented in the *United States Army Garrison Fort Richardson and Fort Wainwright, Alaska, Range Complex and Training Land Upgrades Programmatic Environmental Assessment, March 2010*. The findings of the EA have been incorporated into this final decision document. Early in the process, USARAK garrisons and agency stakeholders were informed of the Proposed Actions, and their comments were solicited. Solutions responsive to concerns and questions were integrated into elements of the Proposed Action Alternatives. Public review of the EA and Draft Finding of No Significant Impact (FNSI) was conducted from December 28, 2009 through January 26, 2010. At total of five comments (four agencies and one interest group) were received during this period. The primary comments raised during this period by the agencies involved regulatory compliance of the Proposed Actions and questions regarding how the Army will adhere to existing regulations (i.e., wetlands and

hazardous substance management) and existing memorandums of understanding (i.e., bison management). These issues have been incorporated in to the Final EA document and Appendix A.2 of the EA contains USARAK's responses to these comments.

Discussion of Anticipated Environmental Effects: Implementation of the Proposed Actions would result in impacts to the natural, cultural and human environment within FWA range and training lands. FWA is located immediately adjacent to Fairbanks and exercises authority over all of the range and training lands north of the Alaska Range, inclusive of the FWA Cantonment, Tanana Flats Training Area (TFTA) to the south, Yukon Training Area (YTA) to the east, and Donnelly Training Area (DTA) (to include Black Rapids Training Area and Gerstle River Training Area). Table A summarizes the intensity of impacts on a variety of resources that can be anticipated under each Proposed Action and the No Action Alternative. Most of the impacts anticipated would be none to minor for these resources from implementation of the Proposed Actions. Moderate adverse impacts would be anticipated for soils, surface water, and floodplains for both Proposed Actions 1 and 2. In addition, moderate adverse impacts would be anticipated for wetlands, vegetation, wildlife, fisheries, and cultural resources under Proposed Action 2. Mitigation measures required to avoid significant adverse impacts are outlined in the subsection below. The cumulative effects analysis determined that provided mitigation measures are followed, the Proposed Actions would not contribute to adverse significant cumulative impacts.

Table A: Potential Environmental Effects of the Proposed Actions

Resource/Issue	No Action	Proposed Action 1: Streamlined Range Construction Projects	Proposed Action 2: Range Planning with Adaptable Use Zones	Proposed Action 3: Environmental Stewardship Range Construction Guidelines	Collective Actions[1]
Soils	Minor	Minor to Moderate with use of BMPs[2]	Minor to Moderate with use of BMPs[2]	Minor to Moderate	Minor to Moderate
Surface Water and Floodplains	None to Minor	Minor to Moderate with use of BMPs[2]	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate	Minor to Moderate
Wetlands	Minor	Minor to moderate with use of BMPs[2]	Moderate with use of BMPs[2] and mitigation	Minor to Moderate	Minor to Moderate
Vegetation	Minor	Minor with use of BMPs[2]	(YTA and DTA) Moderate with use of BMPs[2] (FWA) Moderate with use of BMPs[2] and mitigation	Minor to Moderate	Minor to Moderate
Wildlife & Fisheries	Minor	Minor with use of BMPs[2]	(YTA and FWA) Minor to Moderate with use of BMPs[2] (DTA) Moderate with use of BMPs[2] and mitigation	Minor	Minor to Moderate
Land Use, Energy and Utilities	None	Minor	Minor	Minor to Moderate	Minor to Moderate
Public Access, Recreation and Subsistence	None	Minor	Minor	Beneficial/Minor	Minor to Moderate

Table A: Potential Environmental Effects of the Proposed Actions (continued)

Resource/Issue	No Action	Proposed Action 1: Streamlined Range Construction Projects	Proposed Action 2: Range Planning with Adaptable Use Zones	Proposed Action 3: Environmental Stewardship Range Construction Guidelines	Collective Actions[1]
Fire Management	None	Minor	Beneficial	Beneficial	Beneficial
Cultural Resources	Minor	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate with use of mitigation	Minor to Moderate
Noise	None	Minor to Moderate	None	Minor to Moderate	Minor to Moderate
Human Health and Safety	Minor	Minor to Moderate with use of BMPs[2]	Beneficial	Minor to Moderate	Minor to Moderate

[1]The term "Collective Actions" refers to the decision to implement all three Proposed Actions.
[2]Best management practices (BMPs) are outlined in Chapter 3 for reduction of adverse impacts.

Mitigation Measures: The following measures, which are identified in Chapters 3.0 and 5.0 of the *U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades PEA*, will be undertaken as part of the Proposed Action 2 to avoid significance of impact.

- (Proposed Action 2) Restriction of ground disturbing activities adjacent to stream or surrounding waterbodies within the proposed SAC range adaptable use zones to maintain a vegetative buffer for controlling sediment transport and prevent sedimentation into surface waters. The proposed buffer (commonly 75 feet from the surface water resource) would consider type of proposed activity, proximity to surface water resources, soil types, slope and existing natural vegetative buffers.
- (Proposed Action 2) Implementation of a Special Area Management Protocol (SAMP) within the proposed USAG FWA SAC Range Adaptable Use Zones to determine the functioning and location of existing wetland resources and quality of vegetation communities (habitat) for use as a planning tool. Using the SAMP, USAG FWA would use site fingerprinting, which involves clearing and grading only those areas necessary for construction activities. Site fingerprinting could be used during site planning to concentrate development in areas where past development has occurred to help preserve wetlands and maintain vegetation cover within the proposed SAC range adaptable use zones. In addition, the SAMP could be used to develop a general wetland permit for range and training land construction activities. This permit would allow both the Army and United States Army Corps of Engineers (USACE) to quantify and monitor wetland impacts within the proposed SAC range adaptable use zones and develop project-specific mitigation measures to avoid significance of wetland impacts.
- (Proposed Action 2 – DTA) USAG FWA would mitigate significant adverse impacts to bison spring/summer use areas and sandhill crane roosting located within the proposed DTA SAC Range Adaptable Use Boundary through development of specific mitigation measures in consultation with Federal and State management agencies as projects within the adaptable use boundary are identified that have the potential to impact the use of these species within these areas.

- (All Proposed Actions) Areas unsurveyed for cultural resources would be surveyed and the resources identified during the survey would be evaluated before any construction or other soil disturbing activities occur at that location. Those resources determined to be National Register of Historic Places (NRHP) eligible would be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska State standards for archaeology.

Other standard operating procedures (SOPs) and best management practices (BMPs) contained within Proposed Action 3 will be undertaken by USAG FRA and USAG FWA for all Proposed Actions as a means to reduce or avoid impact. All identified SOPs and BMPs representing additional mitigation measures will also be undertaken as part of the Proposed Action.

Conclusions: Based on the review of the information contained in the PEA, USAG FRA and USAG FWA have determined through this FNSI that the implementation of the Proposed Actions would not significantly affect the quality of the environment within the meaning of NEPA Section 102(2)(C). The preparation of an environmental impact statement (EIS) for the Proposed Action is not required.

Point of Contact: For further information, please direct requests to Ms. Carrie McEnteer, Directorate of Public Works, ATTN: IMPA-FWA-PWE (McEnteer), 1060 Gaffney Road #4500, Fort Wainwright, AK 99703-4500. The EA and FNSI are available at http://www.usarak.army.mil/conservation/NEPA_home.htm.

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U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades Programmatic Environmental Assessment

Table of Contents

Appendices

List of Tables

List of Figures

List of Common Abbreviations

AAF	Army Air Field
ABCT	Airborne Brigade Combat Team
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AFB	Air Force Base
AQCP	Air Quality Control Permit
AR	Army Regulation
ARRC	Alaska Railroad Commission
AST	aboveground storage tank
BAX	Battle Area Complex
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practice
BRTA	Black Rapids Training Area
CACTF	Combined Arms Collective Training Facility
CEA	cumulative effects analysis
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHPPM	Center for Health Promotion and Preventative Medicine
CONEX	container express
CQM	Close Quarter Marksman
CRTC	Cold Regions Test Center
CWA	Clean Water Act
dBA	A-weighted decibel
DMPTR	Digital Multi-Purpose Training Range
DoD	Department of Defense
DPTMS	Directorate of Plans, Training, Mobilization and Security
DPW	Directorate of Public Works

DTA	Donnelly Training Area
DZ	Drop Zone
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAARP	Forward Arming and Refueling Point
FLS	Firebird Assault Airfield
FNPA	Finding of No Practicable Alternative
FNSB	Fairbanks North Star Borough
FNSI	Finding of No Significant Impact
FOB	Forward Operations Base
FRA	Fort Richardson
FWA	Fort Wainwright
GMU	Game Management Unit
GRTA	Gerstle River Training Area
HGM	Hydrogeomorphic
ICRMP	Integrated Cultural Resource Management Plan
INRMP	Integrated Natural Resource Management Plan
IPBC	Infantry Platoon Battle Course
IRP	Installation Restoration Program
ISBC	Infantry Squad Battle Course
ITAM	Integrated Training Area Management
IWFMP	Integrated Wildland Fire Management Plan
KD	Known Distance
LCTA	Land Condition Trend Analysis
LRAM	Land Rehabilitation and Maintenance

MBTA	Migratory Bird Treaty Act
MCRC	Master Control and Reporting Center
MILCON	military construction
MOUT	Mission Operations on Urbanized Terrain
MRF	Modified Record Fire
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OHMP	Office of Habitat Management and Permitting
OHW	ordinary high water
OP	Observation Point
ORRV	off-road recreational vehicle
PEA	Programmatic Environmental Assessment
PEM	palustrine emergent
PES	Preconstruction Environmental Survey
PFO	palustrine forested
POLs	Petroleum, oil, and lubricants
PSS	palustrine scrub shrub
PUB	palustrine unconsolidated bottom
REC	Record of Environmental Consideration
RTLA	Range and Training Land Assessment
RTLP	Range and Training Land Program
SAC	Small Arms Complex
SAMP	special area management protocol
SBCT	Stryker Brigade Combat Team
SDZ	surface danger zone

SHPO	State Historic Preservation Officer
SMDC	Space and Missile Defense Command
SOP	standard operating procedure
SPPCP	Spill Pollution Prevention and Countermeasure Plan
SRA	Sustainable Range Awareness
SRP	Sustainable Range Program
TC	Training Circular
TCP	Traditional Cultural Property
TFTA	Tanana Flats Training Area
TRI	Training Requirements Integration
UAC	Urban Assault Course
UAV	Unmanned Aerial Vehicle
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USAG	United States Army Garrison
USARAK	United States Army, Alaska
USARTRAK	United States Army Garrison Alaska Recreation Tracking System
USC	United States Code
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
UXO	unexploded ordnance
YTA	Yukon Training Area

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1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The U.S. Army Alaska (USARAK) is committed to providing its Soldiers with the most effective, modern and highest quality training possible. To enable its Soldiers to fight, survive, and prevail in combat, USARAK must provide an effective training environment that simulates realistic training scenarios and incorporates increasingly sophisticated equipment. To maintain these high quality training environments, USARAK must engage in regular range maintenance, upgrade, and construction activities on all of its existing range facilities in Alaska.

Environmental management of the approximately 1.6 million acres of Army range and training lands in Alaska is currently divided between two stand-alone garrisons (Figure 1). U.S. Army Garrison Fort Richardson (USAG FRA), located just north of Anchorage, exercises authority over the range and training lands associated with FRA. U.S. Army Garrison Fort Wainwright (USAG FWA), located immediately adjacent to Fairbanks, exercises authority over all of the range and training lands north of the Alaska Range, inclusive of the FWA Cantonment, Tanana Flats Training Area (TFTA) to the south, Yukon Training Area (YTA) to the east, and Donnelly Training Area (DTA), located approximately 100 miles to the southeast and near the city of Delta Junction. Also associated with USAG FWA are the Black Rapids Training Area (BRTA), located to the south of DTA, and the Gerstle River Training Area (GRTA), located to the east of DTA. Both USAG FRA and USAG FWA exist to support the mission needs of USARAK, and as such experience an identical purpose and need in regards to management of their respective range lands. When this document generically refers to "USARAK garrisons", the reader should understand the discussion to include either USAG FRA or USAG FWA or both, depending on the lands involved.

Many of the activities necessary to support Soldier training and to maintain training lands are routine in nature, involving very similar actions occurring at various locations. These actions include certain routine, frequently-occurring projects as well as day-to-day maintenance activities. As a group, these actions have yet to receive a specific comprehensive analysis under the National Environmental Policy Act (NEPA). Where activities are similar in nature, broad in scope, or at the planning level, applicable NEPA regulations authorize programmatic environmental review as a means to eliminate repetitive discussions of the same issues. Due to their broad scope, programmatic reviews may also offer advantages in terms of examining the cumulative effects of various activities over time and space.

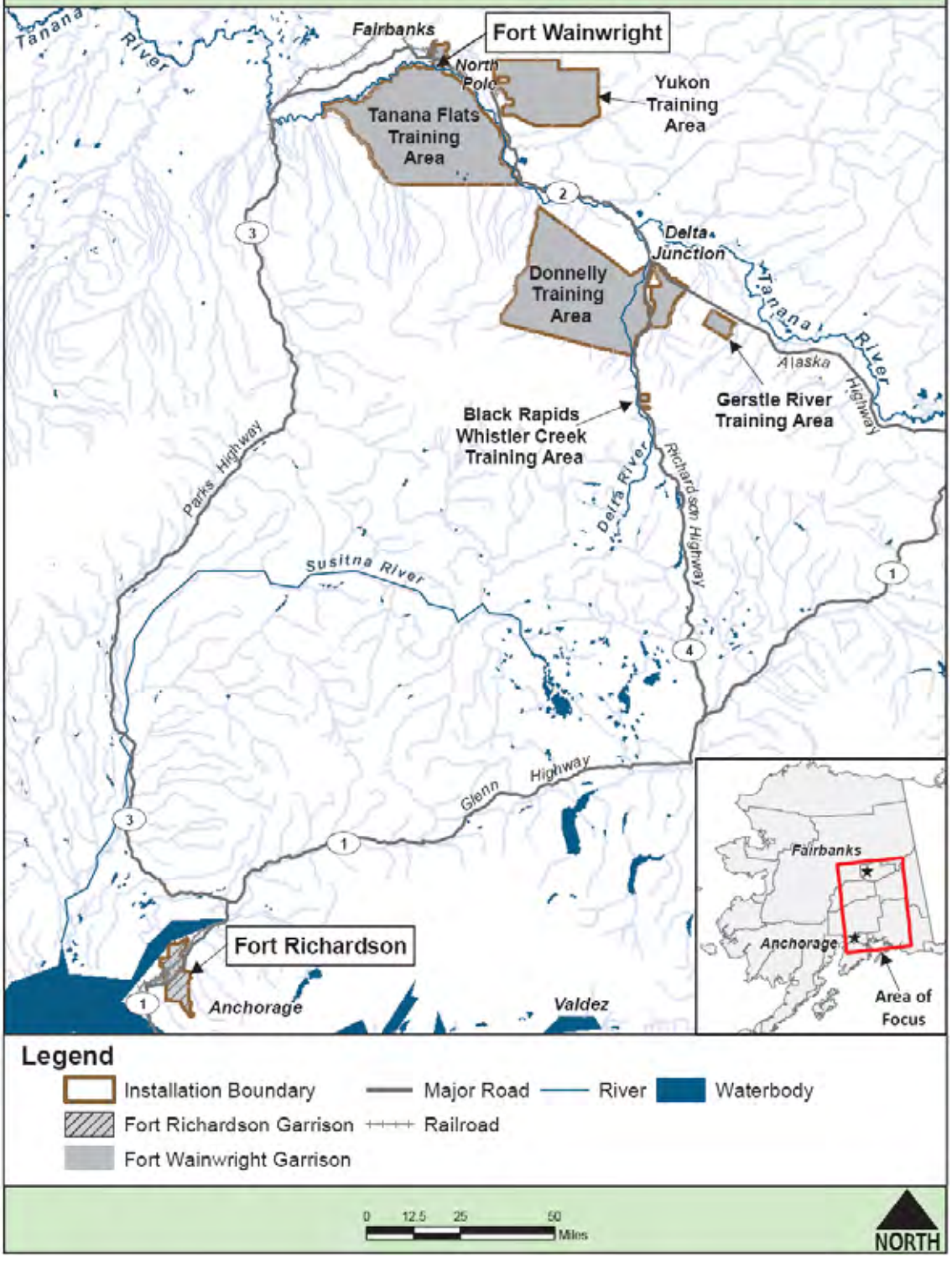
Facing the prospect of potentially time-consuming and expensive ad hoc analysis of similar or related projects, USARAK garrisons have developed this Programmatic Environmental Assessment (PEA). The purpose of a PEA is to facilitate a Federal agency's compliance with NEPA by providing (1) a framework to address the impacts of routine and similar type of actions, (2) a procedure to certify a complete understanding of best management practices (BMPs), SOPs, and mitigation for all impacts addressed in the PEA through the use of a specific Record of Environmental Consideration (REC), and (3) a procedure to insure the preparation of a focused, supplemental EA or Environmental Impact Statement (ElS), as required when site specific (tiered) analyses identify the need. The PEA can be used to evaluate the potential environmental effects of these routine actions and determine if any site-specific requirements require more detailed, focused analyses.

This PEA considers the following program level or planning actions (Proposed Actions), each intended to maximize the efficiency and effectiveness of environmental review of range projects, and thereby promote USARAK's mission to provide its Soldiers with the best facilities and training possible:

- Streamline Site-specific Range Projects in Support of Soldier Training
- Sustainable Range Planning for SAC Ranges Using Adaptable Use Zones
- Environmental Stewardship Range Construction Guidelines

Figure 1

General Location Map



This PEA describes the purpose and need for this programmatic approach and the three Proposed Actions designed to meet the goal of providing Soldiers with a high quality training environment through sustainable range planning and management. This document will also analyze the environmental consequences of the Proposed Actions and the No Action Alternative, discuss standard operating procedures (SOPs) and best management practices (BMPs) which could serve as reasonable and practicable mitigation measures, and explain the decision to be made. Ultimately, this document will provide the decision-maker with the option of continuing range planning under the status quo, or adopting any combination of these programmatic actions.

1.2 PURPOSE AND NEED

USARAK garrisons are committed to providing Soldiers with a high quality training environment (see Objective 1, Section 1.3). Recent Army-wide mission changes (i.e., Army Transformation, Modularity, Grow the Army) have occurred in Alaska which resulted in various stationing actions (growth) since 2004. These specific actions and the range construction projects required to support these mission changes have been analyzed in previous NEPA documentation (See Section 1.5.1).

The continued use of USARAK range and training lands to support the Army mission requires routine maintenance, upgrades, and in some cases new construction of facilities to continue to provide Soldiers with a high quality training environment. These types of activities to support Soldier training will continue into the future as mission requirements, military preparedness and Soldier training requirements change. The programmatic approach used within this document would also provide USARAK with the flexibility to evaluate environmental impacts and a more effective mechanism for implementing continually evolving and unknown future requirements regarding weapons and training technologies to maintain Soldier readiness.

As a result, USARAK garrisons seek to streamline the NEPA review (see Objective 2, Section 1.3) for these routine range actions and to develop and streamline environmentally-sensitive and sustainable planning and construction procedures (See Objective 3, Section 1.3). Both of these actions would establish programmatic planning tools for use by the Directorate of Plans, Training, Mobilization and Security (DPTMS) in current and future range activities (repair, upgrades, and new construction). USARAK garrisons have historically prepared individual NEPA analyses for these activities, many of which are routine and programmatic in nature. Besides the associated costs, this existing process can result in project timeframe delays (jeopardizing Soldier readiness), present repetitive reviews of similar issues, and create inefficient allocation of resource staffing.

To achieve a streamlined process, USARAK garrisons are considering three independent programmatic analyses: 1) known and foreseeable site-specific range construction projects associated with Soldier training; 2) sustainable planning of small arms complex (SAC) ranges; and 3) developing and streamlining environmentally-sensitive and sustainable planning and construction procedures for use specifically on USARAK garrisons' ranges. The purpose and need of each programmatic approach is further detailed in Sections 1.2.1 through 1.2.3.

This PEA would support USARAK garrisons' commitment of providing a high quality training environment for Soldiers by providing a streamlined approach for expediting necessary range projects and through consideration of sustainable planning principles and environmental stewardship guidelines for use specifically on USARAK garrisons' ranges. This PEA would also provide the decision-maker with the choice of implementing programmatic approaches for all three of these activities, to choose a combination, or to elect no programmatic approach.

By thoroughly reviewing specific known future projects and proactively analyzing lands and future development associated with SAC ranges USARAK can more effectively achieve its combat training mission. Standardizing the environmental stewardship practices within the planning, construction and operational stages of routine range projects would provide USARAK with the knowledge and the tools available to minimize training impacts on the environment using the accepted list of SOPs and BMPs.

Also, this programmatic approach would alleviate much of the time and costs associated with analyzing projects on an individual basis. Less time and money spent on repetitive review would translate into more time and money going towards range modernization and support Soldiers' training missions. By analyzing the impacts of these actions within the programmatic framework, more thorough analysis of cumulative effects can be achieved.

1.2.1 Streamline Site-specific Range Projects in Support of Soldier Training

Army Doctrines Field Manual (FM) 7-0 *Training the Force* outlines methods the Army uses to train for combat proficiency and FM 7-1 *Battle Focused Training* guides the planning, preparation and execution of training programs to ensure realistic Soldier training. Subjected to repeated use, inadequately maintained training ranges deteriorate and cause potential detriment to sustainability of the facility, its users, and the environment. In order to achieve and maintain sustainable use, routine maintenance activities within USARAK's ranges are required. In addition, range upgrades and new construction necessary for supporting and maintaining Soldier combat readiness requires the use of realistic training scenarios and increasingly sophisticated equipment to support evolving training missions. Such training, particularly when more advanced technologies are involved, necessitates frequent upgrade or expansion of existing range training facilities. Otherwise, facilities become outdated, ineffective and damaged as new training requirements, technologies or equipment are implemented. USARAK has identified a series of site-specific projects likely to occur within the future to support and maintain Soldier combat readiness and proposes a streamline evaluation of these projects within this NEPA document.

1.2.2 Sustainable Range Planning for SAC Ranges Using Adaptable Use Zones

Army Training Circular 25-8, *Training* provides guidance for developing and operating Army ranges. Future range upgrades and construction projects, both seen and unforeseen, will be necessary to maintain Soldier readiness and to accommodate increasingly sophisticated equipment. A majority of these activities will likely occur within areas associated with the SAC ranges as these areas contain the existing required infrastructure and are within ideal proximity to other already established training assets. SAC ranges as of unique firing ranges that are essential in providing daily realistic weapons training to Soldiers. In order to maintain Soldier readiness, expedite unforeseen construction projects associated with SAC ranges, and to foster environmental stewardship, USARAK garrisons' range planners are proposing the establishment of "adaptable use" zones for the SAC ranges to focus range development and activities within established boundaries. USARAK garrisons would preemptively analyze the environmental consequences of focused disturbance of the adaptable use zones surrounding the SAC ranges, thereby streamlining the environmental planning process in the future. The adaptable use zone concept would also promote environmental stewardship by encouraging the siting of future projects within already disturbed lands associated with existing SAC ranges.

1.2.3 Environmental Stewardship Range Construction Guidelines

Army Regulation (AR) 350-19 *Army Sustainable Range Program* defines the Army's role in maintaining its range lands for repetitive and future use and AR 200-1 *Environmental Protection and Enhancement* provides environmental considerations and environmental stewardship principles for the Army mission and all Army activities. Established Army programs such as the Integrated Training Area Management (ITAM) which includes Range and Training Land Assessment (RTLA) and Land Rehabilitation and Management (LRAM), help monitor and repair environmental adverse effects caused by military training to foster sustainability. In addition, the Army has SOPs and utilizes BMPs to help maintain sustainability and foster environmental stewardship. For instance, the ITAM 5-year plan contains a streamlined mechanism for implementation of certain training area maintenance activities for ITAM-funded projects.

No streamlined mechanism exists, however, for use and implementation of SOPs and BMPs for routine range maintenance and upgrade projects. In addition, the unique ecosystems of Alaska often require additional procedural or management practice measures to protect environmental resources. Through compiling an accepted list of environmental stewardship range construction guidelines, USARAK

garrisons can save time and effort during the planning and permitting processes of routine range construction projects necessary to effectively support Soldier training. These guidelines would also provide a streamlined approach and uniformity for implementation of SOPs and BMPs during both planning and construction to avoid and reduce impacts to the unique ecosystems of Alaska as well as cultural and socioeconomic resources.

1.3 PROJECT OBJECTIVES

The objective of this analysis is to assist USARAK in providing its Soldiers with the highest quality training facilities by developing a streamlined approach for routine range construction, evaluating sustainable range planning with its SAC ranges, and by developing environmental stewardship guidelines for range and training land construction. To succeed in doing so, an alternative carried forward for full analysis in this PEA must meet the following overlapping objectives:

Objective (1) Maintain a high quality training environment for Soldiers. To achieve this objective, USARAK garrisons must undertake routine maintenance, upgrade and construction activities within its existing SAC ranges and on its other training lands. Section 1.5.2 provides a list of Army Regulations (ARs) and guidance documents which outline mandatory range design, use, and safety requirements, as well as prescriptive requirements for range upgrades and construction projects to support Soldiers during combat training.

Objective (2): Meet requirements of the Sustainable Range Program (SRP) and foster environmental stewardship. AR 350-19defines the Army's responsibilities and prescribes policies for implementing the SRP on Army controlled training ranges and training lands. The SRP goal is to maximize the capability, availability, and accessibility of ranges and training lands to support doctrinal requirements, mobilization, and deployments under normal and surge conditions.

Specific objectives for meeting SRP goals include:

- Modernize training range facilities to sustain live training execution in accordance with operational tempo, Flying Hours Program, Standards in Training Commission, combined arms training strategies, and other training strategy requirements through military construction (MILCON) investments, New Mission, Revitalization, and the Army Facility Strategy.
- Resource sustainable range and training land operations.
- Sustain range and training facilities.
- Maximize the accessibility of ranges and training land by minimizing restrictions brought about by encroachment factors.
- Focus the capability of the environmental program to fully support force readiness by sustaining the accessibility of ranges and training land.
- Develop and implement the Sustainable Range Outreach Program to improve public and stakeholder understanding of the Army's live training requirements and clearly articulate and underscore activities supporting national security.
- Establish, at all echelons of the Army, an interdisciplinary approach for sustaining ranges that integrates range safety, operations, facilities, and environmental management functions.
- Establish a multi-disciplined career program for DPTMS personnel that support sustainable range management.

Objective (3): Develop a programmatic and streamlined range planning approach. Deficits of time, money, or information could seriously impair USARAK garrisons' ability to rapidly respond to changing mission and training requirements and maintain military readiness, both now and into the future. A streamlined, programmatic NEPA review process would enhance USARAK garrisons' knowledge and decision-making while avoiding or mitigating detrimental impacts to the environment. A streamlined process would also enable a more efficient mechanism to implement routine range maintenance, upgrade and construction projects for modernizing range training facilities and to sustain live training. This

proactive approach would also provide effective and environmentally-sensitive range planning and maintenance, upgrade, and construction procedures for existing and future use specifically on USARAK garrisons' ranges. It also maximizes the accessibility of ranges and training land by minimizing restrictions brought about by encroachment factors.

1.4 DECISIONS TO BE MADE

This PEA considers the direct, indirect, and cumulative effects of the Proposed Actions and the No Action Alternative. It was prepared in accordance with the NEPA of 1969 (42 United States Code [USC] 4321 et seq.), Council on Environmental Quality (CEQ) Regulations 40 Code of Federal Regulations (CFR) Parts 1500-1508, 32 CFR Part 651, and the *NEPA Analysis Guidance Manual* (USAEC, 2007).

Decision-making authority for USARAK garrisons is shared by the two Commanders independently responsible for Alaska's two Army garrisons. Each Garrison Commander has authority over the range and training land associated with his or her respective installation (see Section 1.1). This PEA would inform each decision-maker of the potential environmental consequences of the No Action Alternative as well as each programmatic component of the Proposed Actions. Each decision-maker would take into account technical, economic, environmental, and social issues, as well as each Proposed Action's ability to meet the purpose and need and associated objectives.

Both Commander's decisions involve which of the Proposed Action programmatic components, if any, would be implemented for range and training lands under their control. After reviewing the analysis contained within this PEA, each decision-maker may choose to either prepare a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for implementation of any number and combination of the three separate Proposed Actions.

1.5 SCOPE OF ENVIRONMENTAL ANALYSIS (ISSUES OF CONCERN)

Description of the affected environment and analysis of the potential impacts (direct, indirect, and cumulative) to physical and biological resources will be provided in Chapter 3. Impacts to the following resources were identified as potential issues of concern during the internal Army scoping process or were raised during the agency scoping process (see Section 1.6) and will be analyzed in regards to each Proposed Action as well as the No Action Alternative:

- Soils (Permafrost)
- Vegetation
- Wetlands
- Surface Water
- Wildlife & Fisheries
- Subsistence
- Public Access and Recreation
- Fire Management
- Cultural Resources
- Land Use, Energy and Utilities
- Noise
- Human Health and Safety

USAG FRA and USAG FWA have determined that various resources would not be impacted by the Proposed Actions, and thus, further evaluation and analysis are not necessary and will not be addressed in Chapter 3.0.

- *Air Quality and Greenhouse Gases*: Non-significant, temporary air emissions would result from construction/clearing processes and would include fugitive dust emissions from soil agitation and byproducts from the combustion of fossil fuels from operation of construction equipment. Any open burning of vegetation debris resulting from range construction or clearing activities would be coordinated with the state and Federal agencies and would comply with open burning policies and guidelines. No increase of military training, personnel, or stationary emission sources emitting air pollutants and would occur as a result of the Proposed Actions. Proposed Actions involving use of generators or having the potential to cause fugitive dust emissions would be coordinated with USAG FRA and USAG FWA Air Specialists to determine conformity with existing permits.

- Greenhouse gases are a byproduct of fossil fuel combustion. Under Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, Federal agencies are required to reduce greenhouse gas emissions. The Army has been working to carry out this Presidential goal by incorporating more energy efficient systems in new facilities and equipment, and in exploring viable alternative energy sources. The activities associated with the Proposed Actions would not increase installation populations, driving behaviors, or Soldier training activities or use; rather they primarily provide repair and upgrade of new facilities and construction of support buildings. Primary potential to increase fossil fuel consumption would be short-term and during construction. From a regional perspective, the upgrades of facilities and new construction added as a result of the Proposed Action would result in negligible consumption of fossil fuels and a corresponding increase in local greenhouse emissions. A discussion of the potential impacts to greenhouse gases from removal of carbon dioxide sinks[1] (vegetation) is included in Section 4.2.3.
- *Airspace Management:* No changes would occur to the existing airspace under any of the Proposed Actions.
- *Groundwater:* Any potential impact to local or regional groundwater quality or availability under the Proposed Actions would be insignificant. The Proposed Actions do not involve an increase in Soldiers, training events, vehicles or the amounts of substances used during training (also see hazardous substances within this section). In addition, range construction activities analyzed within the PEA would result in minor surficial soil disturbances and would not be anticipated to adversely affect groundwater. Substances (i.e., fuels, oils, and other lubricants) associated with construction equipment and operations that have the potential for leaking into soils and entering groundwater aquifers would be avoided through the use of BMPs to prevent spills or leaks as defined in AR 200-1 and USARAK Pamphlet (PAM) 200-1. The Proposed Actions would not affect overall surface water patterns (see Section 3.3) nor create substantial areas of impervious surface; therefore, adverse impacts to groundwater aquifer recharge areas are unlikely.
- *Geology:* No impacts would occur to geology under any of the Proposed Actions. Surface-related impacts (grading and gravel extraction) are addressed within the soils discussion of this EA (Section 3.2).
- *Threatened and Endangered Species:* No Federally-listed rare, threatened, or endangered species, or their habitats, occur within USARAK garrisons' range lands. The lone exception is use of a portion of Eagle River, as it flows through the Eagle River Flats Impact Area on FRA, by the endangered Cook Inlet beluga whale. This Impact Area will not be affected under any of the Proposed Actions contained within this EA. Moreover, SOPs, BMPs and required permitting associated with each Proposed Action would prevent all proposed projects and activities from adversely impacting any Cook Inlet beluga whale habitat (see Section 3.6). In light of the above, the Proposed Actions would not affect threatened or endangered species; therefore, no consultation under Section 7 of the Endangered Species Act for non-marine species would be required.
- *Socioeconomics:* The Proposed Actions would not affect existing socioeconomic conditions of surrounding communities. Regardless of the final decision, there would be temporary, localized benefits to employment from range construction activities. The Proposed Actions would not affect population growth or change permanent employment numbers.

[1] "Carbon sinks" are natural systems, such as forests, prairies, soil and the ocean, that absorb carbon dioxide and store it, preventing the release of the carbon dioxide to the atmosphere.

- *Environmental Justice:* The Proposed Actions would occur within USARAK garrisons' range lands and would not affect adjacent communities. No adverse or disproportionate effects to Environmental Justice populations would occur.
- *Traffic and Transportation Systems:* All construction training activities would be confined to USARAK garrisons' range lands. Equipment required for range construction projects would likely use existing roadways (Glenn Highway, Richardson Highway and Alaska Highway), but such use would be minor and temporary in nature. All Army operations would continue to follow USARAK Regulation 55-2, *Transportation Operations and Planning in Alaska*, which establishes policies and procedures for USARAK units and agencies using transportation resources in support of Army operations.
- *Hazardous Substances:* Petroleum, oil and lubricants (POLs), a universal waste, would be associated with equipment required for clearing and grading for range construction projects. BMPs as defined in AR 200-1 and USARAK PAM 200-1 would be used to prevent spills or leaks during construction and during training operations. The potential also exists for unexploded ordnance (UXO) or contaminated soils within USARAK garrisons' range lands. Environmental safety precaution measures are discussed in Section 2.3 and hazardous substances are further discussed in Section 3.12 as related to human health and safety. The construction of new firing ranges could result in the potential for the transport of metal small arms munitions (bullets) constituents (primarily lead), from operational small arms range areas. The accumulation of lead and other metal constituents in the environment within designated small arms range areas does not alone constitute an environmental concern. The active transport of these constituents through mechanisms such as surface water runoff or groundwater flow, moving these constituents off range areas, is the primary environmental concern. As the Proposed Action does not involve an increase the overall total of munitions allocated to the Army in Alaska, creation of a new range facility would not increase the overall amount of bullets fired downrange. Any new firing range facilities would follow BMPs outlined in the *Army Small Arms Training Range Environmental Best Management Practice Manual (2005)*. This manual provides management and maintenance actions to avoid the potential for the metals to transport out of the range area and the potential to reach receptors at levels that exceed Federal and state established threshold levels.

1.5.1 Related Transformation and Growth Environmental Documentation

USARAK has in recent years produced a variety of NEPA analyses evaluating several actions including Army force transformation efforts, the addition of Soldiers and new equipment, a general increased use of training lands, and range development projects throughout USARAK ranges. The following documents (incorporated by reference) provide a synopsis of previous environmental analysis of USARAK Transformation, stationing actions, and evolution of day-to-day operations.

- *Transformation of US Army Alaska Final EIS, May 2004*. This document analyzes the impacts to USARAK lands and surrounding communities and land users associated with the transformation of the 172nd Infantry Brigade (Separate) at FWA and FRA into the 1-25th Stryker Brigade Combat Team (SBCT). This EIS will serve as a foundational reference source for this PEA, particularly in regards to FRA and FWA.
- *The Battle Area Complex/Combined Arms Collective Training Facility EIS (BAX/CACTF) Final EIS, June 2006.* This document provides an environmental analysis of construction and operation of a combat training facility at DTA East. This EIS focuses on the existing environment at DTA East and provides a comprehensive description of existing resources. The BAX/CACTF EIS (2006) will serve as a foundational reference source for this PEA, particularly in regards to DTA.
- *Conversion of the Airborne Task Force to an Airborne Brigade Combat Team (ABCT) EA, 2006*. This document analyzes the impacts associated with conversion of the existing airborne task force into the 4-25 ABCT at FRA.
- *Environmental Assessment for Donnelly Training Area East Mobility and Maneuver Enhancements, Fort Wainwright, Alaska, 2008*. This document analyzes the impacts associated

with the expansion of the Donnelly Drop Zone, trail improvements and creation of a hardened bivouac to accommodate changing mission requirements at DTA.

- *U.S. Army Pacific Supplemental Programmatic EIS for Army Growth and Force Structure Realignment, 2008*. This document evaluates the effects associated with growing and realigning the Army's force structure to support military operations in the Pacific Theater, including the addition of approximately 2,200 new Soldiers in Alaska.
- *USAG Alaska Grow the Army Force Structure Realignment EA, 2008.* Tiering off the above EIS, this document evaluates the effects associated with facility construction and training actions to accommodate new military units to be stationed in Alaska. The EA analyzes site-specific facility and range construction as well as increased training that will be necessary to support incoming Soldiers and their Families.

1.5.2 Other Relevant Related Documents

Resource Management

- *The Integrated Natural Resource Management Plan (INRMP) 2007-2011 and 2007 INRMP EA, January 2007*. These documents describe standard policies and procedures for managing natural resources to ensure sustainability of USARAK lands.
- *The Integrated Cultural Resource Management Plan (ICRMP), 2001.* This document outlines treatment for and management of USARAK cultural resources.

Sustainable Range Program

- *ITAM Plan and ITAM EA, October 2005 and June 2005, respectively*. These documents focus on managing sustainable use of training areas and provide recommended measures to achieve sustainability and rehabilitation of lands impacted by training.
- *Army Small Arms Training Range Environmental Best Management Practices, 2005*. This document provides a manual of BMPs used on Small Arms Training Ranges.

Range Planning

- *Alaska Army Lands Withdrawal Renewal Final Legislative EIS, 1999*. This document demonstrates the need for and examines the renewal of the existing military withdrawals of FWA YTA and Fort Greely West Training Area and Fort Greely East Training Area from public use for military purposes until November 6, 2051. Fort Greely West and East Training Areas have subsequently been renamed DTA West and East training areas.
- *Range Upgrade/Expansion Projects for Fort Richardson, Alaska, Final FNSI and EA, 2002.* This document examines environmental impacts associated with upgrade and construction of 2 new ranges at FRA.
- *Range Upgrade/Expansion Projects for Fort Wainwright, Alaska, FNSI and EA, 2003*. This document examines environmental impacts associated with upgrade of existing ranges and related facilities and the construction of new ranges at FWA.
- Department of Army PAM 350-38: *Standards in Weapons Training.* This regulation establishes Army policy and responsibilities for the use and maintenance of training aids, devices, simulators, and simulations including: tactical engagement simulations, targets, targetry, combat training center and range instrumentation, and training-unique ammunition. In addition, this regulation sets forth the policies and procedures for the identification, approval, prioritization, development, and fielding of graphic training aids to support Army-wide requirements.
- AR 385-63: *Range Safety.* This regulation prescribes Department of the Army Headquarters range safety policies and responsibilities for firing ammunition, lasers, guided missiles, and rockets and provides guidance for the application of risk management in range operations.
- PAM 385-63: *Range Safety.* This pamphlet provides implementation guidance for the Army Range Safety Programs prescribed in AR 385–63. It provides standards and procedures for the

safe firing of ammunition, demolitions, lasers, guided missiles, and rockets for training, target practice, and, to the extent practicable, combat.

- AR 385-64: *U.S. Army Explosives Safety Program.* This regulation prescribes Army safety policy, standards, responsibilities, and procedures for implementing and maintaining the U.S. Army Explosives Safety Program. It sets explosives safety standards to protect Soldiers, civilian employees, Family members, contractors, the general public, and the environment.
- PAM 385-64: *Ammunition and Explosives Safety Standards*. This pamphlet explains the Army's safety criteria and standards for operations involving ammunition and explosives prescribed by AR 385–64, for the Army and contractor operations on Government property.
- Army Alaska Range Regulation 350-2: *Training.* This regulation provides procedures for planning, requesting, and operating ranges and training areas within USARAK. It mandates specific safety policies for munitions use as required by Army regulations. Highlights include the range safety certification program, environmental considerations, and guidelines for medical support, demolitions training, and laser operations. Specific chapters provide procedures for scheduling, ammunition handling, direct fire, indirect fire, special ranges, airspace, non-firing ranges, and training areas.
- Army Training Circular 25-8: *Training*. This circular provides guidance for developing and operating Army ranges. It is a working guide for trainers, range and mobilization planners, engineers, coordinators, and range project review boards at all levels of the Active Army, Army National Guard, and Army Reserve. It is the primary guide for installation and major Army command range development plans and for developing the Army Master Range Plan.

1.6 INTERAGENCY COORDINATION AND GOVERNMENT-TO-GOVERNMENT CONSULTATION

1.6.1 Interagency Coordination

This section identifies the Federal, State, and local agencies and interest groups invited to participate in the preparation of this PEA. Scoping letters were sent to local, State and Federal agencies on July 29, 2008 inviting the agencies to comment on the Proposed Actions. The scoping period ended October 15, 2008. An example scoping letter and Agency responses are provided in Appendix A.1.

- Alaska Department of Environmental Conservation (ADEC)
- U.S. Environmental Protection Agency (EPA)
- Alaska Department of Fish and Game (ADF&G), Division of Habitat
- Alaska Department of Natural Resources (ADNR), Division of Forestry
- City of Fairbanks
- Fairbanks North Star Borough
- Municipality of Anchorage
- City of Delta Junction
- U.S. Fish and Wildlife Service (USFWS), Fairbanks and Anchorage
- U.S. Army Corps of Engineers (USACE), Regulatory Branch, Fairbanks and Anchorage
- State Historic Preservation Officer (SHPO)
- Fort Greely Garrison
- Bureau of Land Management (BLM), Northern Field Office and Anchorage Office
- BLM, Alaska Fire Service
- Salcha Delta Soil and Water Conservation District
- Palmer Soil and Water Conservation District
- U.S. Air Force (USAF)

This EA incorporates many of the submitted comments. Specific document locations where agency concerns were addressed are noted within parentheses. The following four agencies

provided comments during the August 1 to October 15, 2008 scoping period (also see Appendix A).

USFWS

The USFWS commented that no listed species occur on USAG Alaska range lands, and there is no designated or proposed critical habitat in the vicinity of the range lands and, therefore, the Proposed Actions to be analyzed in the PEA are not likely to adversely affect listed species. USFWS additionally recommended that the PEA include a statement that consultations under Section 7 of the Endangered Species Act regarding the Proposed Actions would not be necessary (see Section 1.5).

Municipality of Anchorage

The Municipality of Anchorage provided the following BMPs concepts for consideration within the PEA which may be applicable to range projects and lands that are adjacent to the Municipality of Anchorage:

- Minimum setback standards for activities near streams, lakes, and wetlands (see Sections 3.3.2.3 and 3.4.2.3).
- Procedures to stabilize cleared or disturbed lands (see Section 3.2.2.3).
- Standards to minimize vegetation removal (see Section 3.5.2.3).
- Procedures for vegetation management practices that minimize adverse effects to surface water quality (see Section 3.5.2.3).
- Standards to control invasive species during revegetation efforts (see Section 3.5.2.3).
- Procedures for handling and cleanup of hazardous materials to minimize environmental exposure (see Section 3.12.2.3).

Fairbanks North Star Borough

Fairbanks North Star Borough offered assistance in review and development of BMPs through their Land Management and Community Planning Division and their Stormwater Management, Air Quality and Floodplain Programs.

USACE , Regulatory District, Fairbanks

USACE requested the Army consider the following elements in their project planning (see Sections 3.3.2.3 and 3.4.2.3):

- Extent and type of wetlands and other waters of the U.S. within proposed project areas.
- Discussion of the functions and values of the various vegetation communities within proposed project areas.
- Discussion and summarization of potential impacts to waters of the U.S.
- Discussion of specific practices that would be implemented to avoid and minimize impacts to wetlands.
- Discussion of the practicability of alternatives that would avoid wetland impacts (see Appendix G).
- Maps of the various impact areas showing location of wetlands and waters of the U.S. (See Section 2.2.1 and 2.2.2).
- Consideration of EO 11990 *Protection of Wetlands* and EO 11988 *Floodplain Management* (see Appendix G).

1.6.2 Government-to-Government Consultation

Federally-recognized tribes maintain a unique political relationship with the Federal government, one that is based on the United States Constitution, treaties, and statutes. Native American tribes have been recognized as "domestic dependant nations" and retain a substantial degree of sovereignty over their

affairs. When Federal actions have the potential to significantly affect tribal interests, consultation with tribal governments must be undertaken on a "government-to-government" basis. Tribal consultation must be considered separately from the public participation process mandated by statutes such as NEPA.

In accordance with USARAK garrisons' responsibilities under NEPA; EO 13175*, Consultation and Coordination with Indian Tribal Governments*; Department of Defense (DoD) American Indian and Alaska Native Policy; DoD American Indian and Alaska Native Policy Alaska Implementation Guidance; DoD Instruction 4710.02; and AR 200-4, *Cultural Resources Management*, government-to-government consultation regarding this PEA has been initiated the following Native tribes: Chickaloon Native Village, Village of Dot Lake, Native Village of Eagle, Native Village of Eklutna, Healy Lake Village, Kenaitze Indian Tribe, Knik Tribe, Nenana Native Association, Northway Village, Native Village of Tanacross, Native Village of Tetlin and the Native Village of Tyonek. The USARAK garrisons' staff native liaison is working directly with tribal representatives to ensure there is sufficient opportunity for their meaningful and effective participation. Notices of the PEA has also been published in the USAG FWA and USAG FRA Quarterly Update for Alaska Native Tribes. No responses have been received to date from any tribe.

1.7 PUBLIC REVIEW PROCESS

Section 1.6.1 provides a summary of the agency scoping period. A detailed summary of the public comments and USAG Alaska responses are located in Appendix A.2. A Notice of Availability (NOA) of the Draft PEA was published in four publications (the *Anchorage Daily News*, the *Alaska Star,* the *Fairbanks Daily Miner* and the *Delta Wind*) and on the USARAK website (http://www.usarak.army.mil/conservation), beginning a 30-day comment period on December 28, 2009 and ending on January 26, 2010. Copies of the PEA were made available on the USARAK website, at the Z.J. Loussac Public Library in Anchorage, the Noel Wien Public Library in Fairbanks and the Delta Junction Community Library in Delta Junction. In addition, USARAK held two agency meetings regarding the Draft PEA, one in Fairbanks on January 13, 2010, and the second in Anchorage on January 14, 2010. During the agency meetings, USARAK NEPA and range staff discussed the three Proposed Actions and solicited written agency comments regarding the Proposed Actions.

Comments received on the Draft PEA were considered in detail during the preparation of the Final EA. At total of five comments (four agencies and one interest group) were received during this period. The primary comments raised during this period by the agencies involved regulatory compliance of the Proposed Actions and questions regarding how the Army will adhere to existing regulations (i.e., wetlands and hazardous substance management) and existing memorandums of understanding (i.e., bison management). These issues have been incorporated in to the Final EA document and Appendix A.2 of the EA contains USARAK's responses to these comments.

1.8 LISTS OF FEDERAL PERMITS, LICENSES, OR ENTITLEMENTS

Table 1.8-1 lists the potentially applicable and relevant Federal laws and regulations and their associated regulatory agency consultations and permits required with the implementation of the Proposed Action.

Table 1.8-1. Laws, Regulations, and Associated Consultations and Permits

Law or Regulation	Description
ADF&G Alaska State Anadromous Fish Act AS 16.05.871	The Anadromous Fish Act requires that an individual or governmental agency provide prior notice and obtain approval from ADF&G "to construct a hydraulic project or use, divert, obstruct, pollute, or change natural flow or bed" of a specified anadromous waterbody.
ADF&G Fishway Act AS 16.05.841	The Fishway Act requires that an individual or government agency notify and obtain authorization from ADF&G for activities within or across a stream used by fish if the department determines that such activities could represent an impediment to the efficient passage of fish.
American Antiquities Act [16 USC 431 et seq.]	Requires the agency to protect historic and prehistoric ruins, monuments, and objects of antiquity including vertebrate paleontological resources, on lands owned or controlled by the Federal government.
American Indian Religious Freedom Act [42 USC 1996]	Establishes Federal policy to protect and preserve the right of American Indians to believe, express, and exercise their religions. Requires Federal agencies to prepare a report evaluating how their actions might interfere with these beliefs, expressions, and actions.
Archeological and Historic Preservation Act [16 USC 469 et seq.]	Authorizes all Federal agencies to expand program or project funds to evaluate, protect, or recover archeological and historical data jeopardized by their projects; explicitly calls for analysis and publication of data.
Archaeological Resources Protection Act [16 USC 470aa et seq.]	Requires a permit for excavation or removal of archaeological resources from publicly held or Native American lands.
Alaska Spill Prevention and Response Statutes and Regulations (18 AAC 75)	These regulations serve as the basis for decisions which are made to prevent and clean up spills and contaminated properties in Alaska.
Bald and Golden Eagle Protection Act [16 USC 668 et seq.]	Prohibits unauthorized take of Bald and Golden Eagles or their nests. Consultations should be conducted to determine if any protected birds are found to inhabit the area. If so, the agency must obtain a permit that may be required because of construction and operation of project facilities before moving any nests.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Superfund)	CERCLA provides Federal funds to clean uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. The Act gives EPA power to seek out those parties responsible for any release and assure their cooperation in the cleanup.
Clean Air Act [42 USC 7401 et seq.]	Requires certain emissions sources to meet standards and obtain permits to satisfy National Ambient Air Quality Standards, State Implementation Plans, New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, and New Source Review.
Clean Water Act (CWA) [33 USC 1251 et seq. Sections 401 and 402]	Prohibits unpermitted discharges of pollutants from point sources into waters of the U.S., safeguards water quality.

Table 1.8-1. Laws, Regulations, and Associated Consultations and Permits

Law or Regulation	Description
The Coastal Zone Management Act (CZMA), 16 USC Section1451 (FRA)	Requires compliance with state laws (If a state has an appropriate Coastal Zone Management Program through the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration (NOAA), Federal agencies with development projects within the coastal zone, including Civil Work activities, must assure that those activities or projects are consistent to the maximum extent practicable, with the approved state program).
CWA [33 USC 1313 Section 404]	Requires permits for discharge or fill placed in jurisdictional waters, including wetlands. Requires alternatives analysis including practicable alternatives that avoid impacts (404b (1) guidelines).
Endangered Species Act of 1973 [16 USC 1531 et seq.]	Prohibits take of endangered or threatened listed species, requires identification of listed species and their habitats, assessment of impacts, and under certain circumstances formal consultation.
EO 11988: *Floodplain Management* EO 11990: *Protection of Wetlands*	Requires that where there is no practicable alternative to development in floodplains and wetlands, Federal agencies are required to prepare a floodplains and wetlands assessment, design mitigation measures, and provide public review. For floodplain involvement, Federal agencies must issue a Floodplain Statement of Findings.
EO 13112: *Invasive Species* [64 FR 6183 February 8, 1999]	Requires Federal agencies, to the extent practicable and permitted by law, to prevent the introduction of invasive species; to provide for their control; and to minimize the economic, ecological, and human health impacts that invasive species cause.
EO 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds* [66 FR 63349 December 6, 2001]	Requires Federal agencies to avoid or minimize the negative impacts of their actions on migratory birds and to take active steps to protect birds and their habitats.
EO 13007: *Indian Sacred Sites* [61 FR 26771]	Directs Federal agencies to avoid adverse effects to sacred sites, provide access to those sites for religious practices, and to plan projects to provide protection for and access to sacred sites.
EO 13175: *Consultation and Coordination with Indian Tribal Governments*	Directs Federal agencies to establish regular and meaningful consultation and collaboration with Tribal officials in the development of Federal policies that have Tribal implications.
Fish and Wildlife Coordination Act [16 USC 661-667e March 10, 1934]	Provides the basic authority for USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects.
Magnuson-Stevens Fishery Conservation and Management Act [16 USC 1801 et seq.]	Requires consultation with National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) and assessment of impacts from activities that may affect Essential Fish Habitat (EFH) and managed species.
Migratory Bird Treaty Act [16 USC 703 et seq.]	Prohibits unauthorized take of migratory birds. Requires consultation to determine whether construction or operation of project facilities has any impacts on migrating bird populations. *Note: Projects which are required to achieve military readiness are exempt through the 2003 Defense Authorization Act.*
National Historic Preservation Act, as amended [16 USC 470 et seq.]	For a Federal undertaking, Section 106 requires consultation with SHPOs, Federally-recognized tribes, and other consulting parties to evaluate effects on historic properties (properties eligible for listing in the National Register of Historic Places), and consider ways to avoid effects or reduce them to the level of no adverse effect.

Table 1.8-1. Laws, Regulations, and Associated Consultations and Permits

Law or Regulation	Description
Native American Graves Protection and Repatriation Act [25 USC 3001]	Requires the development of procedures to address unexpected discoveries of Native American graves or cultural items during activities on Federal or tribal land.
NEPA [42 USC 4321 et seq. 40], as implemented by 40 CFR Part 1500-1508, 32 CFR Part 651, and Army Regulations 200-1; 200-4	Requires environmental analysis of proposed Federal actions. CEQ regulations at 40 CFR 1500-1508 direct all Federal agencies in the implementation of NEPA. Department of the Army regulations for implementing NEPA promulgated under 32 CFR Part 651. Army policy provided by ARs 200-1 and 200-4.
Noise Control Act [42 USC 4901 et seq.]	Requires facilities to maintain noise levels that do not jeopardize the health and safety of the public. Applicable to construction noise.
Protection of Historic Properties [36 CFR 800]	Lists implementing regulations that specify process for above-listed requirements of Section 106 of National Register of Historic Places.

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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The following sections describe three independent approaches to accomplish the Purpose and Need as stated in Section 1.2. A No Action Alternative will also be carried forward and receive full analysis.

The Proposed Actions were developed in accordance with USARAK training mission requirements and criteria objectives listed in Sections 1.2 and 1.3. Section 2.1 discusses the No Action Alternative, which analyzes the continuation of the status quo and the ramifications of that decision. Section 2.2.1 through 2.2.4 provides a description of the Proposed Actions, including a description of upcoming and foreseeable future range projects (Section 2.2), a description of the proposed adaptable use zones (Section 2.3), and a list of proposed SOPs and BMPs guidelines for range construction activities (Section 2.4). Safety and environmental precautions that would be implemented are discussed in Section 2.3. Section 2.4 addresses alternatives considered and eliminated from detailed study. The preferred alternative is identified in Section 2.5 and a summary of the potential environmental consequences of all of the alternatives is presented in Section 2.6.

All actions on USARAK garrisons' range and training lands will continue to comply with all Federal and state environmental laws and regulations. Execution of these projects would be subject to any mitigation measures stipulated in a FNSI. Prior to commencing any project, USARAK garrisons' Environmental staff will assess whether any changed circumstances or alterations to the project's scope or the method of execution warrant additional NEPA analysis and documentation.

2.1 DESCRIPTION OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, the decision-maker would elect to not implement any of the programmatic approaches described in this PEA. Management of USARAK ranges would continue under the status quo. In other words, range maintenance, upgrade and construction activities would occur in accordance with existing procedures. The following paragraphs discuss the inability of the No Action Alternative to meet the stated Purpose and Need:

- ***Streamline Site-specific Projects in Support of Soldier Training.*** DPTMS would not have a readily accessible NEPA compliant tool for a rapid and streamlined response to deal with ever changing mission requirements and normal wear-and-tear on ranges. Projects would undergo the existing process of NEPA review, which involves a site-by-site, project-by-project analysis without the benefit of programmatic guidance. Similar actions either varying on a spatial or temporal scale would not be analyzed under a streamlined approach which could result in project delays, redundancy in reviews, and increased costs associated with document preparation and allocation of staff. The No Action Alternative could result in project delays and inefficiencies which could in turn lead to negative effects to Soldier readiness.
- ***Sustainable Range Planning for SAC Ranges Using Adaptable Use Zones.*** No "adaptable use" zone (boundary) associated with the SAC ranges would be established and no complete analysis of existing environmental conditions would be conducted within these boundaries. Range projects proposed in these highly-utilized areas associated with the SAC ranges would likely require individual NEPA analysis, often resulting in the re-examination of areas already having undergone previous NEPA review for a different action. The lack of future planning for "adaptable use" areas and continual need for repetitive studies within these complexes would reduce cost efficiency. In addition, areas outside of these "adaptable use" boundaries would be subject to greater risk of range development activities as no planning tool would exist for concentrating range development within these existing SAC ranges.

- ***Environmental Stewardship Range Construction Guidelines.*** No environmental stewardship guidelines would be established for range construction activities that are unique to Alaska. No programmatic and streamlined approach for implementing environmental stewardship range construction guidelines would exist which could result in inefficient project reviews and additional revisions to meet regulatory agency approvals and Army environmental stewardship principles. It is important to note that existing SOPs would continue to be used and BMPs would be considered on a project-by-project basis using existing techniques chosen at the discretion of project proponents.

The No Action Alternative and its discussion of the status quo provide a basis for comparative analysis with the action alternatives.

2.2 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action involves three separate actions (Sections 2.2.1 through 2.2.3), any number and combination of which could be incorporated in a final decision. Each Proposed Action described within this section is derived from the Purpose and Need and objectives discussed in Section 1.2.

2.2.1 PROPOSED ACTION 1 – Streamline Site-specific Range Projects in Support of Soldier Training

Proposed Action 1 evaluates, on a site-specific basis, construction and upgrade projects that are currently funded or are otherwise foreseeable (see Tables 2.2-1 through 2.2-3). These projects would be constructed, as funded, over a 10-year timeframe and would not occur all within the same construction season. The multitude and variety of these proposed projects renders preparation of individual environmental analyses inefficient in terms of USARAK garrisons' use of time, manpower and money. Also, if they were to engage in separate and individual review for each project, USARAK garrisons would miss a valuable opportunity to analyze potential cumulative impacts of these projects.

Proposed Action meets the objectives outlined in Section 1.3 through the following benefits:

- Increased understanding of the potential effects and interactions of known and foreseeable projects have on range lands and ecosystems;
- Streamlined environmental review for projects with connected actions[2] and projects which are independent in nature, however, share similar design or space;
- A more comprehensive understanding of cumulative impacts through analyzing USARAK garrisons' range planning on a installation and regional level;
- Managed development of range lands in more coherent and rational manner, allowing USARAK garrisons to compare those actions as they relate to range development planning and to ensure that all current and projected range requirements are met;
- Identification of currently unforeseen risks, delays, or problems associated with the siting of proposed projects; and
- Greater flow of information amongst USARAK garrisons' personnel from Range Planning to Environmental staff and regulatory agencies.

Tables 2.2-1 through 2.2-3 provide a brief description of the site-specific projects including anticipated project impact acreage footprints. Three main project categories are contained within the table: *new construction* which involves construction of an entirely new facility; *upgrade* which involves enhancement of (addition to) an existing facility; and *repair-by-replacement* which involves demolition or

[2] Connected actions are those that are "closely related" to the proposed project and alternatives. Connected actions are interdependent parts of a larger action which oftentimes will not proceed unless other actions have been taken previously or simultaneously.

reuse of an existing training facility. In addition, Figures B-1 through B-3 (see Appendix B) show the approximate locations for the site-specific projects listed in Tables 2.2-1 through 2.2-3 and their proximity to existing resources, human-modified land cover[3], and military activity[4] areas using USARAK GIS mapping. Table 2.2-4 provides a summary of total approximate acreage disturbed for each training area.

Each of the projects addresses a specific range deficiency or need at each installation, and therefore, supports Soldier training and military readiness in some way through new construction, upgrade to existing facilities or repair-by-replacement. None of these projects are connected actions in nature and each serve an independent action; therefore, selection of this alternative does not commit the decision-maker to go forward with each and every project. Rather, the decision maker could elect all, a certain combination, or none of these projects. The purpose and need of each individual project is explained in more detail in Appendix B. This PEA provides a programmatic NEPA analysis for each of these projects. Many of these projects are in the preliminary planning stages, and therefore, the exact footprint and limits of disturbance for the site-specific projects as shown in Figures B-1 through B-3 (see Appendix B) have not been determined. A separate NEPA review (i.e., checklist or other level of analysis determined appropriate by USAG Alaska Environmental staff) would be conducted during project design, once an actual footprint of disturbance has been determined. Alterations to scope, design, techniques or further refinement of the project footprint may require more substantive NEPA review (EA tiered off this PEA or an EIS).

[3] The human modified land cover type within the figures is based upon the ecological land surveys for each installation and can be defined as land that has been highly modified by human activity, such as roads, fill, and excavations and areas where vegetation has been modified but soils are relatively undisturbed (FRA [CRREL, 2003]); barren or partially vegetated (<30 percent cover) areas resulting from manmade disturbance (FWA [CRREL, 1999]); and as cut-and-fill associated with the construction of roads and pads, land clearing, excavations (DTA [CRREL, 2001]).

[4] Military activity areas depicted within the figures were developed using GIS mapping and indicate either live fire range, firing range, non-dudded impact area, drop zone area, airfield surface area, or range areas (i.e., mock village).

Table 2.2-1 Site-specific Range Construction Projects – FORT RICHARDSON

Project Name	Project Components	Acres[1]	Figure Ref. No.
FRA Urban Assault Course (UAC) ***Upgrade***	1) Construct berms. 2) Construct an Urban Defense Building. 3) Construct a Grenadier Gunnery Trainer. 4) Construct an Individual Techniques Trainer. 5) Construct a General Instructional Building.	10	B-1b R1
Dig a well at the ISBC Site ***New Construction***	Construct a Class "A" well that will provide potable water at the Davis Range Complex.	0.01	B-1b R2
Raise the Infantry Squad Battle Course (ISBC) Road ***Upgrade***	Upgrade current road system accessing ISBC to restore existing damage to the training land and maintain a sustainable road network to support the range. Road upgrade dimensions would be the standard road top width of 30 feet with 20 foot shoulders on either side to allow for sloping, drainage and snow placement during winter months.	5	B-1b R3
Provide Turnaround Infantry Platoon Battle Course (IPBC) ***Upgrade***	Upgrade current road system accessing IPBC to restore existing damage to the training land and maintain a sustainable road network to support the range. Road upgrade dimensions would be the standard road top width of 30 feet with 20 foot shoulders on either side to allow for sloping, drainage and snow placement during winter months.	0.5	B-1d R4
Create Bivouac Sites UAC ***New Construction***	Construct a company size site to accommodate up to 200 Soldiers and equipment to include: 1) Construction of a General Instruction Building. 2) Placement of an arctic latrine. 3) Construction of graveled area for Tent Pads. 4) Site Improvements to allow for drainage of melting snow.	5	B-1b R5
Range Operation Complex ***New Construction***	1) Construction of a Range Use Command and Control Facility (20,000 square feet) that will house all range control functions. Law enforcement game regulation offices for the BLM are also included. 2) Connection of supporting infrastructure to include: utilities electrical service, fiber optic cable, sanitary sewer, paving, site improvements (storm drainage and erosion control), and fencing.	20	B-1a R6

Table 2.2-1 Site-specific Range Construction Projects – FORT RICHARDSON

Project Name	Project Components	Acres[1]	Figure
FRA Roads ***Upgrade***	Improve 107 miles of roads in the FRA Training Area to include: 1) Grading road surfaces and removing boulders. 2) Clearing trees and brush to widen existing roads (to a standard road top width of 30 feet with 20 foot shoulders on either side to allow for sloping, drainage and snow placement during winter months). 3) Installing culverts and drainage ditches to control severe erosion. 4) Realigning roads to eliminate unnecessary switchbacks on steep grades, and providing passing areas where needed.	390	B-1a – d R7
Vehicle Storage/ Maintenance Building ***New Construction***	Construct a 6,000 square foot Maintenance Building at the existing Range Control Complex to house store and repair range support vehicles and equipment.	1	B-1a R8 **SAC**[2]
Install Flagpole ***New Construction***	Install a standard range Flagpole at Eagle River gate to notify trespasser of ranges being active and no access granted.	0.01	B-1d R9
Waterless Arctic Latrine ***Repair-by-Replacement***	Replace all old latrines with a Romtec style arctic vaulted unisex latrine.	0.5	B-1a B-1b R10
Covered Bleachers ***New Construction***	Install a set of covered bleachers on each SAC ranges and training area where required.	0.5	B-1a B-1b R11 **SAC**

Notes: [1] Acreages are approximate.
[2] SAC indicates the project occurs within the proposed SAC range adaptable use zone (Proposed Action 2).

Table 2.2-2 Site-specific Range Construction Projects – FORT WAINWRIGHT

Project Name	Project Description	Acres[1]	Figure Reference No.
Fort Wainwright (FWA)			
Ammunition Breakdown Buildings ***New Construction***	Construct Ammunition Distribution Buildings on all the SAC ranges. Currently they are either temporary structures or there are none. This is a requirement of Training Circular (TC) 25-8. There will be a total of 10 buildings.	<1	B-2a W2 **SAC**[2]
Demo Pond Range ***Repair-by-Replacement***	Refurbishing range to a useable state and establish a Blasting Pad, constructing a Missile Proof Shelter and hardening the existing access road.	1.8	B-2a W3 **SAC**
General Instructional Building CACTF ***New Construction***	Construct General Instructional Building to support the Life Support Requirements of the units utilizing the facility. The building will be 40 feet by 80 feet, heated and lighted.	0.2	B-2a W4
Indoor Shooting Range ***New Construction***	Construct Indoor Shooting Range Building to support 15 firing point (FP) lit, heated, covered, and protected environment to allow live-fire training during the winter months and night fire training during summer months. Supporting facilities include utilities; electric service; exterior lighting; fire protection and alarm systems; mass notifications systems; keyless lock system; paving, walks, curbs and gutters; parking; erosion control and storm drainage; site grading and contouring; information systems; site improvements; and power distribution extension service.	2	B-2a W6 **SAC**
Range Operation Complex ***New Construction***	Construct Range Use Command and Control Facility (30,000 square feet) that will house all range control functions including range control, scheduling safety and inspection offices, briefing and conference rooms, material and equipment storage space target fabrication and issue, and range equipment repair. Law enforcement game regulation offices for the BLM are included. Supporting facilities include; utilities electrical service, fiber optic cable, sanitary sewer, fire protection and alarm systems paving, walks, curbs, gutters, storm drainage, site improvements, erosion control, information systems, heating, air conditioning and fencing.	2.1	B-2a W8 **SAC**

Table 2.2-2 Site-specific Range Construction Projects – FORT WAINWRIGHT

Project Name	Project Description	Acres[1]	Figure Reference No.
FWA C-130/17 Mock-up ***New Construction***	Construct 1 each C-17 and 2 each C-130 Air Transport Mockup's at FWA, Alaska. Mockups will consist of a ramp and platform structure to allow loading, securing and unloading of vehicles, equipment, and personnel. Mockup design shall ensure dimensions, heights, clearances, and tie down positions are representative of actual aircraft. Protection from the inclement winters shall be provided on the exterior of the structure in a manner that compliments the Ladd Field National Historic District requirements. Interior lighting will be provided at adequate levels to support training during winter months. Supporting facilities to include connection to existing electrical infrastructure, exterior lighting, paving, walks, curbs, gutters, erosion control measures, emergency phone, site improvements, AT/FP, and fire protection.	2	B-2a W9
Welding/ Carpentry Shop ***New Construction***	Construct Fully functional 60-foot by 120-foot Welding and Carpenter Shop to support the operations of Range Control. The building will be heated, lighted, with sufficient ventilation and dust collection.	2.5	B-2a W10 **SAC**
Arctic Village ***Upgrade***	This project is located on the FWA SAC. The project would include hardening the existing access road and areas surrounding the training structures with gravel. The project would facilitate year road access and allow expansion of the number of plywood training buildings to better replicate an urban setting. All activities would take place within the existing range footprint.	13	B-2a W11 **SAC**
SAC Range East Expansion ***Upgrade***	The project will involve hardening an existing trail to a width of 36 feet to allow for additional access for the breech facility, FP 25 and 26 and future ranges. All eastward expansion would take place within the existing SAC range boundary.	10	B-2a W12 **SAC**
Known Distance (KD) Range Expansion ***Upgrade***	The project will consist of moving the target berm south 1,312 feet (400 meters)[3] to facilitate a 3,280 feet (1,000 meter) range. Firing berms will be constructed at 328-656 and 984 feet (100-200 and 300 meters).	22	B-2a W13 **SAC**
Pave Range Road ***Upgrade***	Paving the existing Range Road to reduce maintenance costs and eliminate dust to provide a safer driving surface. The length of the road to be paved is 13,582 feet (4,140 meter) with a 40-foot top.	18.4	B-2a W14 **SAC**
SAC Range Security Fence ***Upgrade***	Installing a security fence around the entire SAC range to meet regulatory requirements. Dimensions for this project are a length of 46,522 feet (14,180 meters) with a width of 16 feet (5 meters). Note, this project does not involve placement of fencing below the northern bank of the Tanana River.	17.5	B-2a W15 **SAC**
Rebuild Modified Record Fire (MRF) Firing Line ***Upgrade***	Resurfacing and widening the berm to a top width of 18 feet and establish stairways at each firing position.	2.1	B-2a W16 **SAC**

Table 2.2-2 Site-specific Range Construction Projects – FORT WAINWRIGHT

Project Name	Project Description	Acres[1]	Figure Reference No.
Combined Arms Collective Training Facility (CACTF) Trail ***Upgrade***	Improve a network of existing trails approximately 5,140 feet in length to an all season surface and width of 24 feet with adequate slope and drainage. Approximately 15 feet of vegetation will be cleared either side of the hardened trails to facilitate line of site and future maintenance. Vegetation will also be cleared at undetermined locations adjacent to the hardened trail network to accommodate training aids and hardened parking pads .This project will improve access to FWA.	9.0	B-2a W17
Drivers Training Course Phases 1-5 ***Upgrade***	1) Improve approximately 36,090 feet of existing roads and trails to an all season surface and width of 24 feet with adequate slope and drainage. Approximately 15 feet of vegetation will be cleared either side of the hardened roads and trails to facilitate line of site and future maintenance. 2) Install concrete and earthen obstacle proficiency stations throughout the Drivers Training Course route. The project will be installed in 5, 7, 218 feet phases and will provide basic and proficiency training opportunities through the negotiation of several different types of obstacles, such as side slopes, inclines, declines and self recovery areas.	44.7	B-2a W18 (2)
Latrine – Birch Hill Biathlon Range ***Upgrade***	Install Romtec SST® Single Restroom pre-fabricated latrine at the newly constructed Birch Hill Biathlon Range.	0.4	B-2a W19
Warrior Forward Operations Base (FOB) Phase 3 ***Upgrade***	Upgrade 7 acres of existing FOB pads and roads with an additional 6 inches of cap fill material, approximately 17,000 cubic yards to improve year round access to the site.	7	B-2a W20
Latrines ***Upgrade***	This project is located in on the FWA SAC range involves the installation of pre-fabricated Romtec SST® Restroom latrines at the Zero/Close Quarter Marksman (CQM) Range, KD and CACTF	0.7	B-2a W22 **SAC**

Table 2.2-2 Site-specific Range Construction Projects – FORT WAINWRIGHT

Project Name	Project Description	Acres[1]	Figure Reference No.
Tanana Flats Training Area (TFTA)			
Alpha Impact Area Boundary Line ***Upgrade***	Clear an 141,664 feet by 19.7 feet boundary line around the permanent impact area to create a mechanically treated, highly visible impact area perimeter that will improve safety during training exercises and other operations adjacent to the impact area. It will also provide a moderate firebreak.	64	B-2b W21
Yukon Training Area (YTA)			
Digital Air Ground Integration Range ***Upgrade***	Construct a Digital Air Ground Integration Range requiring: 1) After Action Review Building. 2) Standard Large Range Operations Center. 3) 2 Range Towers upgrade. 4) Range Maintenance Building. 5) General Instruction Building. 6) 2 Arctic latrines. 7) Enclosed Mess Facility. 8) Enclosed Bleachers. A total of 6 camera towers are required. The range will include new targetry consisting of 245 stationary infantry targets, 72 each stationary armor targets, 25 moving infantry targets, 15 each moving armor targets, and 2 each, 984 feet by 1,312 feet (300 meter by 400 meter) rectangular rocket target boxes, 6 each live-fire villages, and 4 each two-story facades. The range will also include aviation; 6 each rocket pits, 2 each harmonization panels, 8 each known distance panels, 2 each aviation asset holding areas with 1 each ammo break down building, 1 each ammunition loading dock, tie downs, military specification grounding points and landing pads for 8 each aviation assets.	10	B-2c W1
Stuart Creek Integrated Target Array ***Upgrade***	Hardening an existing and new access trails, 5,085 feet (1,550 meters) with a top width of 15 feet. In addition; 3 each, 492 feet by 492 feet (150 meters by 150 meter) target areas will be hardened to facilitate the construction and maintenance of targets. This project will increase the training opportunities for integrated fires. Material for the hardening of the trails and pads will come from an area adjacent to this project. The size of this pit will be approx 350 feet by 250 feet in depth.	21.7	B-2c W5

Table 2.2-2 Site-specific Range Construction Projects – FORT WAINWRIGHT

Project Name	Project Description	Acres[1]	Figure Reference No.
Firebird Unmanned Aerial Vehicle (UAV) Building ***New Construction***	Construct a 120 feet by 50 feet building to support UAV operations on Firebird. The building will have power, heat and lights with a drive through capability.	1	B-2c W7
Charlie Battery FOB ***Upgrade***	Continue development of the existing structure of the vacant Nike Hercules Site and surrounding area to facilitate use as a FOB, Bivouac and Indirect FP to include: 1) Vegetation clearing. 2) Establishing harden pads, roads and berms. 3) Repair of existing buildings to make them structural sound and safe. 4) Installation of latrines. 5) Installation of power, communication lines fencing and construction of support buildings.	28	B-2c W23
YTA Convoy Live Fire Range Phase 1 ***Upgrade***	Upgrade 13,123 feet of existing road by spot hardening, clearing lines of sight and installing 2,656 feet by 656 feet target objective areas.	22	B-2c W24
Winter Camp FOB ***Upgrade***	Expand the existing hardened areas and provide permanent support structures such as Living Quarters, Mess Halls, latrines and Maintenance Buildings. The area will be fenced and power and communications will be provided.	5	B-2c W25 **SAC**
YTA FP 13 ***Upgrade***	Harden an un-improved existing FP for all-season use through the installation of a 599 feet by 26 feet looping gravel access trail with a 20-foot top surface and a 328 feet by 328 feet FP pad. Vegetation will be cleared 10 feet either side of the access trail for line of sight.	3.1	B-2d W26
Husky Drop Zone (DZ) FOB ***Upgrade***	Expand existing Harden Bivouac site (3.39 acres) to a full 500 feet by 500 feet area to allow for year round use of the area.	2.3	B-2c W27
YTA Latrines ***Upgrade***	Install pre-fabricated Romtec SST® Restroom latrines at previously constructed firing points (FPs) and Bivouac Sites in the YTA, including FP Charlie, FP Bravo 3, OP Shack, FP 20, and Firebird Assault Strip.	2.4	B-2c W28
YTA Demolition Range ***Upgrade***	Improve a 5,905-foot (1,800-meter) existing trail to a 24-foot width all season surface and harden a 15.5-acre clearing.	18	B-2c W29
YTA FP Direct Fire ***Upgrade***	Improve a 3,280-foot (1000-meter) existing trail to a 24-foot width all season surface. In addition, 2.5-acre a pad will be hardened.	4.5	B-2c W30

Table 2.2-2 Site-specific Range Construction Projects – FORT WAINWRIGHT

Project Name	Project Description	Acres[1]	Figure Reference No.
Stuart Creek Access Trails ***Upgrade***	Hardening trails and target pads within the impact area to facilitate Target installation and maintenance.	37.4	B-2c W31
Stuart Creek Impact Area Boundary Line ***Upgrade***	Clear a 131,526 feet by 19.7 feet boundary line around the permanent impact area. This project will create a mechanically treated, highly visible impact area perimeter to improve safety during training exercises and other operations adjacent to the impact area. It will also provide a moderate firebreak.	59.5	B-2c W32
Direct FP 9 ***Upgrade***	Hardening a 5,249-foot access trail with a 30-foot gravel top surface and 2, 328 feet by 328 feet gravel pads to develop a firing platform for direct firing weapon systems. Additional clearing and site hardening will be needed to facilitate target emplacement.	15	B-2c W33
Husky DZ Resurface ***Upgrade***	Clearing vegetation, disking, leveling, grading, and reseeding the existing drop zone to improve safety and facilitate future maintenance.	217	B-2c W34
Gravel Source YTA ***New Construction***	Establish a classified material site for a source material in the construction and maintenance of roads and areas throughout the YTA. Activities would include clearing, excavating, drilling, blasting, crushing, sorting and stockpiling material.	20	B-2c W35
Bravo Battery FOB ***Upgrade***	Continue development of the existing structure of the vacant Nike Hercules Site and surrounding area to facilitate use as a FOB, Bivouac and Indirect FP to include: 1) Vegetation clearing. 2) Establishing Harden Pads, roads and berms. 3) Repair of existing buildings to make them structural sound and safe. 4) Installation of latrines. 5) Installation of power, communication lines fencing and construction of Support Buildings.	17	B-2c W36
Maintenance Building ***New Construction***	Construct a Maintenance building, 60 feet by 100 feet, to support range operations at the Master Control and Reporting Center (MCRC). The building will be heated, lighted and have electrical power.	0.04	B-2c W37 **SAC**
High Capacity Well ***New Construction***	Provide a high capacity all season well to support the operations of the MCRC, fire fighting activities and road maintenance throughout the YTA.	0.02	B-2c W38 **SAC**

Table 2.2-2 Site-specific Range Construction Projects – FORT WAINWRIGHT

Project Name	Project Description	Acres[1]	Figure Reference No.
YTAs Upgrade ***Upgrade***	Upgrade entire YTA unpaved training area road system (estimate 91 miles) to include Johnson, Quarry, Manchu, Brigadier, Skyline, Beaver Creek, North Beaver Creek, Transmitter, North Camera Road, South Camera Road, FP 16 Road, and Manchu Lake Roads. Project components include: 1) Grading road surfaces. 2) Clearing trees and brush to widen existing roads from a 24-foot wide top surface to a 42-foot wide top surface with 25-foot shoulders on either side to allow for sloping, drainage and snow placement during winter months. This project will upgrade and widen roads to sufficient size to accommodate Stryker vehicles. Other components include boulder removal, installation of culverts and drainage ditches to control severe erosion, realign roads to eliminate unnecessary switchbacks on steep grades, and provide passing areas where needed.	309	B-2c B-2d W39 (throughout)
YTA Manchu Trail Bridge Upgrade ***Repair-by-Replacement***	Replace current temporary bridges with a permanent structure to meet the requirements to support Stryker traffic. Replace with a 2 lane, 30 ton bridge.	2	B-2c W40
Harden Firebird FP and Bivouac Area ***Upgrade***	Harden an area adjacent to Firebird Assault Airfield (FLS) to be utilized as an Artillery FP and company Bivouac Area. Construct a 1,312 feet road with a 42-foot wide top surface, and 2, level pads totaling roughly 7.7 acres.	9.6	B-2c W42

Notes: [1]Acreages are approximate.
[2]SAC indicates the project occurs within the proposed SAC range adaptable use zone (Proposed Action 2).
[3]Range projects design standards often occur in meters and are noted as such in the Table.

Table 2.2-3 Site-specific Range Construction Projects – DONNELLY TRAINING AREA

Project Name	Project Description	Acres[1]	Figure Reference No.
Range Operation Complex ***New Construction***	1) Range Use Command and Control Facility (15,000 sq ft). 2) Supporting include; utilities electrical service, fiber optic cable, sanitary sewer, fire protection and alarm systems, paving, walks, curbs, gutters, storm drainage, site improvements, erosion control, information systems, heating.	7	B-3a D1 **SAC**[2]
DTA Roads ***Upgrade***	Upgrade and improve an estimated 136 miles of the training area road system to support heavier vehicles including the Stryker vehicle. This project encompasses the unpaved training area road system between the Richardson Highway and the Delta River. The upgraded road system would have a standard road top width of 42 feet with 25-foot shoulders on either side to allow for sloping, drainage and snow placement during winter months.	1,085 (assumes existing standard trail width of 24 feet)	B-3a, B-3b D2
DTA FPs ***Upgrade***	Upgrade and enlarge existing FPs; pad areas (0.8 acre each) will be cleared and graded, and geotextile and gravel installed.	26	B-3b D3, D4
New Load Ramps at Donnelly DZ ***Repair-by-Replacement***	Replace the existing facility located near the northern end of the Donnelly Assault Strip close to the Richardson Highway. The footprint would be approximately 50 feet per side.	0.1	B-3b D5
MATCH Shoot House at Colorado South ***New Construction***	Construct a Shoot House at Colorado South in the existing SAC range. Located towards the east end of the range within previously cleared area.	0.1	B-3a D6 **SAC**
Expand KD Range ***Upgrade***	Expand KD Range from 10 lanes to 20. The expanded lanes would only be 1,969-foot (600-meter)[3] distance and would be on the south side of the existing lanes.	6.6	B-3a D7 **SAC**
Target Emplacement ***Upgrade***	Place hard targets in the impact areas (distribute throughout all of DTA impact areas). These would include old tanks and other vehicles.	0.01 (Small, scattered footprint)	B-3e D8

Table 2.2-3 Site-specific Range Construction Projects – DONNELLY TRAINING AREA

Project Name	Project Description	Acres[1]	Figure Reference No.
Construct additional support buildings at Battle Area Complex (BAX)/ CACTF ***New Construction***	Construct additional buildings to include: 1) Troop Support/Warm-up/General Instruction Building. 2) Vehicle Preparation/Instrumentation Building. 3) Fire Station/House near the BAX. 4) Observation Tower south of 33-Mile Loop Road in between the two ends of Course Road 1.	5	B-3d D9
Maintenance Buildings for units training at DTA ***New Construction***	Construct 2 Large Maintenance Buildings for units to use while they are training at DTA.	1	B-3a, B-3d D10
Beales Replacement ***Repair-by-Replacement***	Replace the existing Beales Range Maintenance Facility with an 8,000-square-foot building to support DTA Range carpentry, welding, and target construction. Includes access road, parking areas, storage areas for lumber, equipment and other vehicles.	7	B-3a D11 **SAC**
Area of Responsibility Village ***Upgrade***	Clear areas within the existing CACTF footprint and install a combination of wood and container express (CONEX) structures to replicate an Iraqi Village. Includes roads and ditches.	11	B-3d D12
Theater Specific Village ***New Construction***	Create a combination wood and CONEX structures set in mountainous terrain at BRTA to replicate an Afghanistan-style Village. Because of the portable nature, several locations are considered together because it could be installed at BRTA, and then moved. Addition locations include GRTA, Molybdenum Ridge, and the CACTF. Village would be placed above treeline providing for any number of appropriate landing zones without modification to the vegetation.	11	B-3f; B-3g; B-3h D13
Expand Observation Point (OP) 26 for Range Control West Operations ***New Construction***	Construct a Barracks-style Building that can support DPTMS personnel for necessary maintenance and construction operations in DTA West. Construction would include heat and a well and septic and likely a maintenance building.	5	B-3e D14
Delineate DTA East Boundary ***Upgrade***	Survey and mark the entire DTA boundary east of the Delta River. This would involve clearing a 13-foot (4-meter) swath and allow visibility of signage, while preventing trespassers from driving along the boundary. Signs would be installed every 200 meters along the boundary, as necessary.	54	B-3d D15

Table 2.2-3 Site-specific Range Construction Projects – DONNELLY TRAINING AREA

Project Name	Project Description	Acres[1]	Figure Reference No.
Sign the Impact Area ***Upgrade***	Place signs (on trees or posts as needed) around the impact areas on DTA.	No footprint	B-3e D16
Improve Buffalo DZ ***Upgrade***	Fill in old foxholes and other larger holes, pits and abrupt depressions in the DZ. Areas would be revegetated with native grass seed mix and fertilizer.	50 (scattered through-out the 500-acre DZ)	B-3d D17
Expand Buffalo DZ ***Upgrade***	Clear trees, level the ground, plant grass, etc to expand the drop zone into the southeast corner so the DZ becomes more of a square will allow for approaches that are parallel to Fort Greely rather than crossing over Fort Greely.	180	B-3d D18
Extend the Donnelly FLS ***Upgrade***	Extend the FLS by 1,969 feet (600 meters) to the south. This would enable C-17s more options for landing and taking off during inclement weather. Grade, fill and compact gravel.	13	B-3b D19
Convert Fuel Break to Airstrip ***Upgrade***	Upgrade the fuel break northeast of the CACTF to act as a small aircraft-style airstrip façade in support of training scenarios at the CACTF. Final size would be about 200 feet wide by 2,000 feet long.	9.2	B-3d D20
New Road to bypass Cold Regions Test Center (CRTC) ***New Construction***	A new route is needed around some of the live fire facilities along Meadows Road. Options include 1) No Action, 2) upgrade the existing Old Richardson and Windy Ridge Roads to provide an alternate route (but this would be the long way around), 3) Create a by-pass road close to Meadows Road that would be located just out of the firing fans, 4) Create a new road along the base of Windy Ridge. The last option is one that has been considered before, but has challenges associated with wetlands and archaeology sites. It is also the preferred option for CRTC, who would benefit most from the project. Range Control's preferred option is to upgrade existing roads (#2 above).	44 (#2); 26 (#3); 30 (#4)	B-3c D21
BAX East Maneuver Corridor ***New Construction***	Create a new maneuver corridor in TA 8 east of the BAX. Maneuver trails would utilize the wood chips from the hydro-axing as the base material.	6	B-3d D22
BRTA Roads ***Upgrade***	Improve the 22 miles of trails at BRTA to a 30-foot width maximum with 20-foot shoulders on either side.	85	B-3g D23

Table 2.2-3 Site-specific Range Construction Projects – DONNELLY TRAINING AREA

Project Name	Project Description	Acres[1]	Figure Reference No.
GRTA Road ***Upgrade***	Improve the 51 miles of trails at GRTA to support 2-way Stryker traffic for at least half the distance (25 miles) of trails to a 42-foot road top width and the other half (26 miles) to a 32-foot road top width. In addition 25-foot shoulders on either side of all trail upgrades would be established to allow for sloping, drainage and snow placement during winter months.	373	B-3h D24
Combat Outposts (COP) ***New Construction***	Construct a platoon to company size simulated combat outpost overlooking the Bondsteel live fire village located within restricted airspace to include: • Hilltop tree clearing and addition of gravel. • Placement of large Jersey barriers or Hesco baskets surrounding the clearing to replicate a blast-proof barrier. • Construction of 12 CONEXs to serve as billets inside. • Construction of 2 Guard Towers. • Addition of a road through the facility from one end to the opposite, with entry and exit points. An additional COP would be constructed at GRTA on an appropriate hilltop, eastern portion. Waterless latrines would need to be installed along with all of the other features described for Bondsteel.	5	B-3h D25
Replace or Relocate Simpsonville Buildings ***Repair-by-Replacement***	Building replacement would consist of 8 buildings on pressure treated lumber footers that would elevate them about the ground surface and minimize the wetland footprint. The area is wetland muskeg. Buildings would be a variety of 1 and 2-story 12-foot by 16-foot, 12-foot square or 8-foot square. Plus 2 4-foot square small bunkers and some wooden walkways between buildings. In addition 1 or 2 Guard Towers would be constructed. An alternative to replacing Simpsonville on site would be to relocate it to the winter trail between the Delta River and OP 26. An exact location has not been selected, but would be based on minimizing wetland impacts.	6 (<1 acre building footprint)	B-3f D26
Construct UAV System tracking pad and access ***New Construction***	Construction of a new parking pad on the back site of the UAV strip and a short access trail from the Twin Lakes Road to correct operational tracking deficiencies during landing.	1.5	B-3b D27
Delta Creek Assault Strip ***Upgrade***	Improve the surface of this airstrip, and lengthen it to accommodate C-17 rough surface landing requirements. Add 1,969 feet (600 meters) in length to the north, clear vegetation back from all sides to safety standards. Grade, fill and compact gravel. The existing assault strip is in an abandoned channel of Delta Creek.	13	B-3e D28
Install Waterless Latrines ***Upgrade***	Install permanent waterless latrines 2 each at the CACTF, Buffalo Bivouac, and Georgia Range.	<1	B-3a D29

Table 2.2-3 Site-specific Range Construction Projects – DONNELLY TRAINING AREA

Project Name	Project Description	Acres[1]	Figure Reference No.
Construct Forward Arming and Refueling Points (FAARPs) ***New Construction***	Construct FAARPs, 1 each at Delta Creek Assault Strip and Wills Range. This consists of creating slightly elevated (1-2 feet) compacted gravel pads and fuel containment berms that can be lined with plastic to catch spills during exercises and installation of grounding rods (up to 8 each of the pad/berm/grounding rod set-ups would be installed at each site).	3 (<1 acre impact spread out)	B-3a D30
Add New Observation Points (OPs) along the Winter Trail ***Upgrade***	Construct 5 new OPs along the Winter Trail in DTA West. Each point would vary from 2 to 5 acres of vegetation clearing and disturbance, but a smaller area for gravel fill and building footprints. OPs would consist of a survivability shelter (small CONEX-sized) and bunkers. A range tower, observation building similar to what exists on the east DTA OPs, and latrine would be installed at each site. The existing OPs 27-30 also need to be enhanced with the addition of the same structures.	17 (new disturb-ance), 1 (building footprint)	B-3e D31

Note: [1]Acreages are approximate.

[2]SAC indicates the project occurs within the proposed SAC range adaptable use zone (Proposed Action 2).

[3]Range projects design standards often occur in meters and are noted as such in the Table.

Table 2.2-4 Site-specific Range Construction Projects Acreage Summary

Training Area	Total Acreage of Range and Training Lands	Total Acreage of Impact (Proposed Action 1)	Percent Disturbance Relative to Total Range and Training Land Acreage
FRA	54,903	434	0.8
FWA	5,561	211	4
TFTA	655,000	64	<0.01
YTA	247,952	804	0.3
DTA	635,600	1,980	0.3

2.2.2 PROPOSED ACTION 2 – Sustainable Range Planning for SAC Ranges Using Adaptable Use Zones

Proposed Action 1 discussed foreseeable projects that could occur throughout USARAK garrisons' installations, including those within SAC ranges. Proposed Action 2 defines, delineates and examines the impacts of creating "adaptable use" zones associated with USARAK garrisons' SAC ranges (see Figures 2-1 through 2-3). The purpose of the intensive analysis of land and resources within these designated adaptable use zones is to prospectively and comprehensively analyze likely locations for future, unforeseen range growth. Each adaptable use zone was uniquely delineated to maximize use of existing training areas, firing ranges, and surface danger zones (SDZs). Other constraints were also used in development of the proposed adaptable use zones including proximity to existing infrastructure, topography, environmental and operational constraints, and the need to provide flexibility for future range projects. Criteria used for each proposed SAC range adaptable use zone are further described later in this section. The decision to be made regarding Proposed Action 2 is whether to establish these adaptable use zones and implement a streamlined environmental review procedure for projects within these zones.

SAC ranges consist of a group (complex) of firing ranges which differ in configuration and are tailored to specific training and weaponry. These ranges are typically grouped together for several reasons, including reduced travel between ranges for Soldiers and maintenance personnel, overlapping SDZs, and minimization of overall range impacts through use and reuse of the same areas. Currently, these complexes and the facilities contained therein experience the greatest amount of Soldier use for training and military readiness. Rapid and frequent Army-wide evolutions in training and range requirements create a high likelihood of future upgrades and construction within these SACs. Evolving training requirements and increasingly sophisticated technologies and weaponry require additional maintenance activities to ensure the sustainability of these ranges over the long term. Similarly, evolving training requirements and changes in technologies or weaponry require adjustments to range configuration and greater distances between firing points and firing targets. Changes of training requirements are often very difficult to foresee, making planning very difficult. Performing environmental review of each new training requirement on an ad hoc basis can lead to protracted delays, high costs, and loss of the "big picture" in terms of cumulative environmental effects (see Objectives 1 and 2, Section 1.3).

Proposed Action 2 constitutes a planning tool intended to enable a timelier, more holistic and environmentally-sensitive response to these changing training mandates. By preemptively examining in detail the areas associated with existing SAC ranges and thereby eliminating much of the time and cost of redundant analysis in the future, Proposed Action 2 would streamline the environmental review process for future projects to be sited in these proposed adaptable use zones. In turn, the availability of a more efficient review process would encourage the siting of new projects within these designated zones, which have already experienced prior disturbance and would help minimizing encroachment into "green" or previously undisturbed areas and avoid the inadvertent establishment of an entirely new SAC (see Objective 3, Section 1.3). Overall, selection of Proposed Action 2 would maximize existing compatible land use within and surrounding USARAK garrisons' SAC ranges while minimizing environmental degradation of USARAK garrisons' range lands as well as costs.

The following adaptable use zones are part of Proposed Action 2 (also see Figures 2-1 through 2-3). (*Note: Range projects design standards often occur in meters and are noted as such*).

Proposed FRA Adaptable Use Zone. Currently, approximately 870 acres within the proposed FRA SAC Range Adaptable Use Zone are already developed or considered human disturbed (ground disturbance) from past military activity. The proposed adaptable use zone would include existing developed SAC range infrastructure and an additional 2,258 acres (approximately 3,128 acres total; Figure 2-1). The following criteria were used to establish the proposed adaptable use zone:

- The boundary was defined by measuring 3,937 feet (1,200 meters) from the distant edge of the current range footprint. The additional distance accounts for anticipated increases in weapon lethality, the in-depth and lateral expansion of range footprints to accommodate larger SDZ,

increased targetry at greater distances and the construction of maintenance trails, maneuver corridors and fuel breaks to enhance training and support wildland fire suppression.

- Terrain limitations (Chugach Mountains) would ultimately require rerouting the frontage road to accommodate expansion of some firing lines to the North, up to within 49 feet (15 meters) of the Glenn highway. USARAK has a requirement to supplement small arms marksmanship training for certain weapons out to 3,280 feet (1,000 meters). Because of the location of the Chugach Mountains, the range cannot expand to the southeast, therefore, USARAK must relocate the firing line northwest to within about 164 feet (50 meters) of the Glenn Highway. Relocation of firing lines would not conflict existing infrastructure or uses off the installation, and the firing direction would be maintained in the direction of the Chugach Mountains.
- Vertical construction (or buildings) occurring forward of the range firing lines is not anticipated, with the exception of berms, target boxes and power supply or target bunkers.
- Anticipated construction activities to the rear and adjacent to the firing lines include control and observation towers, latrines, warm-up and general instruction buildings, maintenance and storage buildings, parking areas, bleacher and mess areas.
- McVeigh Marsh has been excluded from potential development due to its ecological importance.
- Site-specific projects R8 and R11 (Proposed Action 1) are located within the proposed SAC range adaptable use zone.

Proposed FWA Adaptable Use Zone. Currently, approximately 500 acres within the proposed FWA SAC Range Adaptable Use Zone are already developed or considered human disturbed from past military activity. The proposed adaptable use zone would include existing developed SAC range infrastructure and an additional 4,554 acres (approximately 5,054 acres total; Figure 2-2a). The following criteria were used to establish the proposed adaptable use zone:

- The proposed boundary was defined by similar measurements described in FRA using a 3,937-foot (1,200-meter) distance to account for increasing standards in current and future weapons standards.
- Similar to FRA, the proposed zone is bounded by an existing public roadway, Richardson Highway. Existing firing direction would be maintained, away from the highway.
- Additional consideration was given to the dike located beyond the 3,937-foot (1,200 meter) line and anticipated future requirements to monitor traffic on the Tanana River during live fire activities with the M2 .50 caliber machine gun. The Tanana River is considered a navigable waterway and FWA would be required to monitor boat traffic on the waterway and cease firing activities when boats are present in the SDZ. To address boat traffic within the SDZ, FWA proposes either or both of the following actions:
  - Extend the height and width of the dike to make it capable of stopping .50 caliber rounds and thereby mitigating the SDZ, shortening it to within the limits of the SAC range.
  - Place observation towers and warning signs along the banks of the Tanana River. Cameras mounted on the observation towers would track activity on the river through a visual monitors placed at Range Control or at the range location. This would also require the construction of access and maintenance trails out to the location of the towers.
- A limited use zone (1,080 acres) was established within the proposed FWA SAC Range Adaptable Use Zone within the Tanana River (see Figure 2-2a). Any development or change of military use within this area would require separate NEPA documentation (not part of this PEA analysis).
- Site-specific projects W2, W3, W5, W6, W8, W10, W11, W12, W13, W14, W15, W16, and W22 (Proposed Action 1) are located with the proposed SAC range adaptable use zone.

Proposed FWA – YTA Adaptable Use Zone. Currently, approximately 900 acres within the proposed YTA SAC Range Adaptable Use Zone are already developed or considered human disturbed from past military activity. The proposed adaptable use zone would include existing developed SAC range

infrastructure and an additional 7,572 acres (approximately 8,472 acres total; Figure 2-2b). The following criteria were used to establish the proposed adaptable use zone:

- The proposed boundary encompasses three ranges, the Digital Multi-Purpose Training Range (DMPTR), the IPBC and ISBC; all of which will require upgrades to roads, access trails, course roads, and pads to meet training objectives as they are expanded and to maintain movement throughout the courses as mission requirements change.
- All three ranges would require berm and target maintenance as well as trenching for buried cable maintenance.
- Vertical construction (or buildings) of storage, maintenance and additional range operations buildings would be likely.
- Site-specific projects W25, W37 and W38 (Proposed Action 1) are located with the proposed SAC range adaptable use zone.

Proposed DTA Adaptable Use Zone Currently, approximately 1,750 acres within the proposed DTA SAC Range Adaptable Use Zone are already developed or considered human disturbed from past military activity. The proposed adaptable use zone would include existing developed SAC range infrastructure and an additional 8,994 acres (approximately 10,744 acres total; Figure 2-3). The following criteria were used to establish the proposed adaptable use zone: DTA SAC Range Adaptable Use Zone:

- Similar to FRA and FWA, the proposed DTA adaptable use zone requires a distance greater than 3,937 feet (1,200 meters) from the edge of the range footprint due to targetry; set up on the west side of the Delta River.
- Primary construction/disturbance would occur on the east side of the Delta River along the range firing lines.
    - Vertical (buildings) projects include construction of control and observation towers, elevated sniper positions, general instruction, warm up and maintenance buildings, waterless latrines, bleacher areas, covered mess areas, and range operations centers.
    - Horizontal projects include expansion of the range footprint laterally and in depth, construction of access and maintenance trails, construction of berms, target bunkers, trenching for power and fiber cables and parking areas.
- Projects on the west side of the Delta River would primarily be horizontal and would include installation and replacement of targetry, and construction of access and maintenance trails.
- Similar to FWA, a limited use zone (3,024 acres) was established within the proposed DTA SAC Range Adaptable Use Zone within the Delta River (see Figure 2-3). Development or change of military use within this area would require separate NEPA documentation (not part of this PEA analysis).
- Site-specific projects D1, D6, D7, D10, D11, D29, and D30 (Proposed Action 1) are located with the proposed SAC range boundaries.

Figure 2-1

Proposed FRA SAC Range Adaptable Use Zone

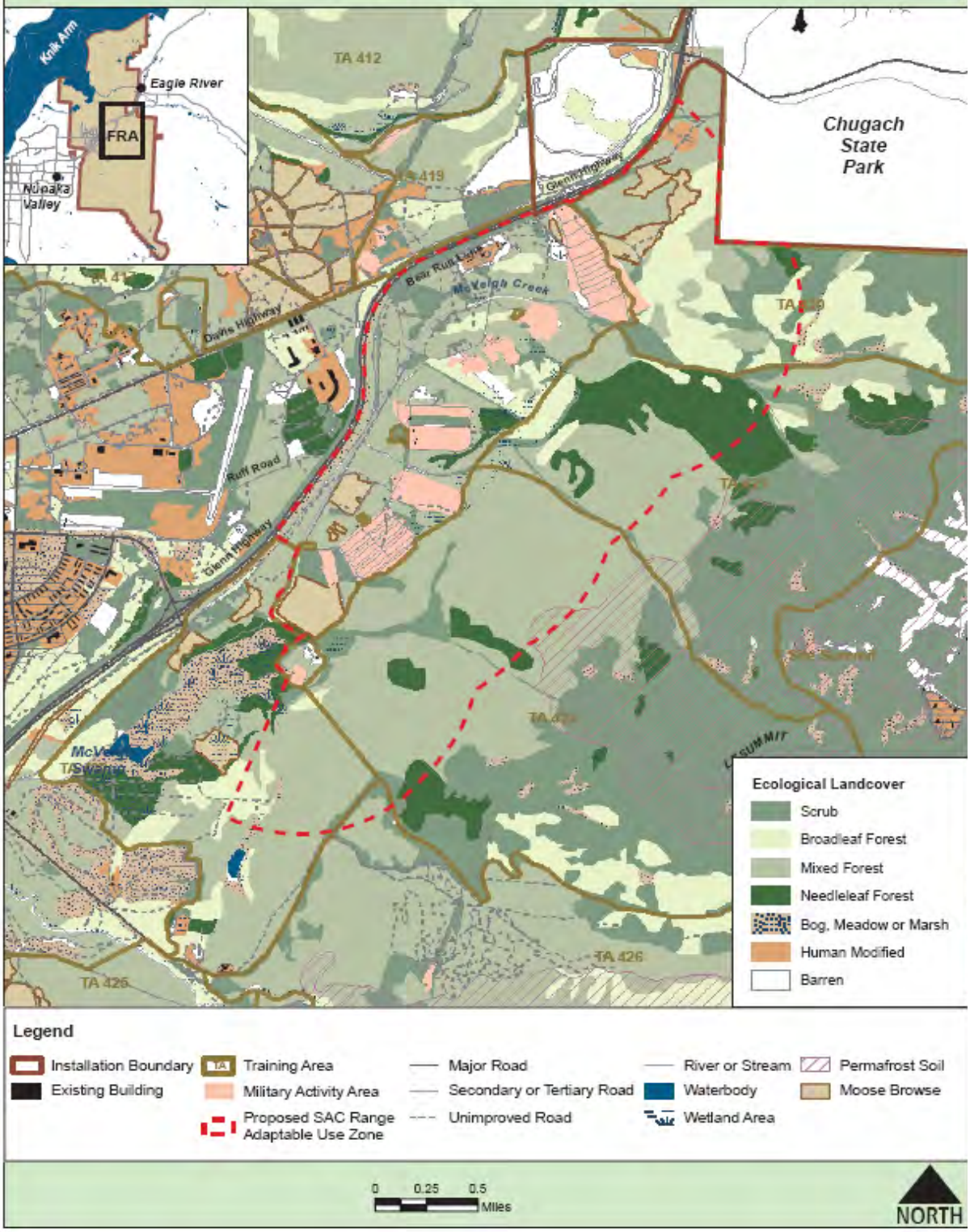


Figure 2-2a

Proposed FWA SAC Range Adaptable Use Zone

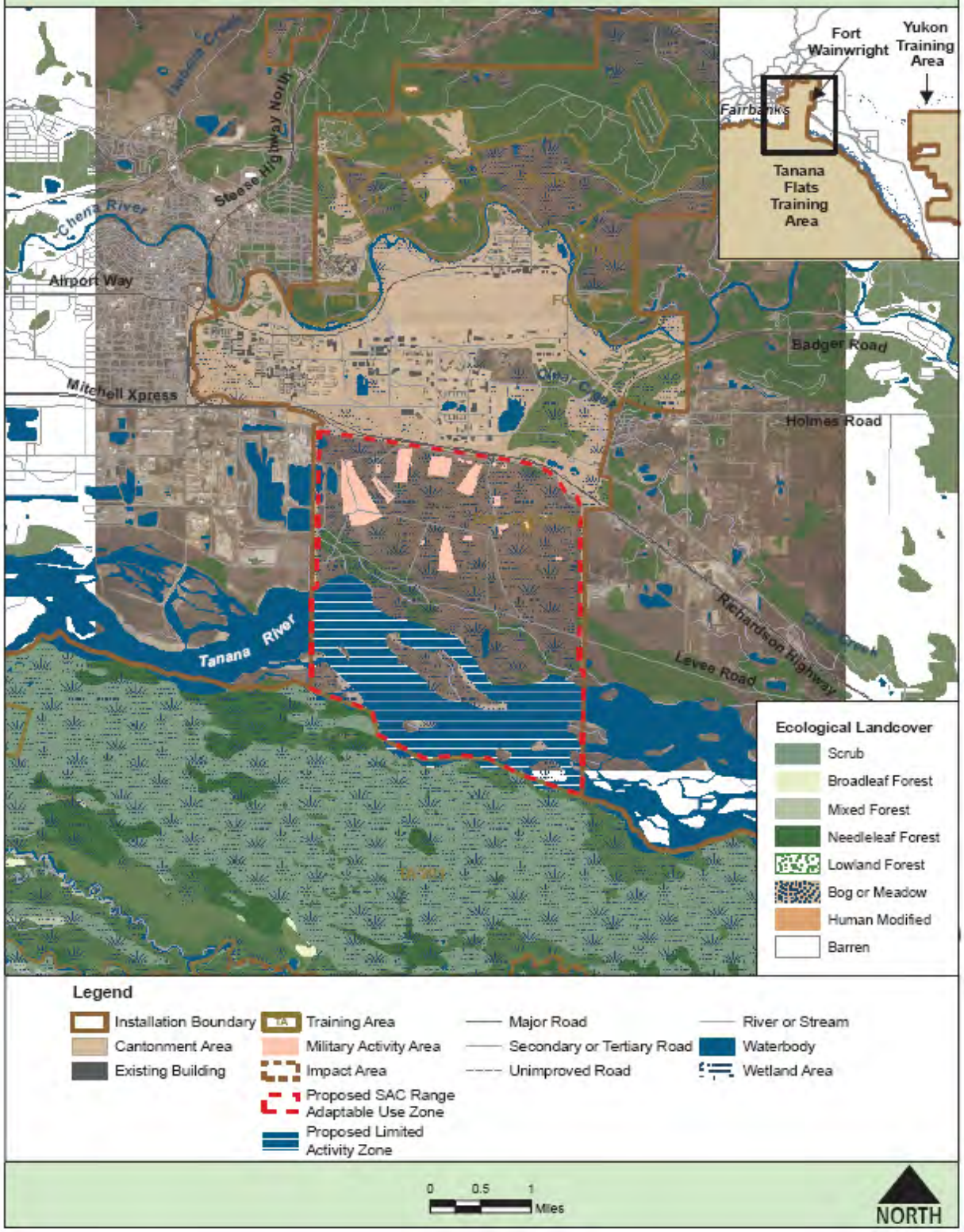


Figure 2-2b

Proposed FWA YTA SAC Range Adaptable Use Zone

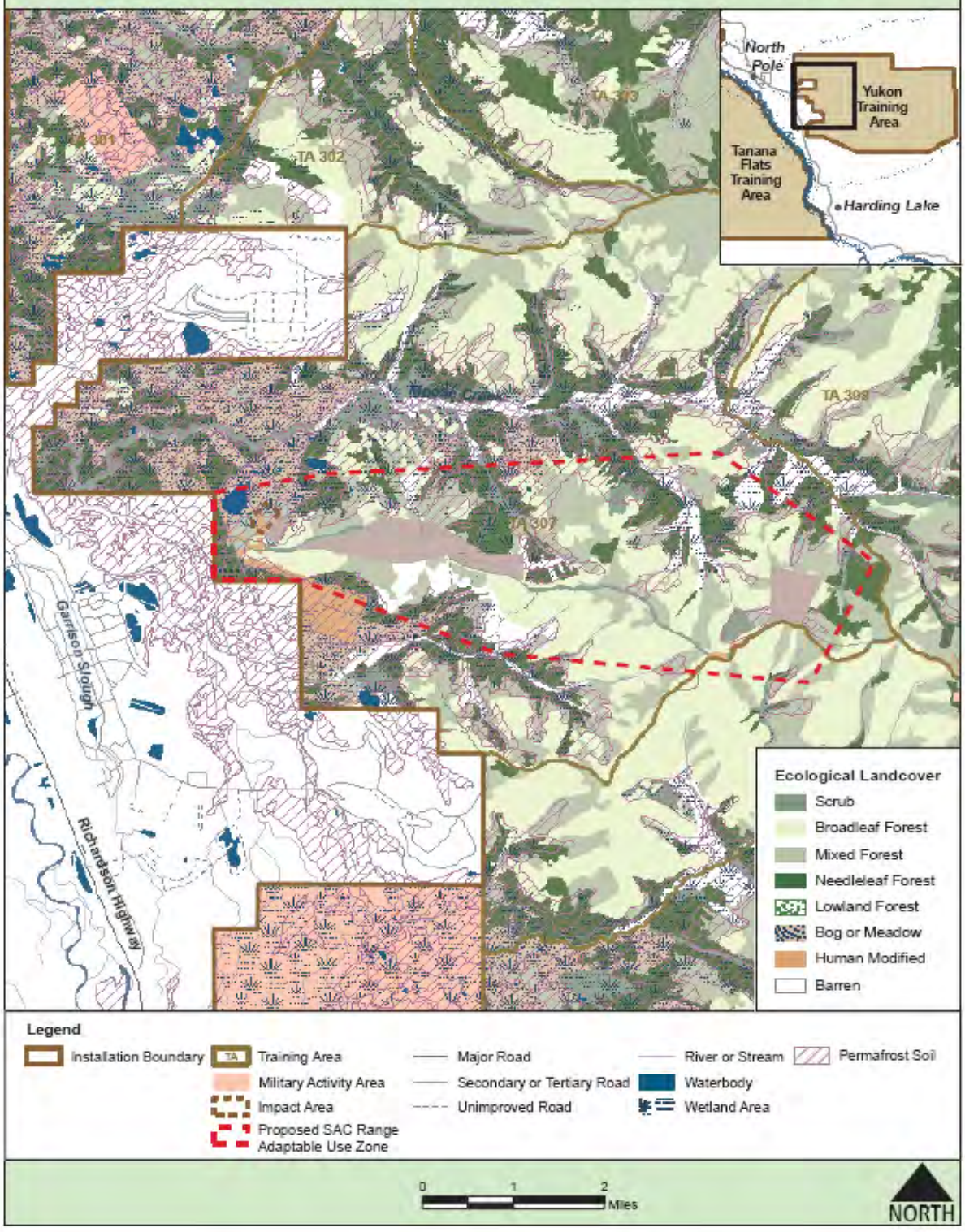
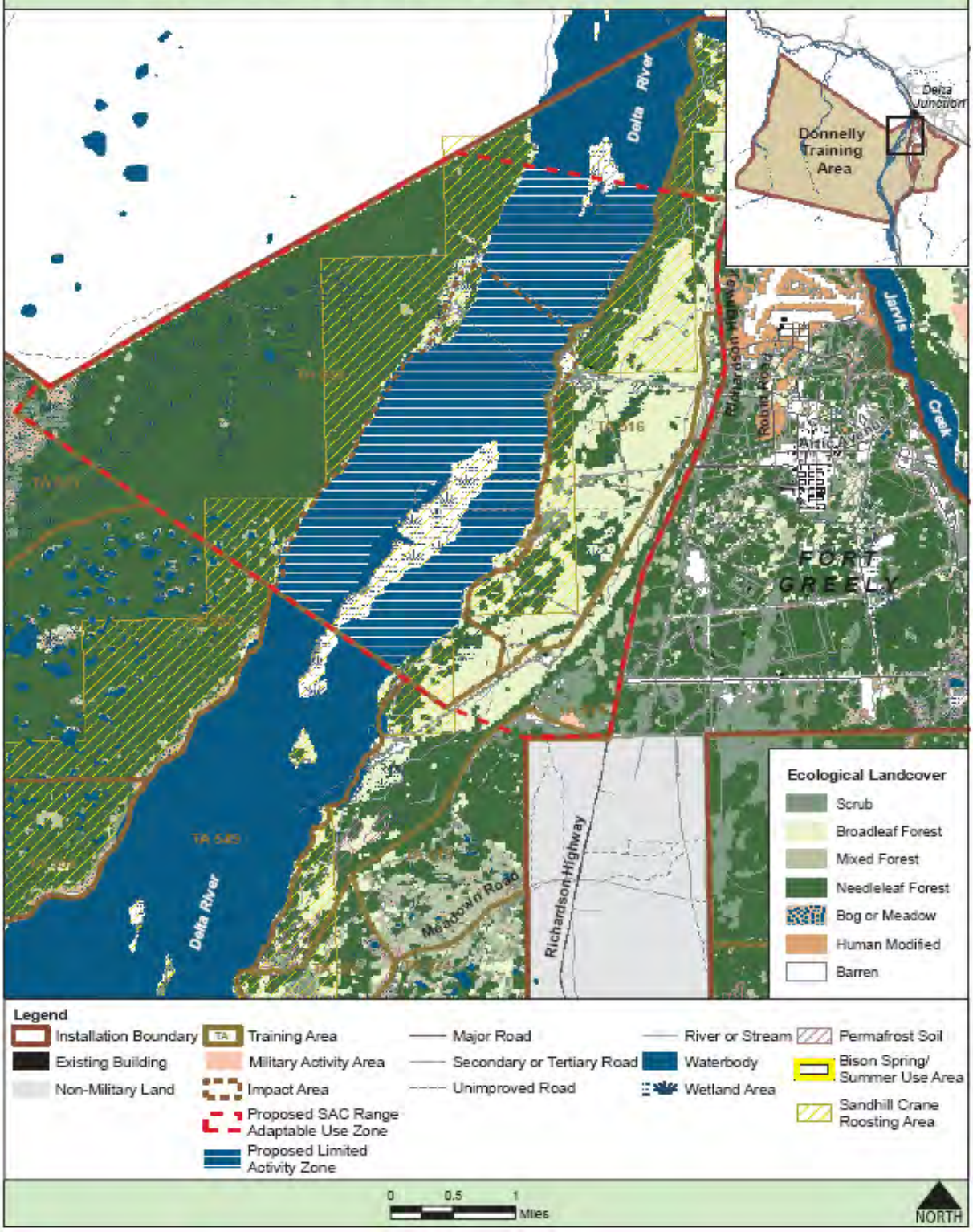


Figure 2-3

Proposed DTA SAC Range Adaptable Use Zone



To accomplish the most detailed environmental analysis possible, Proposed Action 2 will consider the potential impacts associated with a 100 percent disturbance within the designated adaptable use zones. This "worst-case scenario" provides USARAK garrisons with the most flexible planning tool for future development of its SAC ranges as is possible, examining any possible combination of future projects within these areas . As a practical matter, complete development within the adaptable use zone would be detrimental to training and unlikely. For instance, vegetation and natural features serve as natural buffers between individual ranges and infrastructure. Generally ranges are specifically built to incorporate natural environs, and as such existing landscapes are often essential to Soldier training and satisfying range specification.

If Proposed Action 2 is selected in a FNSI, then activities occurring within its boundaries would be eligible for streamlined NEPA review (see Objective 2, Section 1.3). Once an adaptable use zone is adopted, activities occurring within its boundaries would undergo streamlined NEPA review (see Objective 2, Section 1.3). Project proponents would complete a checklist (see Appendix C) in order to verify each project's consistency with what has been analyzed in this PEA. These checklists would be supplied and reviewed by USAG FRA and USAG FWA Environmental (NEPA) staff while conducting their 5-year review cycles to determine whether the cumulative effects of activities within the proposed SAC range adaptable use zones remain insignificant. Based on this checklist and any other details regarding the scope and location of the project, garrison Environmental staff would independently analyze whether each proposed project falls within the scope of this Proposed Action, and would determine the appropriate level of NEPA analysis to tier off this PEA. After PEA tiered analysis approval by the garrison's Environmental Branch Chief and Director of Public Works, NEPA analysis of the project would be complete. This flexibility will increase USARAK's ability to meet training objectives, particularly when changing circumstances require an immediate response that current environmental review procedures cannot accommodate.

All projects within these adaptable use zones would conform to all environmental laws, regulations, and associated permitting requirements. Standard application of existing SOPs and BMPs would help reduce the intensity of impacts to the natural, cultural and human environment contained within these adaptable use zones (see Appendix D).

2.2.3 PROPOSED ACTION 3 – Environmental Stewardship Range Construction Guidelines

Many USARAK range maintenance, upgrade and construction projects entail similar actions occurring in similar environments. Despite these similarities, each of these projects typically requires individual environmental review. Separate review of many small range projects can be redundant and time-consuming, causing unnecessary costs and delays to the detriment of the training mission. To address these issues, USARAK garrisons have developed the following Proposed Action, intended to foster environmental stewardship and maintain range sustainability while accomplishing the following objectives (see Section 1.3):

- Reduce the level of effort and time by avoiding redundant analysis of routine range construction projects;
- Reduce the necessary procedural and management practice decisions required to maintain sustainability; and
- Avoid or reduce environmental impacts during the project planning process.

Proposed Action 3's programmatic approach was developed through several steps. To begin, USARAK identified a list of routine range and training land projects to carry forward for analysis. This list is a compilation of small projects that have recurred in recent years, combined with certain new activities that,

in the professional judgment of USARAK range planners, are likely to be necessary in the future. Appendix E presents a consolidated list and description of these project types. With this list in hand, the preparers of this PEA preemptively analyzed the potential environmental impacts associated with each listed project type, and then developed customized SOPs and BMPs[5] to address these impacts. The resulting SOPs and BMPs would be intended to avoid or minimize the significance of environmental impacts from these projects. This SOP and BMP guidance would be readily available for use in the siting and design of projects and would assist DPTMS with a systematic approach to reduce, avoid and minimize environmental impacts from USARAK range projects at the early planning stages.

The SOPs and BMPs proposed here would not completely replace all existing SOPs and BMPs or significantly alter the process in which planning decisions are made. Rather, Proposed Action 3 would consolidate existing SOPs and BMPs[6] analyzed in previous NEPA documentation[7], introduce new SOPs and BMPs tailored to each project type, and provide a catalyst for the development of new techniques. SOPs and BMPS may evolve over time as range and training requirements evolve; as such, it is the intent of this PEA and Proposed Action to permit USARAK Range Planners and Environmental staff to update and improve SOPs and BMPs where such modification would further reduce environmental impacts. SOPs and BMPs identified in the 2007-2011 INRMP were developed in consultation with State and Federal agencies, and these SOPs and BMPs are continually reviewed on an annual basis. The entire INRMP will be evaluated again by those agencies during the development of the 2012-2017 INRMP. It is important to note that 1) if Proposed Action 3 is not selected, USARAK garrisons would still adhere to existing SOPs and continue the use of BMPs as identified on a project-by-project basis and 2) if Proposed Action 3 is selected it will also be applicable to Proposed Action 1 and Proposed Action 2, if they are selected.

Aware that repeated iterations of generally benign projects could result in undesirable cumulative impacts, USARAK Range Planners and Environmental staff have incorporated certain safeguards within Proposed Action 3 that would eliminate the risk of cumulatively significant adverse impacts. These safeguards include: maintaining current chains of command and communication for new project construction planning; providing guidance on the likely impacts of each proposed project and direction on how to site project so as to avoid or minimize these impacts; introducing a checklist-based review process (see Appendix C) intended to limit cumulative impacts of multiple projects; performing NEPA review of all projects; and conducting independent reviews of cumulative PEA-related impacts on a 5-year cycle. The checklist in Appendix C would be completed on an individual project basis to make sure routine range projects fall within the scope of this PEA and to quantify resource disturbance on an individual project basis. These checklists would be supplied and reviewed by USAG FRA and USAG FWA Environmental staff while conducting their 5-year review cycles to determine whether the cumulative effects of routine range projects remain insignificant.

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[5] Because the subject matter of SOPs and BMPs often overlap, it can be difficult to distinguish between the two. At the risk of over-simplification, SOPs are loosely defined as the protocols by which DPTMS accomplishes projects. Meanwhile, BMPs are loosely defined as a menu of techniques from which DPTMS will select, given the unique conditions of the project site, in order to minimize or mitigate the impact of the project. In this sense, it would be a commonly-used SOP of DPTMS to analyze the suitability of various BMPs and apply those deemed most appropriate.

[6] Appendix G contains the list of SOPs and BMPs which were identified from existing Army protocol, Agency guidance, USARAK garrisons' ITAM Plan, INRMP, ICRMP, and USARAK garrisons' Environmental Staff interviews.

[7] See Section 1.5 for list.

The chain of internal communication among USARAK garrisons Range Planning and Environmental staff has proven successful over the years, and would not significantly change under Proposed Action 3. This existing process helps ensure that each range project receive sufficient review from all relevant subject matter experts. For these reasons, this process, which is depicted below in Figure 3, would continue under this Proposed Action.

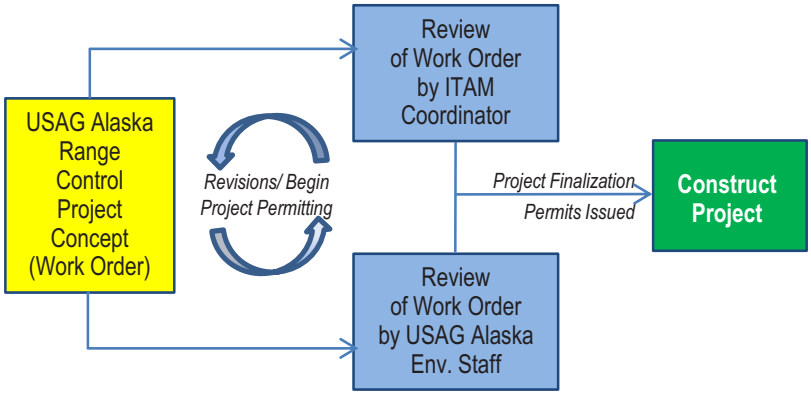

Figure 3. Project Planning and Construction Chain of Command

One notable addition to the early stages of the current range project planning process involves Table 2.2-4 of this PEA. This table provides estimates of potential impact that each project type will have on particular environmental resources. The estimated potential for impact is based on the nature of each project, anticipated project locations, and the professional judgment of Range Planning and Environmental staff as well as environmental consultants. Factors considered in this process include:

- Typical Footprint: Is the routine action a linear action (i.e., utility line, trail, firing lane) which has the potential to traverse numerous ecosystems? What is the typical footprint of disturbance for the routine action?
- Probable Location: Is the routine action fixed to a specific location (i.e., upgrade to existing range infrastructure, culvert tied to a stream)?
- Probable Activity: Does the routine action contain an activity tied to a specific resource (i.e., bridge/stream crossing; land clearing/vegetation removal; prescribed burn/wildfire management; UXO survey/Human Health and Safety)?

A proposed project's anticipated level of impact is a useful planning tool that would also have significant ramifications as to what (if any) siting requirement will apply to the proposed project. A low potential indicates the routine action is either small in footprint, or is not tied to a specific location or resource, and therefore, could be sited to reduce or avoid adverse impacts to resources. A moderate potential indicates the routine action may adversely impact a resource due to the footprint of the routine action and nature of the activity; siting the routine action away from the resource may not be possible. A likely potential indicates that due to the footprint and type of activity, the routine action would not be sited away from the resource. During project planning, this table would guide range planners in determining the resources likely to be affected by routine actions, as well as impact avoidance and minimization measures likely to be necessary. Those routine actions posing a "moderate" or "likely" potential to impact resources would require use of resource SOPs and consideration of BMPs (Appendix D) during the initial planning phase.

Table 2.2-4 Environmental Considerations of Routine Actions

Routine Action	Potential for Routine Action to Impact Resource ○ = low ⊙ = moderate[1] ● = likely[1]										
	Soil Resources	Surface Water & Floodplains	Wetland Resources	Vegetation	Wildlife & Fisheries	Land Use, Energy & Utilities	Recreation & Subsistence	Wildfire Management	Cultural Resources	Noise	Human Health & Safety
Berm Creation & Maintenance	●	⊙	⊙	●	⊙	○	○	○	⊙	○	⊙
Bleacher Enclosure	⊙	○	○	○	○	○	○	○	⊙	○	⊙
Bridge Installation	⊙	●	○	○	⊙	○	⊙	○	○	⊙	○
Building Construction (e.g., General Instruction/Warm-up)	⊙	⊙	⊙	⊙	⊙	⊙	○	○	⊙	⊙	○
Control Tower	○	○	○	○	○	⊙	○	○	○	○	○
Covered Hall	⊙	○	○	⊙	⊙	⊙	○	○	⊙	○	○
Culvert Installation	⊙	●	○	○	⊙	○	○	○	○	⊙	○
Fencing	○	○	○	○	⊙	○	⊙	○	○	○	○
Firing Lane Creation & Maintenance	⊙	○	⊙	●	⊙	⊙	⊙	⊙	○	●	⊙
Firing Line Creation & Maintenance	⊙	○	○	⊙	○	○	○	○	○	●	○
FOB Creation and Maintenance	●	⊙	⊙	●	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Grading/Shaping	●	⊙	⊙	●	⊙	○	○	○	⊙	⊙	⊙
Gravel Pits	●	⊙	○	●	⊙	○	○	○	⊙	●	○
Hardened Target Creation & Maintenance	⊙	○	○	⊙	○	⊙	○	⊙	○	●	○
Hardstands Creation and Maintenance (e.g., bivouac, FP, staging areas)	●	⊙	⊙	●	⊙	⊙	⊙	⊙	⊙	⊙	○
Improvised Explosive Device Defeat	●	○	○	●	⊙	○	⊙	⊙	⊙	●	⊙
Land Clearing & Vegetation	⊙	⊙	⊙	●	⊙	○	⊙	⊙	○	●	○
Latrine	○	○	○	○	○	○	○	○	○	○	○
Mowing	○	○	○	●	○	○	○	⊙	○	⊙	○
OPs Creation & Maintenance	⊙	○	○	⊙	○	○	○	○	○	○	○
Pit Toilets Creation and Maintenance	○	○	○	○	○	○	○	○	○	○	○
Prescribed Fire	○	○	○	●	⊙	○	⊙	●	○	○	○

Table 2.2-4 Environmental Considerations of Routine Actions

Routine Action	Potential for Routine Action to Impact Resource ○ = low ⊙ = moderate[1] ● = likely[1]										
	Soil Resources	Surface Water & Floodplains	Wetland Resources	Vegetation	Wildlife & Fisheries	Land Use, Energy & Utilities	Recreation & Subsistence	Wildfire Management	Cultural Resources	Noise	Human Health & Safety
Road (Trail) Creation & Maintenance	●	●	●	●	●	○	⊙	⊙	⊙	●	⊙
Small Arms Siting	●	●	●	●	●	●	⊙	⊙	⊙	●	⊙
Boundary Line Clearings	○	○	○	⊙	○	○	○	○	○	○	○
Target Emplacement	⊙	○	○	⊙	○	○	○	○	○	●	○
Utility Line Creation & Maintenance	⊙	⊙	⊙	⊙	○	●	○	○	⊙	●	⊙
UXO Surveys	⊙	⊙	⊙	⊙	○	○	○	○	⊙	⊙	●
Wood Pile Burning	○	○	○	○	○	○	○	●	○	○	○
Urban Training Village	●	⊙	⊙	●	⊙	⊙	⊙	⊙	⊙	⊙	⊙

[1]Those routine actions posing a "moderate" or "likely" potential to impact resources would require use of resource SOPs and consideration of BMPs (Appendix D) during the initial planning phase.

To ensure that the SOPs and BMPs identified by Range Planning staff are actually implemented by the contractors executing the projects themselves, Proposed Action 3 would retain current procedures for ensuring coordination between Range Planners, Environmental staff, project engineers, and the contractors hired to perform the work. For instance, project engineers would continue to develop "Environmental Concerns for Construction and Renovation Projects" packages[8] to communicate project designs and environmental concerns to contractors. Another key component of this existing process requires contractors to prepare an Environmental Protection Plan addressing the following environmental concerns: contaminated soils, stormwater, de-watering, wastewater, backflow prevention, noise, hazardous waste/material, solid waste, air quality, fuel storage tanks, restoration of contaminated sites, NEPA, natural resources, and cultural resources. A copy of the Plan must be provided to the Directorate of Public Works (DPW) Environmental for review and comment prior to the start of construction.

Additionally, the checklist-based review process developed in conjunction within this PEA (Appendix C) would further supplement project planning and minimize impacts. Once a location has been determined for a proposed routine action, the project proponent will be required to complete a checklist that poses certain questions as to the scope and potential impacts of the project. This process will guide range planners and project proponents by prescribing applicable SOPs and BMPs, thereby reducing or avoiding

[8] See Appendix F for an example package.

adverse impacts to environmental resources. The results of this checklist review would also inform the garrison Environmental staff's analysis of whether a proposed project (Appendix E) falls within the scope of the analysis of this PEA and, therefore, qualifies for the expedited environmental review. For those projects that indeed qualify, USARAK garrison Environmental staff use the checklist review (Appendix C) as a means to tier off the analysis contained within this PEA. Non-qualifying proposals would require a more detailed NEPA analysis.

Proposed Action 3 would also require USARAK garrisons' Environmental staffs to conduct periodic reviews to verify that projects tiered off this PEA are not impacting the environment in a cumulatively significant manner. These reviews, to occur every 5 years, would evaluate whether or not the cumulative impacts of all projects executed under the Proposed Action 3 process remain below the levels of significance discussed in Section 2.6. In the event that these cumulative impacts were found to be approaching any resource-specific threshold of significance posited by this PEA, USARAK garrison Environmental staff would prepare the appropriate level of NEPA documentation and identify potential measures to avoid or sufficiently minimize and mitigate adverse impacts to a particular resource.

2.3 ENVIRONMENTAL AND SAFETY PRECAUTIONS

As previously stated, a checklist (Appendix C) is being developed in conjunction with this PEA to assist USAG FRA and USAG FWA in identifying potential environment, cultural and human health and safety impacts of projects tiered off this PEA during the project planning and siting process. If not already completed and deemed necessary, surveys would be performed to determine the extent of natural resources, cultural resources and hazardous materials/waste within a specific project location. Formal wetland delineations would be conducted in any areas where activities would result in fill, extensive areas of ground disturbance or impacts to streams. These findings would be coordinated with USACE Alaska District regulatory branch and any required Section 404 permitting would be obtained. In addition, any projects that may affect essential fish habitat (EFH) or managed species under the Magnuson-Stevens Fishery Conservation and Management Act will be coordinated with the National Marine Fisheries Service. Projects affecting EFH would require additional coordination with the ADF&G, Division of Habitat to obtain any necessary Fish Habitat Permits. Necessary archaeological surveys would be required prior to construction activities (or establishment of associated staging areas) within locations that have not already been determined to have lower archaeological potential. As necessary, surveys for surface munitions constituents would be conducted by qualified Explosive Ordnance Disposal personnel within the project areas that have not previously undergone such surveys. Finally, a Preconstruction Environmental Survey (PES) must be completed by the garrisons' Environmental and Master Planning staffs, approved by the Garrison Commander, and certified by the IMCOM Pacific Region Director for any MILCON-funded range project. The purpose of the PES is to identify any environmental constraints toward executing the specific project. Thus, a certified PES for a specific range project serves as important input to the NEPA process to determine the effects of that project on the environment.

If any of the above surveys indicate that contamination, wetlands, or other siting constraints are present within a proposed range activity project area, additional sampling or surveys would be conducted to determine the extent of the constraint, and the results would be used to make a determination on whether the proposed facilities can be reconfigured to avoid such areas or if the siting constraints should be addressed (i.e., avoidance of wetlands or archeological sites). Execution of projects would be consistent with all applicable regulatory and permitting requirements. Activities within the ranges which involve the use of treated contaminated soil or movement of contaminated soil is regulated by the ADEC (18 AAC 75.325(i), 75.370(b)). Accordingly, USARAK garrisons would prepare and submit a work plan following 18 AAC 75.360 prior to any ground disturbance.

For range upgrade and construction activities using construction equipment, a Spill Pollution Prevention and Countermeasure Plan (SPPCP) would be employed to prevent spills and effectively address cleanup strategies before potential spill contaminants from construction equipment could reach surface water or

groundwater resources. In addition, during range construction activities, USARAK garrisons would follow existing SOPs for the handling and transfer of hazardous material, and would adhere to relevant and applicable occupational health and safety standards listed under 29 CFR Parts 1910 and 1920.

Projects involving discharges of stormwater from construction sites that disturb 1 acre or more of land would obtain a National Pollutant Discharge Elimination System (NPDES) permit through the ADEC, Division of Water.

2.4 ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED STUDY

The following alternatives were considered and dismissed based on their inability to meet the objectives outlined in Section 1.3. Therefore, these alternatives would not meet current or future Army training requirements.

2.4.1 Creation of New Training Facilities or Small Arms Range Complexes off Installation Lands

This alternative would require the Army to acquire new property for constructing its training facilities and ranges. This alternative would fail to meet effective Army training requirements (i.e., Soldiers training in proximity to existing range infrastructure and cantonment areas) and would fail to meet Objective 3 (Section 1.3) to maintain sustainability and foster environmental stewardship. In order for this alternative to be viable, the Army would have to construct new or duplicate set of training facilities on lands within close proximity to each installation. The amount of time to construct new ranges could also affect Soldier training and preparedness, therefore, not meeting the objective to maintain a high quality training environment (Objective 1, Section 1.3). Neither the cost, feasibility of obtaining additional lands to support this alternative, nor the potential magnitude of environmental impacts associated with this alternative would allow the Army to consider this alternative for further analysis.

2.4.2 Creation of New Training Facilities or Small Arms Complex Ranges within Installation Lands

This alternative would require the Army to construct entirely new facilities as opposed to upgrading existing facilities and construct new SAC ranges within existing installation boundaries. This alternative would not maximize existing land use and facilities already existing within USARAK garrisons' installations and would fail to meet sustainability goals and foster environmental stewardship. In order for this alternative to be viable, the Army would have to construct new training facilities within its installation boundaries. New training facilities and SAC ranges would require additional amounts of likely undisturbed range land in order to construct these new ranges and would likely require more extensive timeframes to obtain necessary environmental permitting; therefore, this alternative would not meet the object of fostering environmental stewardship (Objective 3, Section 1.3) or adopting a streamlined planning approach (Objective 2, Section 1.3). The amount of time to construct new training facilities and ranges could also affect Soldier training and preparedness, therefore, not meeting the objective to maintain a high quality training environment (Objective 1, Section 1.3). The cost feasibility of construction to support this alternative, the potential magnitude of environmental impacts associated with this alternative through construction on new facilities on previously undisturbed installation lands, and failure to meet objectives would not allow the Army to consider this alternative for further analysis.

2.5 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The Army's preferred course of action is to select all three Proposed Programmatic Actions: Streamline Site-specific Projects in Support of Soldier Training, implement Sustainable Range Planning for SAC Ranges Using Adaptable Use Zones, and implement Environmental Stewardship Range Construction Guidelines.

2.6 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This section summarizes the conclusions reached by the analysis contained within Chapter 3. Table 2.6-1 contains a summary matrix of the No Action and Proposed Actions by comparing the environmental consequences for specific resource categories. The table describes the range of environmental consequences of the No Action Proposed Actions, along with the collective implementation of all Proposed Actions discussed in Chapter 3.0. The qualitative terms used in the matrix are generally defined as:

- **None** – No measurable impacts are expected to occur.
- **Minor** – Short-term but measurable adverse impacts are expected. Impacts may have slight impact on the resource.
- **Moderate** – Noticeable adverse impacts that would have a measurable effect on a resource and are not short-term.
- **Severe** – Adverse impacts would be obvious, both short-term and long-term, and would have serious consequences on a resource. These impacts would be considered significant.
- **Beneficial** – Impacts would benefit the resource/issue.

The Collective Actions column considers the combined environmental consequences for implementation of both Proposed Actions 1 and 2; representing a worst-case scenario. Through choosing not to implement Proposed Action 3, USARAK garrisons would still be required to comply with existing environmental regulations, existing SOPs would continue to be used, and BMPs would be considered on a project-by project basis. USARAK would, however, lack a standardized list of environmental stewardship and range construction guidelines to be used at the early planning stage.

Table 2.6-1 Summary of Environmental Consequences by Proposed Action and Collective Actions

Resource/Issue	No Action	Proposed Action 1: Streamlined Range Construction Projects	Proposed Action 2: Range Planning with Adaptable Use Zones	Proposed Action 3: Environmental Stewardship Range Construction Guidelines	Collective Actions[1]
Soils	Minor	Minor to Moderate with use of BMPs[2]	Minor to Moderate with use of BMPs[2]	Minor to Moderate	Minor to Moderate
Surface Water and Floodplains	None to Minor	Minor to Moderate with use of BMPs[2]	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate	Minor to Moderate
Wetlands	Minor	Minor with use of BMPs[2]	Moderate with use of BMPs[2] and mitigation	Minor to Moderate	Minor to Moderate
Vegetation	Minor	Minor with use of BMPs[2]	(FRA, YTA and DTA) Moderate with use of BMPs[2] (FWA) Moderate with use of BMPs[2] and mitigation	Minor to Moderate	Minor to Moderate
Wildlife & Fisheries	Minor	Minor with use of BMPs[2]	(FRA, YTA and FWA) Minor to Moderate with use of BMPs[2] (DTA) Moderate with use of BMPs[2] and mitigation	Minor	Minor to Moderate

Table 2.6-1 Summary of Environmental Consequences by Proposed Action and Collective Actions

Resource/Issue	No Action	Proposed Action 1: Streamlined Range Construction Projects	Proposed Action 2: Range Planning with Adaptable Use Zones	Proposed Action 3: Environmental Stewardship Range Construction Guidelines	Collective Actions[1]
Land Use, Energy and Utilities	None	Minor	Minor	Minor to Moderate	Minor to Moderate
Public Access, Recreation and Subsistence	None	Minor	Minor	Beneficial/Minor	Minor to Moderate
Fire Management	None	Minor	Beneficial	Beneficial	Beneficial
Cultural Resources	Minor	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate with use of BMPs[2] and mitigation	Minor to Moderate with mitigation	Minor to Moderate
Noise	None	Minor to Moderate	None	Minor to Moderate	Minor to Moderate
Human Health and Safety	Minor	Minor to Moderate with use of BMPs[2]	Beneficial	Minor to Moderate	Minor to Moderate

[1]The term "Collective Actions" refers to the decision to implement all three Proposed Actions.
[2]Best management practices (BMPs) are outlined in Chapter 3 for reduction of adverse impacts.

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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This Chapter describes the impact assessment methodology, the affected environment (existing conditions), and the environmental consequences for the No Action Alternative and Proposed Actions. Several resources were determined not to be affected by the Proposed Action; therefore, a detailed analysis of these topics is not presented in this Chapter (see Section 1.5).

3.1 IMPACT ASSESSMENT METHODOLOGY

Context and intensity are taken into consideration in determining a potential impact's significance, as defined in 40 CFR Part 1508.27. The context of an impact takes into account the affected region (region of influence), the affected interests, and the locality. In the case of the site-specific alternatives presented in Chapter 2.0, the affected region is the general location associated with the alternatives. The region of influence for each of the potentially affected resources is presented in Table 3.1-1 and is based on the potential impacts to the affected resource. For example, the region of influence may focus on the specific location of an alternative, or the installation and surrounding area, or may include the entire watershed. The intensity of a potential impact refers to the impact's severity and includes consideration of beneficial and adverse impacts, the level of controversy associated with a project's impacts on human health, whether the action establishes a precedent for future actions with significant effects, the level of uncertainty about project impacts, or whether the action threatens to violate Federal, state, or local law requirements imposed for protection of the environment. Table 3.1-1 presents resource-specific regions of influence and the relevant factors in evaluating the context and intensity of a potential impact to determine if the impact may be significant.

Impacts that range from none to moderate are considered insignificant. Significant adverse impacts would result from those impacts categorized as severe. In general, the following five categories were used to determine levels of impacts to resources analyzed within this EA:

- **None** – No measurable impacts are expected to occur.
- **Minor** – Short-term but measurable adverse impacts are expected. Impacts may have slight impact on the resource.
- **Moderate** – Noticeable adverse impacts that would have a measurable effect on a resource and are not short-term.
- **Severe** – Adverse impacts would be obvious, both short-term and long-term, and would have serious consequences on a resource. These impacts would be considered significant.
- **Beneficial** – Impacts would benefit the resource/issue.

Table 3.1-1. Factors Considered in Evaluating the Context and Intensity of a Potential Impact

Resource/Issue of Concern	Region of Influence	Factors
Soils	Installation	• **Minor to Moderate (insignificant)** – The degree to which activities cause erosion or otherwise impact the productive capacity of local soils. • **Severe (significant) –** Activities that would result in uncontrolled and irreparable erosion, or that would otherwise preclude the restoration of native plant communities in an area in excess of 5,000 square feet, would represent a significant impact. • **Minor to Moderate (insignificant)** – The degree to which activities disrupt or melt permafrost on an installation and regional level. • **Severe (significant) –** Activities that would result in the uncontrolled or unmanaged melting of more than 5,000 square feet of permafrost within an undeveloped area, or any unintentional or unmanaged melting of permafrost within developed areas, represent significant impacts.
Water Resources (Surface Water and Floodplains)	Watersheds	• **Minor to Moderate (insignificant)** – The degree to which activities would introduce sediment or other pollutants into local and regional waterways; also, the degree to which activities would alter floodplains. • **Severe (significant)** –Activities resulting in the introduction of pollutants that directly or cumulatively degrade water quality standards of a surface water body would be significant impacts. Activities that alter patterns of or increase the intensity of flood water movement would also represent a significant impact.
Wetlands	Jurisdictional wetlands within Installation	• **Minor to Moderate (insignificant)** – The degree to which activities affect installation wetlands. Minor impacts would result from any temporary impacts to wetlands. Activities that permanently impact wetlands but comply with Section 404 and any associated mitigation requirements would represent moderate impacts. In the case of regionally unique or rare wetlands, any temporary or permanent impacts would represent moderate impacts. **Severe (significant)** – Activities that result in an unpermitted loss of jurisdictional wetland function or the loss of more than ten percent of an installation's wetlands would represent a significant impact.

Table 3.1-1. Factors Considered in Evaluating the Context and Intensity of a Potential Impact

Resource/Issue of Concern	Region of Influence	Factors
Biological Resources (Vegetation, Wildlife, and Fisheries)	Installation and surrounding area	• **Minor to Moderate (insignificant)** – The degree to which activities alter the local or regional vegetation patterns. • **Severe (significant)** – Activities that eliminate local populations of rare or sensitive plant species, allow the propagation of non-native plant species, eliminate regional native plant species, eliminate more than 25 percent of an installation's vegetative resources, or segment habitat such that regional wildlife species are jeopardized would represent a significant impact. • **Minor to Moderate (insignificant)** – The degree to which activities affect local plants, animals, and biological conditions or cause regional impacts to habitat. • **Severe (significant)** –Activities that reduce regional wildlife populations below State management levels or eliminate a habitat type from an installation or region would represent a significant impact. • **Minor to Moderate (insignificant)** – The degree to which activities affect bald and golden eagles on or near the installation. • **Severe (significant)** –Activities that violate the Bald and Golden Eagle Protection Act or otherwise cause discernible population-level impacts at the installation or regional level would represent a significant impact. • **Minor to Moderate (insignificant)** – The degree to which activities affect a given waterways' fish population. • **Severe (significant) –** Activities that violate state Fish Habitat permit requirements, ignore recommendation arising from consultation with the National Marine Fisheries Service (NMFS), or otherwise lead to population-level impacts to any fish species within local waterways would represent a significant impact.
Land Use, Energy and Utilities	Installation and surrounding area	• **Minor to Moderate (insignificant)** – The degree to which activities impact local and regional energy, water, and sewer demand and affect regional planning. • **Severe (significant)** – Activities that create energy, water, or sewer demand in excess of existing supply or that require substantial changes to regional development planning would represent a significant impact.

Table 3.1-1. Factors Considered in Evaluating the Context and Intensity of a Potential Impact

Resource/Issue of Concern	Region of Influence	Factors
Public Access, Recreation and Subsistence	Installation and surrounding area	• **Minor to Moderate (insignificant)** – The degree to which activities affect the regional availability of recreational activities, access to public lands, or subsistence opportunities. • **Severe (significant)** – Activities that eliminate the regional availability of a particular recreational or subsistence opportunity, or that result in long-term closure of an important public access point, would represent a significant impact.
Fire Management	Installation	• **Minor to Moderate (insignificant)** – The degree to which activities affect the likelihood or potential severity of wildfire starts, as well as impacts to response capabilities. • **Severe (significant)** – Actions that are inconsistent with the goals and objectives of USAG Alaska's Integrated Wildland Fire Management Plan or that pose risks exceeding response capability would represent a significant impact.
Cultural and Historic Resources (including Aesthetics)	Installation	• **Minor to Moderate (insignificant)** – The degree to which activities affect known or unknown historic, archeological, or other cultural resources. • **Severe (significant)** – Activities that result in the unmitigated loss of any cultural resources, or that result in an historic districts or National Landmark losing its National Register of Historic Places (NRHP) designation, would represent a significant impact.
Noise	Installation and surrounding area	• **Minor to Moderate (insignificant)** – The degree to which activities would produce additional noise detectable to inhabitants and users of an installation and surrounding areas. • **Severe (significant)** –Activities that exceed a 65 A-weighted decibel day night average would represent a significant impact.
Human Health and Safety	Installation and surrounding area	• **Minor to Moderate (insignificant)** – The degree to which activities affect, or pose the potential to affect, the health and safety of persons on and off-post. • **Severe (significant)** – Activities that violate established Federal, State, and local health and safety laws and regulations would represent a significant impact.

Table 3.1-1. Factors Considered in Evaluating the Context and Intensity of a Potential Impact

Resource/Issue of Concern	Region of Influence	Factors
Air Quality[1]	Northern Alaska Intrastate Air Quality Control Regions	• **Minor to Moderate (insignificant)** – The degree to which activities result in measurable changes to local and regional air quality. • **Severe (significant)** – Activities causing an exceedance of regulatory thresholds would represent a significant impact.
Airspace Management[1]	Restricted Airspace	• **Minor to Moderate (insignificant)** – The degree to which activities impact the availability of or traffic within local or regional airspace. • **Severe (significant)** – Activities that would require substantial modification of existing airspace designations or cause overutilization of regional airspace would represent a significant impact.
Socioeconomics, Environmental Justice, and Protection of Children[1]	Installation and surrounding area	• **Minor to Moderate (insignificant)** – The degree to which activities alter levels of employment, disproportionately impact minorities or low-income individuals, or result in health and safety risks for children. • **Severe (significant)** – Activities which adversely affect regional levels of employment or family income, pose disproportionate adverse impacts to minorities or low-income individuals, or causes health or safety risks for children would represent a significant impact.
Traffic and Transportation Systems[1]	Installation and surrounding area	• **Severe (significant)** – The degree to which activities result in increased use of roads or railways, or interferes with the provision of services to the same. • **Minor to Moderate (insignificant)** – Activities that cause recurring traffic delays on roadways, require changes to existing rail schedules, or cause discernible degradation of existing roads or rail facilities would represent a significant impact.
Hazardous Substances	Installation	• **Minor to Moderate (insignificant)** – The degree to which activities increase the potential for environmental or human exposure to hazardous materials and waste. • **Severe (significant)** – Activities that violate applicable regulations or that seriously threaten or cause exposure to hazardous substances capable of causing immanent and substantial endangerment to human health and the environment would represent a significant impact.

[1] USAG FRA and FRA did not carry Air Quality; Airspace Management; Socioeconomics, Environmental Justice, and Protection of Children; Traffic and Transportation Systems; and Hazardous Substances for further analysis in Chapter 3 of this EA (see Section 1.5).

The following methodology was used to determine impact intensity for each Proposed Action:

- **Proposed Action 1** – *Streamline Site-specific Range Projects in Support of Soldier Training.* GIS mapping was used to determine the proximity of sensitive resources and human disturbed areas to the proposed project locations (Figures B-1a through B-3h, see Appendix B). Based on the proposed project components, anticipated acreage of disturbance (Tables 2.2-1 through 2.2-3) and proximity to resources, a tabular assessment was made regarding the type and intensity of adverse impact, by resource area (i.e., for wetlands, Section 3.4, see Table 3.4-1a through Table 3.4-1c), resulting from each proposed project. SOPs and BMPs (Proposed Action 3) were also considered as mitigation measures for reducing intensity of impact. As Proposed Action 3 contains a compilation of SOPs and BMPs, Appendix D serves as a reference for measures to avoid or reduce impacts identified within Chapter 3 for each resource area. Even if Proposed Action 3 is not selected, USARAK garrisons would still be bound to existing SOPs and use applicable BMPs as mitigation measures for reduction and avoidance of Proposed Action 1 site-specific projects.

- **Proposed Action 2** – *Sustainable Range Planning for Small Arms Complex Ranges Using Adaptable Use Zones*. GIS mapping was used to characterize resources within proposed SAC range adaptable use zones at each installation. All resources within these proposed boundaries were determined to have the potential for disturbance from future SAC range planning activities. Sensitive resources within these boundaries were quantified and any sensitive resources directly adjacent to these boundaries were identified (i.e., for wetlands, Section 3.4, see Section 3.4.2.3). The benefits to concentrating SAC range activities and related training within these boundaries compared to available range lands was also considered. Similar to Proposed Action 1, USARAK garrisons would still be bound to existing SOPs and use applicable BMPs as mitigation measures for reduction and avoidance of future actions within the proposed adaptable use zones.

  This Proposed Action considers a "worst case scenario" that all resources within the proposed adaptable use zone would be impacted in the future to provide DPTMS with the flexibility to develop areas within the proposed adaptable use zone, as required, to meet Soldier training objectives. The worst case scenario, however, would be unlikely as Soldier training requires varying degrees of natural overhead protection and concealment (trees/bushes) for maneuvers, inherently requiring the retention/protection of some resources within the proposed adaptable use zone. Overhead protection provides safety from both direct and indirect live-fire, while concealment provides protection from enemy detection. In addition, SAC ranges include SDZs associated with the firing range safety fan of firing ranges. The actual sizes of SDZs vary and are based on factors such as weaponry and terrain. SDZs are typically established a considerable distance (upwards of 1 mile) from established firing points. Development of structures within SDZs would likely be limited due to safety concerns.

- **Proposed Action 3** – *Environmental Stewardship Range Construction Guidelines*. A list of SOPs and BMPs, by resource area, was developed in coordination with USAG FRA and USAG FWA and other Federal, state and local agencies (see Section 1.6). In order to evaluate the effectiveness and utilization of proposed SOPs and BMPs, a tabular assessment of potential type and intensity of adverse impact, by resource area, was determined using routine range actions (Appendix E). Factors of these routine range actions such as the typical footprint, probable location and probable activity were examined to determine the potential for impact to each resource area and the possible intensity of the impact. SOPs and BMPs (Appendix D) were then considered for reducing intensity of impacts from theses routine range actions (i.e., for wetlands, Section 3.4, see Table 3.4-3 "Implementation of SOPs and BMPs" column). The SOPs and BMPs were developed from existing USARAK garrisons protocol and agency comment (see Section 1.6).

3.2 SOILS

Soils are formed on bedrock and sediment through a complex interaction between climate, vegetation, biological organisms, parent materials, and topography. In Alaska, climate is the dominant factor, which dictates how the other factors interact with each other. Human activity can also affect soil formation and stability. When the soil fabric is disrupted through construction, repetitive activities, or removing vegetation, increased erosion can reduce the soil's quality and stability. The properties of the soil arbitrate what structures and activities can be performed in an area, and will contribute to the selection of project siting.

A major component of Alaskan soils is permafrost, which is defined as soil, silt and rock that remains frozen year-round. Depending on the location, permafrost layers occur in varying thicknesses from less than a foot to more than 150 feet. Permafrost is particularly susceptible to degradation from human activity as it requires an insulating layer of peat and vegetation between the frozen material and warm air in the summer. If enough vegetation is removed, the permafrost soils would melt and thermokarst can occur. Differential melting causes hummocks and mounds to form, with water collecting in depressions. Soil structure, formerly contained by ice crystals, starts to break down, causing mudflows on sloping ground. Once thermokarst starts in a particular area, it cannot be reversed, and the surficial permafrost soils are destroyed.

3.2.1 Affected Environment

3.2.1.1 Fort Richardson

FRA soils are primarily shallow, immature, and tend to be nutrient-poor, specifically of nitrogen and phosphorous. The soils have formed on glacial moraines, outwash, tidal flats and peat bogs, which contributes to a wide variety of engineering properties and soil types. The soils do not retain water very well, which is a limiting factor of plant growth during the dry periods. The Proposed Actions would be located within the lowland soils, which is in a separate climate zone from the adjacent Chugach Mountains. Lowland soils have less developed horizons because of lower precipitation, localized winds and periodic mid-winter thaws. The parent materials are sandy and gravelly glacial outwash deposits, and loamy to gravelly glacial drift. Soils in this area have developed a thin gray, leached surface horizon over reddish brown subsoils, described as acidic spodosols. In saturated areas, peat may form over the soil horizons (USARAK, 2004a).

Less than 1 percent of FRA consists of permafrost soils. Permafrost is located in sections of forested bogs near Muldoon Road, and in increasing frequency in higher elevations. Less than 0.1 percent of the installation has been affected by thermokarst in the last 200 to 300 years (USARAK, 2007b).

3.2.1.2 Fort Wainwright

FWA soils are weakly developed because of the cold northern climate and the young glacial and alluvial parent materials. The soil properties at the installation are dictated by their parent materials, either alluvium, bedrock or loess. Unless they have been disturbed by human activity or flooding, most of the soils have some organic layer over the soil column. There are a very high percentage of permafrost soils on the installation, however it varies based on the elevation and topography of the site (USARAK, 2004a).

Most of the soils at Main Post of FWA are Chena alluvium, formed on the unconsolidated silt-gravel deposits from the Chena and Tanana Rivers. Soils in the Tanana Flats Training Area are organic, wet and cold, and are formed on the unconsolidated materials from the mountain ranges. The parent material varies from coarse gravel at the heads of alluvial fans, to finer silt and sand to the north and at the base of the fans. The drainage also ranges from well drained in areas with coarse materials to poorly drained lowland areas. Soils on the YTA form differently based on which side of the ridges they form on. South

slopes consist of well-drained silt loams, while north-facing slopes are shallow, gravelly, silt loams. Soils closer to the drainage have peat over silt loam (USARAK, 2004a).

Permafrost occurs in discontinuous area beneath the surface on the Main Post and in TFTA. In some locations in the TFTA, permafrost can occur within 20 inches of the surface, and stretch down to almost 128 feet. There is also extensive and massive thermokarst (42 percent of the permafrost area) occurring in and around Tanana Flats within the last 200 years. Birch forests are particularly susceptible to the collapsing permafrost soil structure that occurs during thermokarst. The YTA is in a discontinuous permafrost zone, where permafrost is extensive, but not laterally connected. The permafrost is thickest in valley floors, and is generally absent on southern-facing slopes and mountain ridges. Unfrozen zones are also found below most large lakes and rivers in this area (USARAK, 2004a).

The majority of range land soils have not been affected by military training. However, construction has the greatest negative influence on soil stability and productivity (USARAK, 2004a). The area around small arms ranges, roads and buildings is particularly susceptible to soil compaction and erosion. Increased erosion can also be attributed to explosion-related burning, as seen in the Stuart Creek Impact Area (USARAK, 2004).

3.2.1.3 Donnelly Training Area

DTA soils are derived from glacial deposits, reworked by streams and floods in the lowland areas, with discontinuous permafrost. In some locations the soils are then overlain by loess. The extreme topographic variability and varying parent materials contributes to a wide variety of soil associations across the installation. Soils around river floodplains tend to be very wet, due to a high water table, dominated by organic deposits, and occasionally underlain by permafrost deposits. The upland foothills tend to have moist loamy soils, while the mountain ridge soils are thin, rocky and tend to be unvegetated. The lowland soils have a moderate erosion potential, while the upland soils are have a moderate to high erosion potential. Depending on their location, the parent materials in the installation's soils are derived from glacial moraines, outwash terraces and loess deposits (USARAK, 2004a).

Soils at GRTA are described as poorly drained with mottled gray, gravelly silt or sandy loam beneath the thick surface mat of peat. Soils on the western portion of BRTA were developed in glacial till and most are poorly drained. Bedrock outcrops on peaks and ridges and loose rubble occur in many high areas. Well-drained soils have developed in very gravelly material at the foot of high ridges and on some south-facing slopes and hilly moraines at lower elevations (USARAK, 2004a).

The permafrost at DTA is patchy and irregular, and particularly dependent on topography changes. Prediction of permafrost locations is poor due to DTA's extreme variability and complex interaction between microclimate, vegetation and topography. Isolated patches of permafrost are found in areas under sandy gravel from 2 to 40 feet below ground level, with thickness varying from 10 to 118 feet. A relatively large portion of the landscape has discontinuous permafrost, but existing and abandoned river channels, lakes, wetlands, and other low-lying areas are likely permafrost-free (USARAK, 2004a). GRTA has a shallow permafrost table (below 10 to 20 inches) that occupies a broad outwash plain (USARAK, 2004a). Permafrost conditions at BRTA are assumed to be similar to those of DTA.

Only a small proportion of DTA is presently affected by permafrost degradation, which is indicated by the presence of thaw ponds. Permafrost degradation appears to be less compared to TFTA due to the cooler climate and higher elevations, and the prevalence of thaw-stable, gravelly soils at DTA (USARAK, 2004a). However, areas dominated by loess or other silty sediments may be more vulnerable to permafrost degradation.

3.2.2 Environmental Consequences

Direct impacts to soils are further discussed by the No Action and Proposed Action alternatives below. Indirect impacts resulting from soil disturbance including those to water quality, wetlands, vegetation, fisheries habitat and cultural resources are discussed in Sections 3.3.2, 3.4.2, 3.5.2, 3.6.2, and 3.10.2, respectively.

The following categories will be used in assessing the intensity of potential direct impacts resulting from the Proposed Action.

- **Minor to Moderate (insignificant)** – The degree to which activities cause erosion or otherwise impact the productive capacity of local soils or the degree to which activities disrupt or melt permafrost on an installation and regional level.
- **Severe (significant) –** Activities that would result in uncontrolled and irreparable erosion, or that would otherwise preclude the restoration of native plant communities in an area in excess of 5,000 square feet, would represent a significant impact. Activities that would result in the uncontrolled or unmanaged melting of more than 5,000 square feet of permafrost within an undeveloped area, or any unintentional or unmanaged melting of permafrost within developed areas, represent significant impacts.

In addition, the following bullets provide general descriptions of the type of impacts used in the soils impact analysis:

- *Permanent loss of soil* includes loss of soils due to direct impacts that include creation of impervious surface areas, excavation, or placement of fill material (e.g., gravel).
- *Soil compaction* includes disturbance to soils that affect soil structure (e.g., placement of heavy machinery over soil). This type of disturbance does not cause a loss in soil acreage, however, it can adversely affect the functioning of the soil such as the ability to filter water or support vegetative growth.
- *Wind erosion (construction)* includes the loss of the upper soil horizons by wind due to exposed soils from construction.
- *Water erosion (construction)* includes the loss of the upper soil horizons by runoff due to exposed soils from construction.
- *Permafrost impacts* include the degradation of permafrost soils through melting of permafrost and subsidence of soils.
- *Soil stability (ongoing use)* includes the potential disruption of soil stability during operations resulting from loss of vegetative cover and would likely contribute to conditions prone to wind and/or water erosion.
- *Beneficial impact* includes those actions that would benefit soils by removing or reducing the potential for soil disturbance during operations.

3.2.2.1 No Action Alternative

Under the No Action Alternative, USAG Alaska garrisons would not implement one or more of the Proposed Actions. Range construction projects would still continue, as needed, and would undergo a project-by-project evaluation under NEPA. Impacts to soils under the No Action Alternative may be increased; no accepted list SOPs and BMPs would be established as protocol and guidance for reducing and avoiding soil impacts during range maintenance, upgrade, and construction projects. In addition, no designation of an adaptable use zone for the SAC ranges would likely result in inefficient land use. The future footprint of disturbance caused by SAC range upgrades and construction would have the potential to be located in multiple locations throughout the range lands as opposed to concentrated within an adaptable use zone; causing a greater potential of soil erosion. Existing BMPs, however, would still be utilized to stabilize soils during and after construction and range land monitoring and repair under the ITAM Program would continue, reducing overall adverse impacts to minor.

3.2.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.2.2.2.1 Fort Richardson

Due to the small footprints of disturbance and/or nature of activity (lack of ground disturbance) of projects R2, R9, R10, and R11 adverse impacts would be minor and managed during construction and operations of these proposed projects.

Based on the size and nature of activity, the remaining projects (R1, R3, R4, R5, R6, R7, and R8) have the potential to cause significant adverse impacts to soil resources through uncontrolled and irreparable erosion in excess of 5,000 square feet. In addition, due to the presence of permafrost soils, R7 has the additional potential to cause significant adverse impacts to permafrost through the uncontrolled or unmanaged melting of more than 5,000 square feet of permafrost. All of these 7 projects involve either construction for new facilities or improvements to existing road infrastructure, therefore; the potential to exceed this threshold of significance would likely occur during the construction stages. Adverse impacts to soil resources from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of the following BMPs during construction and site restoration:

- During project design, permafrost and highly erodible soils would be avoided whenever possible to reduce the potential for uncontrolled erosion and permafrost degradation.
- During construction, the Garrison Dust Control Plan would be used to control wind erosion through pre-grading planning, pre-grading watering, use of chemical stabilizers, wind fencing/sheltering, wind awareness, cover haul vehicles, and reduced speed limits/vehicular trips during construction.
- During construction, footprints would be minimized within permafrost areas, and in areas of temporary disturbance, vegetative cover would be established as soon as possible following disturbance to reduce impact to permafrost and the potential for permafrost melting.
- Time tree and vegetation removal activities, when feasible, during winter months when soils are frozen and hand clear or hydro-axe for vegetation clearing located within sensitive soils during non-winter months to reduce the level of disturbance to these sensitive soils.
- Following construction, seeding and fertilizing, as necessary, would be performed immediately following construction to aid in the establishment of protective vegetative cover. Manual planting or geotextiles, as necessary, would be used in areas susceptible to higher wind erosion to aid in the establishment of protective vegetative cover. These combined measures would provide a protective vegetative layer to stabilize soils which are temporarily disturbed during construction.

Besides disturbances during construction, Projects R1 and R5 would have the potential to cause significant adverse impacts to soils during operations. These projects involve establishment of new training areas which would experience recurrent use and could degrade over time to exceed the 5,000 square foot thresholds. Projects R3, R4, and R7 all provide improvements to existing roadways, therefore, these projects would likely result in net beneficial impacts to soil resources through repairing and upgrading existing segments to maintain sustainable use. Adverse impacts to soil resources from recurrent future use would be mitigated to insignificant (minor or moderate) adverse impacts through use of the following BMPs during operations:

- Monitoring and rehabilitation efforts of RTLA and LRAM components of the ITAM Program would be used to determine effects of training on soils and adjust training use to prevent significant adverse soil impacts.

- Impacts caused by off-road vehicle use would be minimized by timing, as much as is practical, and schedule training activities to coincide with the times of the year during which the lands are more resilient. For example, snow-pack would minimize the impacts to soils and permafrost compared to spring break-up when soils are more susceptible to erosion.
- Existing trails and roadways would be improved (Projects R3, R4, and R7) to increase the resiliency and capacity for the land to absorb traffic. Improvements would include stormwater management control such as incorporation of vegetated swales adjacent to improved trails and roadways to manage sediments and runoff.

Table 3.2-1a shows the anticipated level of impacts for the FRA site-specific projects with the implementation of the BMPs discussed above. Due to the large amount of surface disturbance associated with FRA roads improvements (Project R7), the potential exists for moderate loss (up to 390 acres) of soils from road upgrades; therefore, there would be a greater potential for moderate impacts due to soil compaction and increased erosion potential during construction (see Section 3.3.2.2.1 for indirect impacts to receiving surface water resources). Other projects could result in minor adverse impacts of soil loss and soil compaction during construction (R3, R4, R5, R8, and R11).

Project R5 would introduce a new bivouac area for Soldiers to use during training, therefore, the project has potential to adversely impact soils by increasing the potential of erosion; however, incorporation of hardened training surfaces associated with the bivouac area would reduce impacts to none or minor. None of the other projects are anticipated to cause adverse soil impacts from operations as they all involve either new building construction which would not involve outside Soldier training (R1, R6, R8, R10, and R11), or involve upgrades to existing training infrastructure which would not involve additional operational surface areas used by Soldiers during training (Projects R3, R4, and R7), and would therefore, not be anticipated to cause additional levels of soil loss, compaction, or erosion during operations.

Some projects would have slight beneficial impacts to soils if they are completed. Projects R3, R4, and R7 would help to prevent erosion by upgrading and replacing the existing roads, reducing the need for off-road maneuvering. Project R5 could benefit soils through providing hardened surfaces for Soldiers to perform operations, reducing potential for erosion and soil compaction outside of the hardened surface areas.

Table 3.2-1a Summary of Soil Impacts from Site-specific FRA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Approximate acreage of potential soil impact/Permafrost impact	Permanent loss of soil	Soil compaction	Wind erosion (construction)	Water erosion (construction)	Permafrost impacts	Soil stability (operations)	Beneficial	***Overall Impact***
(R1) FRA UAC[1]	10/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(R2) Dig a well at the ISBC Site	0.01/0	○	○	○	○	○	○	○	○
(R3) Raise the ISBC Road	5/0	⊙	⊙	⊙	⊙	○	○	✪	⊙

Table 3.2-1a Summary of Soil Impacts from Site-specific FRA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Approximate acreage of potential soil impact/Permafrost impact	Permanent loss of soil	Soil compaction	Wind erosion (construction)	Water erosion (construction)	Permafrost impacts	Soil stability (operations)	Beneficial	***Overall Impact***
(R4) Provide Turnaround IPBC	0.5/0	⊙	⊙	⊙	⊙	○	○	✪	⊙
(R5) Create Bivouac Site UAC	5/0	⊙	⊙	⊙	⊙	○	⊙	✪	⊙
(R6) Range Operation Complex	20/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(R7) FRA Roads	390/11	◎	◎	◎	⊙	⊙	○	✪	◎
(R8) Vehicle Storage/Maintenance Building[1]	1/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(R9) Install Flagpole ER Gate	0.01/0	○	○	○	○	○	○	○	○
(R10) Waterless Arctic Latrine	0.5/0	○	○	○	○	○	○	○	○
(R11) Covered Bleachers[1]	0.5/0	○	○	○	○	○	○	○	○
Total Approximate Acreage	**433/11**								

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to verify the absence of permafrost and to determine erosion potential of soils once a footprint has been established. Although R7 would have a moderate impact on potentially up to 390 acres of soils, impacts from construction and future maintenance activities would be staggered through time (as funding becomes available to upgrade road segments) and overall impacts would likely be minor and managed during construction. All projects disturbing over 1 acre of land would also be subject to an ADEC Construction General Permit and development of a Storm Water Pollution Prevention Plan (SWPPP), reducing the potential from soil erosion during construction and indirect impacts to surface water quality (also see Section 3.3.2).

3.2.2.2.2 Fort Wainwright

Due to the small footprints of disturbance and/or nature of activity (lack of ground disturbance) of projects W19, W21, W22, W28 and W32, adverse impacts would be minor and managed during construction and operations of these proposed projects.

Based on the size and nature of activity, the remaining projects (W2, W3, W4, W5, W6, W8, W9, W10, W11, W12, W13, W14, W15, W16, W17, W18, W20, W23, W24, W25, W26, W27, W29, W30, W31, W33, W34, W35, W36, W38, W39, W40, and W42) have the potential to cause significant adverse impacts to soil resources through uncontrolled and irreparable erosion in excess of 5,000 square feet. In addition, due to the presence and extent of permafrost soils, Projects W25, W31, W34, W37, W39, and W40 have the additional potential to cause significant adverse impacts to permafrost through the

uncontrolled or unmanaged melting of more than 5,000 square feet of permafrost. All of these 37 projects involve either construction for new facilities or improvements to existing road infrastructure, therefore, the potential to exceed this threshold of significance would likely occur during the construction stages. Adverse impacts to soil resources from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of BMPs during construction and site restoration, similar to those discussed in Section 3.2.2.2.1.

Besides disturbances during construction, Projects W1, W5, W9, W11, W12, W23, W24, W25, W30, W33, W35, and W42 would have the potential to cause significant adverse impacts to soils during operations. These projects involve establishment of new training areas which would experience recurrent use and could degrade over time to exceed the 5,000 square feet thresholds. It is important to note that projects W5, W11, W12, W14, W17, W18, W24, W29, W30, W31, W33, and W39 all contain components which improve existing roadways, therefore, these projects would likely result in net beneficial impacts to soil resources through repairing and upgrading existing segments to maintain sustainable use. Adverse impacts to soil resources from recurrent future use would be mitigated to insignificant (minor or moderate) adverse impacts through use of BMPs during project operations, similar to those discussed in Section 3.2.2.2.1.

Table 3.2-1b shows the anticipated level of impacts for the FWA site-specific projects with the implementation of the BMPs. Due to the large amount of surface disturbance associated with FWA road improvements (Projects W5, W31, and W39), there would be a greater potential for moderate impacts due to soil compaction and increased erosion potential during construction (see Section 3.3.2.2.2 for indirect impacts to receiving surface water resources). In addition, due to the size and nature of gravel pits (soil removal and exposed soils), the potential exists for moderate soil loss and erosion from Project W35. All remaining projects could result in minor adverse impacts of soil loss and soil compaction during construction (see Table 3.3-1b).

Projects W1, W5, W9, W24, W25, W30, W33, W35, W36, and W42 would introduce new areas for Soldiers to use during training, therefore, these projects have the potential to adversely impact soils by increasing the potential of erosion; however, incorporation of hardened training surfaces associated with these projects would reduce impacts to none or minor. None of the other projects are anticipated to cause adverse soil impacts from operations as they all involve either new building construction which would not involve outside Soldier training (W2, W4, W6, W7, W8, W10, and W37), or involve upgrades to existing training infrastructure which would not involve additional operational surface areas used by Soldiers during training (W3, W11, W12, W13, W14, W16, W17, W18, W20, W26, W27, W29, W31, W34, W39, and W40), and would, therefore, not be anticipated to cause additional levels of soil loss, compaction or erosion during operations.

The following projects could have adverse impacts to permafrost soils which are located within the vicinity: W25, W34, W37, W39, and W40. Impacts, however, would be minor as these areas are located within or adjacent to existing disturbed areas and would be reduced by siting projects away from permafrost and would limit soil disturbance and vegetation cover removal.

Some projects would have slight beneficial impacts to soils if they are completed. Projects W5, W11, W12, W14, W17, W18, W24, W29, W30, W31, W33, W39, and W40 would help to prevent soil erosion by upgrading and replacing the existing roads, reducing the need for off-road maneuvering. Projects W20, W23, W25, W29, W30, W33, W36, and W42 could benefit soils through upgrading to provide hardened surfaces for Soldiers to perform operations, reducing indirect adverse effects from erosion such as turbidity and sedimentation.

Table 3.2-1b Summary of Soil Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Approximate acreage of potential soil impact/Permafrost impact	Permanent loss of soil	Soil compaction	Wind erosion (construction)	Water erosion (construction)	Permafrost impacts	Soil stability (operations)	Beneficial	***Overall Impact***
FWA									
(W2) Ammunition Breakdown Buildings[1]	<1/0	⊙	⊙	⊙	⊙	○	○	○	○
(W3) Demo Pond Range[1]	1.8/0	⊙	⊙	⊙	⊙	○	○	✪	⊙
(W4) General Instructional Building CACTF	0.2/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(W6) Indoor Shooting Range[1]	2/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(W8) Range Operation Complex [1]	2.1/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(W9) FWA C130/17 Mock-up	2/0	⊙	⊙	⊙	⊙	○	⊙	○	⊙
(W10) Welding/ Carpentry Shop[1]	2.5/0	⊙	⊙	⊙	⊙	○	○	✪	⊙
(W11) Harden Access to Arctic Village[1]	13/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(W12) SAC East Expansion[1]	10/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(W13) KD Range Expansion[1]	22/0	⊙	⊙	⊙	⊙	○	○	○	⊙
(W14) Pave Range Road[1]	18.4/0	⊙	⊙	⊙	⊙	○	○	✪	⊙
(W15) SAC Security Fence[1]	17.5/0	○	⊙	⊙	⊙	○	○	○	⊙
(W16) Rebuild MRF Firing Line[1]	2.6/0	○	○	⊙	⊙	○	○	○	○
(W17) Combined Arms Collective Training Facility	9/0	⊙	⊙	⊙	⊙	○	○	✪	⊙
(W18) Drivers Training Course Phases 1-5	44.7/0	⊙	⊙	⊙	⊙	○	○	✪	⊙
(W19) Latrine – Birch Hill Biathlon Range	0.4/0	○	○	○	○	○	○	○	○
(W20) Warrior Forward Operations Base Phase 3	7/0	⊙	⊙	⊙	⊙	○	○	✪	⊙
(W22) Latrines[1]	0.7/0	○	○	○	○	○	○	○	○
Total Approximate Acreage	**157/0**								
TFTA									
(W21) Alpha Impact Area Survey Line	64/0	○	○	○	○	○	○	○	○
Total Approximate Acreage	**64/0**								
YTA									
(W1) Digital Air Ground Integration Range	10/0	⊙	⊙	⊙	⊙	○	⊙	✪	⊙
(W5) Stuart Creek Integrated Target Array	21.7/0	⊙	⊙	⊙	⊙	○	⊙	✪	⊙
(W7) Firebird UAV Building	1/0	○	○	⊙	⊙	○	○	○	⊙
(W23) Charlie Battery FOB	28/0	○	⊙	⊙	⊙	○	⊙	✪	⊙
(W24) YTA Convoy Live Fire Range Phase 1	22/0	⊙	⊙	⊙	⊙	○	⊙	✪	⊙
(W25) Winter Camp FOB[1]	5/5	⊙	⊙	⊙	⊙	⊙	⊙	✪	⊙
(W26) YTA Firing Point 13	3.1/0	⊙	⊙	⊙	⊙	○	○	✪	⊙

Table 3.2-1b Summary of Soil Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Approximate acreage of potential soil impact/Permafrost impact	Permanent loss of soil	Soil compaction	Wind erosion (construction)	Water erosion (construction)	Permafrost impacts	Soil stability (operations)	Beneficial	***Overall Impact***
(W27) Husky DZ FOB	2.3/0	⊙	⊙	⊙	⊙	○	○	✪	⊙
(W28) YTA Latrines	2.4/0	○	○	○	○	○	○	○	○
(W29) YTA Demolition Range	18/0	○	⊙	⊙	⊙	○	⊙	✪	⊙
(W30) YTA Firing Point Direct Fire	4.5/0	○	⊙	⊙	⊙	○	⊙	✪	⊙
(W31) Stuart Creek Access Trails	37.4/18	◎	◎	◎	◎	◎	○	✪	◎
(W32) Stuart Creek Impact Area Survey Line	59.5/32	○	○	○	○	○	○	○	○
(W33) FP 9 Direct Firing Point	15/0	⊙	⊙	⊙	⊙	○	⊙	✪	⊙
(W34) Husky DZ Resurface	217/217	⊙	⊙	⊙	⊙	⊙	○	○	⊙
(W35) Gravel Source YTA	20/0	○	⊙	◎	◎	○	⊙	○	◎
(W36) Bravo Battery FOB	17/0	⊙	⊙	⊙	⊙	○	⊙	✪	⊙
(W37) Maintenance Building[1]	0.04/0.04	⊙	⊙	⊙	⊙	⊙	○	○	⊙
(W38) High Capacity Well[1]	0.02/0.02	○	○	○	○	○	○	○	○
(W39) YTA Roads Upgrade	309/47	◎	◎	◎	◎	◎	○	✪	◎
(W40) YTA Manchu Trail Bridge Upgrade	2/2	⊙	⊙	⊙	⊙	⊙	○	✪	⊙
(W42) Harden Firebird FP and Bivouac Area	9.6/0	○	⊙	⊙	⊙	○	⊙	✪	⊙
Total Approximate Acreage	**804/321**								

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Similar to FRA, the NEPA Checklist would be completed for each FWA project. In addition, all projects disturbing over 1 acre of land would be subject to an ADEC Construction General Permit and development of a SWPPP, reducing the potential from soil erosion during construction and indirect impacts to surface water quality (also see Section 3.3.2).

3.2.2.2.3 Donnelly Training Area

Due to the small footprints of disturbance and/or nature of activity (lack of ground disturbance) of projects D15, D16, and D29, adverse impacts would be minor and managed during construction and operations of these proposed projects.

Based on the size and nature of activity, the remaining projects (D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D30, and D31) have the potential to cause significant adverse impacts to soil resources through uncontrolled and irreparable erosion in excess of 5,000 square feet. In addition, due to the presence and extent of permafrost soils, Projects D2, D14, D21, and D31 have the additional potential to cause significant adverse impacts to permafrost through the uncontrolled or unmanaged melting of more than 5,000 square

feet of permafrost. All of these 28 projects involve either construction for new facilities or improvements to existing road infrastructure, therefore, the potential to exceed this threshold of significance would likely occur during the construction stages. Adverse impacts to soil resources from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of BMPs during construction and site restoration, similar to those discussed in Section 3.2.2.2.1.

Besides disturbances during construction, Projects D7, D8, D12, D13, D18, D19, D20, D21, D22, D25, D27 and D31 would have the potential to cause significant adverse impacts to soils during operations. These projects involve establishment of new training areas which would experience recurrent use and could degrade over time to exceed the 5,000 square feet thresholds. It is important to note, however, that projects D2, D23, and D24 all contain components which improve existing roadways, therefore, these projects would likely result in net beneficial impacts to soil resources through repairing and upgrading existing segments to maintain sustainable use. Adverse impacts to soil resources from recurrent future use would be mitigated to insignificant (minor or moderate) adverse impacts through use of BMPs during project operations, similar to those discussed in Section 3.2.2.2.1.

Table 3.2-1c shows the anticipated level of impacts for the DTA site-specific projects with the implementation of the BMPs. Due to the large amount of surface disturbance associated with DTA road improvements (Projects D2, D21, D23 and D24), there would be a greater potential for moderate loss of soils from road upgrades and there would be greater potential for moderate impacts due to soil compaction and erosion during construction (see Section 3.3.2.2.1 for indirect impacts to receiving surface water resources). All remaining projects could result in minor adverse impacts soil loss and soil compaction during construction (see Table 3.2-1c).

Projects D7, D8, D12, D13, D18, D19, D20, D21, D22, D25, D27 and D31 would introduce a new areas for Soldiers to use during training, therefore, these projects have the potential to adversely impact soils by increasing the potential of erosion; however, incorporation of hardened training surfaces associated with these projects would reduce impacts to none or minor. None of the other projects are anticipated to cause adverse soil impacts from operations as they all involve either new building construction which would not involve outside Soldier training (D1, D5, D6, D9, and D10), or involve upgrades to existing training infrastructure which would not involve additional operational surface areas used by Soldiers during training (D2, D3, D4, D11, D14, D17, D23, D24, D26, D28 and D30), and would therefore, not be anticipated to cause additional levels of soil loss, compaction, or erosion during training.

The following projects could have adverse impacts to permafrost soils which are located within the vicinity: D2, D14, D21, and D31. Impacts, however, would be minor as these areas are located within or adjacent to existing disturbed areas and would be reduced by siting projects away from permafrost and would limit soil disturbance and vegetation cover removal.

Some projects would have slight beneficial impacts to soils if they are completed. Road upgrade projects (Projects D2, D23, and D24) would help to prevent erosion by upgrading and replacing the existing roads, reducing the need for off-road maneuvering. Projects D3 and D4 could benefit soils through providing hardened surfaces for Soldiers to perform operations, reducing potential for erosion and soils compaction.

Table 3.2-1c Summary of Soil Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Approximate acreage of potential soil impact/ Permafrost impact	Permanent loss of soil	Soil compaction	Wind erosion (construction)	Water erosion (construction)	Permafrost impacts	Soil stability (operations)	Beneficial	***Overall Impact***
(D1) Range Operation Complex[1]	7/0	○	⊙	⊙	⊙	○	○	○	⊙
(D2) DTA Roads	1085/55	◎	◎	◎	◎	◎	○	✪	◎
(D3/D4) DTA Firing Points	26/0	○	⊙	⊙	⊙	○	○	○	⊙
(D5) New Load Ramps at Donnelly DZ	0.1/0	○	○	○	○	○	○	○	⊙
(D6) MATCH Shoot House at Colorado South[1]	0.1/0	○	○	○	○	○	○	○	○
(D7) Expand KD Range[1]	6.6/0	○	⊙	⊙	⊙	○	⊙	○	⊙
(D8) Target Emplacement	0.01/0	○	○	○	○	○	⊙	○	○
(D9) Construct additional support buildings at BAX/CACTF	5/0	○	⊙	⊙	⊙	○	○	○	⊙
(D10) Maintenance Buildings for units training at DTA[1]	1/0	○	⊙	⊙	⊙	○	○	○	⊙
(D11) Beales Replacement[1]	7/0	○	⊙	⊙	⊙	○	○	○	⊙
(D12) Area of Responsibility Village	11/0	○	⊙	⊙	⊙	○	⊙	○	⊙
(D13) Theater Specific Village	11/0	○	⊙	⊙	⊙	○	⊙	○	⊙
(D14) Expand OP 26 for Range Control West Operations	5/5	⊙	⊙	⊙	⊙	⊙	○	○	⊙
(D15) Delineate DTA East Boundary	54/7	○	○	○	○	○	○	○	○
(D16) Sign the Impact Area	0/0	○	○	○	○	○	○	○	○
(D17) Improve Buffalo DZ	50/0	✪	⊙	⊙	⊙	○	○	✪	⊙
(D18) Expand Buffalo DZ	180/0	○	⊙	⊙	⊙	○	⊙	○	⊙
(D19) Extend the Donnelly FLS	13/0	○	⊙	⊙	⊙	○	⊙	○	⊙
(D20) Convert Fuel Break to Airstrip	9.2/0	○	⊙	⊙	⊙	○	⊙	○	⊙
(D21) New Road to bypass CTR	44/5	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙
(D22) BAX East Maneuver Corridor	6/0	○	⊙	⊙	⊙	○	⊙	○	⊙
(D23) BRTA Roads	85/0	○	◎	⊙	⊙	○	○	✪	◎
(D24) GRTA Roads	373/0	○	◎	⊙	⊙	○	○	✪	◎
(D25) Combat Outposts	5/0	○	⊙	⊙	⊙	○	○	○	⊙
(D26) Replace or Relocate Simpsonville Buildings	6/0	○	⊙	⊙	⊙	⊙	○	○	⊙
(D27) Construct UAV System Tracking Pad and Access	1.5/0	○	⊙	⊙	⊙	○	⊙	○	⊙
(D28) Delta Creek Assault Strip	13/0	○	◎	⊙	⊙	○	○	○	◎
(D29) Install Waterless Latrines[1]	<1/0	○	○	○	○	○	○	○	○
(D30) Construct FAARPs[1]	3/0	○	⊙	⊙	⊙	○	○	○	⊙
(D31) Add New OPs along the Winter Trail	17/17	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙
Total Approximate Acreage	**2026/89**								

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Similar to FRA, the NEPA Checklist would be completed for each DTA project. In addition, all projects disturbing over 1 acre of land would also be subject to an ADEC Construction General Permit and development of a SWPPP, reducing the potential from soil erosion during construction and indirect impacts to surface water quality (also see Section 3.3.2).

3.2.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.2.2.3.1 Fort Richardson

Of the 3,128 acres of the proposed FRA SAC Range Adaptable Use Zone, 870 acres have been already disturbed or are part of a military activity area. There would be significant amount of soil impacts if 100 percent of the area was disturbed all at once and without the use of stabilization BMPs could cause significant erosion from wind and surface water runoff. There is a small amount of permafrost soils on the southeast border of the proposed adaptable use zone (Figure B-1a, Appendix B). Projects would be sited to avoid permafrost areas within the proposed adaptable use zone, therefore, permafrost impacts would be negligible. The following factors would mitigate the overall extent of adverse impacts to FRA soils to insignificant:

- Soil loss within the proposed FRA SAC Range Adaptable Use Zone would occur over time. As areas within the adaptable use boundary become developed, range planners would still be required to use BMPs during construction and operations (see Section 3.2.2.1) to control soil erosion both during and operations. These measures would stabilize soils within construction sites and training areas to prevent soil loss and erosion, avoiding and through use of SWPPPs to control site runoff and reduce impacts to surface water resources. These measures would serve to avoid uncontrolled and irreparable erosion that would otherwise preclude the restoration of native plant communities in an area in excess of 5,000 square feet.
- Areas within the proposed adaptable use zone would still be subject to ITAM monitoring and SRP goals which would involve monitoring and repair/rehabilitation of degraded range lands, reducing impacts of military training on soils and identifying and restoring areas of soil erosion would serve to avoid uncontrolled and irreparable erosion that would otherwise preclude the restoration of native plant communities in an area in excess of 5,000 square feet.

3.2.2.3.2 Fort Wainwright

There are 5,054 acres within the proposed FWA SAC Range Adaptable Use Zone, with approximately 500 acres part of military activity areas. Soils in the military activity areas most likely have been disturbed once, either through building training areas, or from training procedures. The Tanana River is also included in the proposed adaptable use zone, which would not be developed. There are no indications that permafrost soils are present in the proposed adaptable use zone, so no impacts to permafrost would be anticipated. There are approximately 8,472 acres within the proposed YTA SAC Range Adaptable Use Zone, with approximately 900 acres part of military activity area and approximately 3,126 acres potentially containing permafrost and the potential for moderate adverse impacts to permafrost. The proposed adaptable use zone would expand the potential developed land within by 7,572 acres (approximately 8,472 acres total; Figure 2-2b).

Similar factors (discussed for FRA, Section 3.2.2.3.1) would mitigate the overall extent of adverse impacts to FWA soils and permafrost to insignificant. Activities that would result in the uncontrolled or unmanaged melting of more than 5,000 square feet of permafrost within the proposed YTA SAC Range Adaptable Use Zone or any unintentional or unmanaged melting of permafrost within developed areas would be unlikely providing the BMPs (see Section 3.2.2.3.1) are employed during construction. In addition, as described in Section 3.1, both the requirements of concealment during Soldier training, and SDZ building limitations would likely prevent the extent of disturbance analyzed by the worst-case-

scenario, resulting in less than significant adverse impacts to permafrost at YTA through maintaining a protective vegetative layer.

3.2.2.3.3 Donnelly Training Area

The proposed DTA SAC Range Adaptable Use Zone would encompass 8,472 acres, which contains 1,750 acres of human modified or a military activity area. If 100 percent of the soils were removed at once, there would be significant adverse impacts to soil stability; no permafrost was noted within the proposed boundaries. Similar factors (discussed for FRA, Section 3.2.2.3.1) would reduce the overall extent of adverse impacts to DTA soils to insignificant adverse impacts.

3.2.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts on soils through uncontrolled and irreparable erosion in excess of 5,000 square feet or through uncontrolled, unmanaged or unintentional melting of more than 5,000 square feet of permafrost. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) to reduce overall adverse soil impacts from routine range projects. Table 3.2-2 (page 3-20) summarizes the potential type and intensity of soil impacts as a result of routine range projects considering use of the proposed environmental stewardship range construction guidelines.

SOPs to avoid soil erosion include:

- During the range project planning phase, USARAK garrisons review project site soil types to determine: 1) constructability and suitability of soils for intended uses, 2) presence of permafrost or highly erodible soils, 3) the potential need for structures or practices to prevent erosion (i.e., grading or reshaping the ground to lessen steep slopes, shoring excavated areas).
- USARAK garrisons would continue to implement Dust Control Plans which includes BMPs for reducing wind erosion and promoting site stabilization during and after demolition, construction, earthmoving, excavating, stockpiling and transport activities.

BMPs to prevent or control soil erosion include:

Project Design

- Avoid permafrost and highly erodible soils whenever possible.
- Maximize footprint disturbances within areas of existing or previously disturbed soils.

Construction Staging

- Control dust emissions during construction on site per Garrison Dust Control Plans to include: pre-grading planning, pre-grading watering, pre-grading watering, chemical stabilizers, wind fencing/sheltering, wind awareness, cover haul vehicles, reduced speed limits/vehicular trips during construction.
- When working in permafrost, minimize the footprint of the disturbed area, and in areas of temporary disturbance provide vegetative cover as soon as possible following disturbance.
- Tree and vegetation removal activities would preferably occur during winter months when soils are frozen. Hand clearing or use of hydro-axe to clear vegetation located within sensitive soils during non-winter months.

Site Restoration

- Seed and fertilize, as necessary, the area immediately following construction to aid in the establishment of protective vegetative cover. Manual planting or geotextiles, as necessary, would be used in areas susceptible to higher wind erosion to aid in the establishment of protective vegetative cover.
- Restoration of disturbed areas by implementing industry standard BMPs and techniques as detailed in the ITAM Program.

- Monitoring and rehabilitation efforts of RTLA and LRAM components of the ITAM Program to determine effects of training on soils and adjust training use.

Operations

- Minimize impacts caused by off-road vehicle use by timing, as much as is practical, and schedule training activities to coincide with the times of the year during which the lands are more resilient. For example, snow-pack would minimize the impacts to soils and permafrost compared to spring break-up when soils are more susceptible to erosion.
- Improve existing trails and roadways to increase the resiliency and capacity for the land to absorb traffic. Improvements would include stormwater management control such as incorporation of vegetated swales adjacent to improved trails and roadways to manage sediments and runoff.

Following site selection of these routine projects, the NEPA Checklist (Appendix C) would be completed to evaluate the potential for impacts. In general, the implementation of the SOPs and BMPs would reduce the overall impacts to the site-specific and routine range projects, resulting in no to minor adverse impacts. Those activities which primarily involve soil movement such as berm construction, gravel pits and grading and shaping would have a greater potential for moderate soil impacts which would condense the soil structure causing soil compaction or remove soils entirely in the case of gravel pits. Most impacts from erosion would occur during construction, as topsoil is sequestered (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 that is removed during construction would be used for grading and revegetating around the project site. These impacts, however, would likely be reduced to minor or none by proper siting, erosion procedures and post-construction revegetation to prevent topsoil loss. Projects disturbing over 1 acre of land would also be subject to an ADEC Construction General Permit and development of a SWPPP, reducing the potential from soil erosion during construction and indirect impacts to surface water quality. If projects either improve or overlay existing disturbed soils, they may have little to no impacts. Projects involving hardened surfaces for Soldier training and road improvements which would likely provide long-term benefits as adjacent undisturbed soils would not be affected by military operations.

Table 3.2-2 Summary of Potential Soil Impacts from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	**Type and Intensity of Impact** ○ = none ⊙= minor ◎ = moderate ● severe ✪ = beneficial							
	Permanent loss of soil	Soil compaction	Wind erosion (construction)	Water erosion (construction)	Permafrost impacts	Soil stability (ongoing use)	Beneficial	***Overall Impact***
Berm Creation & Maintenance	⊙	◎	⊙	⊙	⊙	⊙	○	◎
Bleacher Enclosure	⊙	⊙	⊙	⊙	⊙	○	○	⊙
Bridge Installation	⊙	⊙	⊙	⊙	○	○	○	⊙
Building Construction	⊙	⊙	⊙	⊙	⊙	○	○	⊙
Control Tower	⊙	○	⊙	⊙	⊙	○	○	⊙
Covered Hall	⊙	⊙	⊙	⊙	⊙	○	○	⊙

Table 3.2-2 Summary of Potential Soil Impacts from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Impact ○ = none ⊙= minor ◎ = moderate ● severe ✪ = beneficial							
	Permanent loss of soil	Soil compaction	Wind erosion (construction)	Water erosion (construction)	Permafrost impacts	Soil stability (ongoing use)	Beneficial	***Overall Impact***
Culvert Installation	⊙	⊙	⊙	⊙	○	○	○	⊙
Fencing	○	○	⊙	⊙	○	○	○	⊙
Firing Lane Creation & Maintenance	⊙	○	⊙	⊙	○	⊙	○	⊙
Firing Line Creation & Maintenance	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙
FOB Creation and Maintenance	⊙	⊙	⊙	⊙	○	⊙	✪	⊙
Grading/Shaping	⊙	◎	⊙	⊙	⊙	⊙	○	◎
Gravel Pits	◎	○	◎	◎	⊙	⊙	○	◎
Hardened Target Creation & Maintenance	⊙	⊙	⊙	⊙	⊙	⊙	○	⊙
Hardstands Creation and Maintenance	⊙	⊙	⊙	⊙	⊙	⊙	✪	⊙
Improvised Explosive Device Defeat	⊙	◎	⊙	⊙	⊙	⊙	✪	⊙
Land Clearing & Vegetation	○	○	⊙	⊙	⊙	⊙	○	⊙
Latrine	○	○	⊙	⊙	○	○	○	⊙
Mowing	○	○	○	○	○	○	○	○
Observation Points Creation & Maintenance	⊙	○	⊙	⊙	⊙	⊙	○	⊙
Pit Toilets Creation and Maintenance	○	○	⊙	⊙	○	○	○	⊙
Prescribed Fire	⊙	○	○	○	○	○	○	⊙
Road (Trail) Creation & Maintenance	⊙	◎	⊙	⊙	⊙	⊙	✪	⊙
Small Arms Siting	⊙	◎	⊙	⊙	⊙	⊙	○	◎
Boundary Line Clearings	○	○	○	○	○	○	○	○
Target Emplacement	⊙	⊙	○	○	⊙	⊙	○	⊙
Utility Line Creation & Maintenance	⊙	○	⊙	⊙	⊙	○	○	⊙
UXO Surveys	○	○	○	○	○	○	○	○
Wood Pile Burning	○	○	○	○	○	○	○	⊙
Urban Training Village	⊙	⊙	⊙	⊙	⊙	○	○	⊙

3.3 SURFACE WATER AND FLOODPLAINS

The Clean Water Act (CWA) mandates that each state develop a program to monitor and report on the quality of its surface and groundwaters 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" waterbodies that do not meet water quality standards. Alaska's water quality standards (18 AAC 70) apply to surface waterbodies in an attempt to preserve them for nature and public use. The standards are applied to waterways based on their designated use (ADEC, 2008). The waterbodies 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 Garrisons are committed to applying these standards to both jurisdictional and non-jurisdictional waters.

EO 11988, *Floodplain Management,* instructs Federal agencies to consider the location of floodplains in the siting and development of projects. Typically, projects involving the placement of structures (i.e., buildings, berms, inadequately sized bridges) which have the potential to affect floodwater elevations or flows are discouraged.

3.3.1 Affected Environment

3.3.1.1 Fort Richardson

There are 12 named lakes and ponds in addition to several unnamed waterbodies that are located on FRA. Most of the surface streams that flow through FRA connect the Chugach Mountains to the south and east, to the Knik Arm of the Cook Inlet located to the north and west. The largest river on the installation, Eagle River, flows through the northern section of the installation, and is fed by glacial runoff. Other large waterbodies include Ship Creek, Clunie Lake, Otter Lake, Gwen Lake, Thompson Lake and Waldon Lake. Lakes are managed for recreational fishing, although all of the waterbodies on the installation are labeled as freshwater classes A, B and C for water quality protection. The combined area of the named lakes and ponds is approximately 359 acres (USAG Alaska, 2007b).

Eagle River ends at Eagle River Flats, a 2,200-acre estuarine tidal marsh in FRA. Eagle River, is recognized as impaired for ammonia and metals within the vicinity of Eagle River due to a wastewater treatment facility, however, is not listed on the state's 303(d) list (ADEC, 2008). Eagle River Flats was listed in 1996 on the 303(d) list for white phosphorous (from artillery shell residue) which is lethal to waterfowl (ADEC, 2008). The Army has since conducted remediation within Eagle River Flats ponds contaminated with white phosphorous, and in 2008, the Eagle River Flats were removed from the 303(d) list. The Army, however, continues long term monitoring within the flats to ensure that the remediation efforts are benefiting waterfowl populations (ADEC, 2008).

Ship Creek contains several sensitive riparian habitats on the installation, and flows alongside the Elmendorf Air Force Base (AFB) and the city of Anchorage. Because of hydrocarbons, oil and grease found downstream of the Glenn Highway Bridge, Ship Creek is listed on Alaska's 303 (d) list of impaired waters (ADEC, 2008). Most of the pollutants appear to have originated from non-point sources due to surface water runoff and groundwater leeching downstream of FRA, potentially because an increasingly urban watershed near Anchorage. As of 1996, the state list concluded that no cumulative or increasing water quality degradation was occurring in the lower portion of Ship Creek (USAG Alaska, 2007b). Ship Creek is also impaired from fecal coliform bacteria due to urban runoff, however, is not currently on the state's 303(d) list for this impairment (ADEC, 2008). USAG FRA has a stake in ensuring that Ship Creek's pollution is minimized, and to repair portions of the creek that may be damaged.

3.3.1.2 Fort Wainwright

Generally, the overall surface water quality on FWA is good (USAG, 2007b). The Chena River, which runs through the middle of the Main Post has been classified for Class A, B, and C uses. However, the portion that runs through Fairbanks and FWA has been on Alaska's 303(d) list since 1990 for turbidity and sediment. Since then, petroleum products have been added as an impairment, likely due to urban runoff (ADEC, 2008).

Due to its remote location, surface water quality data are not collected for much of TFTA. Data for the Wood and Tanana rivers upstream and downstream of the training area are used to estimate the installation's water quality. The Wood River is surface-water and spring-fed, compared to the glacially-fed Tanana River which contains higher sediments. The water quality would, therefore, differ greatly

between streams which have surface-water and spring-fed origins compared to those streams with glacier-fed sources containing higher sediment loads (USAG Alaska, 2007b).

The surface waters that originate in the YTA are relatively pristine because there is little human development and activity on the training area. A majority of the waterbodies originating within YTA flow east and north into the Chena River, with a lesser component flowing west and south into the Tanana River. The waters meet all primary drinking water standards, and iron (from natural sources) is the only parameter to exceed the Alaska state secondary drinking water standards (USAG Alaska, 2007b).

3.3.1.3 Donnelly Training Area

The DTA's surface waters are diverse and lie entirely within the Tanana River drainage basin. A majority of the larger streams flowing through the area, such as the Delta River and Jarvis Creek, are fed by melting glaciers. Glacially-fed streams typically carry clay and silt-sized material (rock silt) derived from their glacial endpoints (USARAK, 2006a).

The State of Alaska has designated the streams on DTA for all use classes. Surface water quality values on DTA meet the state's primary drinking water standards. However, aluminum, iron, and manganese concentrations were higher than the state's secondary standards (USARAK 2004). High iron concentrations are typical in streams that drain wetland areas high in organic matter. In addition, 16 lakes on DTA, ranging from 3 to 320 acres, are stocked by the ADF&G.

Compared to other USARAK training areas where storm events and snow melt are primary contributors to flooding conditions, aufeis is the primary cause of flooding along Jarvis Creek with some additional flooding extending near the mouth and upstream of Ober Creek within DTA. Aufeis is an ice sheet that forms on the creek bed and adjacent floodplain areas over the winter as normal channels freeze solid or are otherwise dammed so that flowing water and groundwater forced to the surface spreads out in a shallow layer over the surface and freezes forming thick ice accumulations within the active floodplain.

3.3.2 Environmental Consequences

Direct impacts are further discussed by the No Action and Proposed Action alternatives below. Indirect impacts of surface water quality degradation to fisheries, and recreation and subsistence are further discussed in Sections 3.6.2, and 3.8.2, respectively.

The following categories will be used in assessing the intensity of potential direct impacts resulting from the Proposed Action.

- **Minor to Moderate (insignificant) –** The degree to which activities would introduce sediment or other pollutants into local and regional waterways; also, the degree to which activities would alter floodplains.
- **Severe (significant) –** Activities resulting in the introduction of pollutants that directly or cumulatively degrade water quality standards of a surface water body would be significant impacts. Activities that alter patterns of or increase the intensity of flood water movement would also represent a significant impact. The first three qualitative impact categories (none, minor, and moderate) are considered insignificant in this analysis. The next category (severe) is considered significant. A table for each installation provides the impacts to different surface water attributes and the overall impact for each site-specific project.

In addition, the following bullets provide general descriptions of the type of impacts used in the surface water and floodplains impact analysis:

- *Channelization of streams* including the alteration of stream morphology due to channelization (e.g., alteration of stream banks using concrete walls).
- *Loss of streambed* includes the loss of streambed through placement of structures such as culverts.

- *Increased turbidity* (construction) includes the increased potential of sedimentation from construction site runoff.
- *Degraded water quality (operations)* includes the increased potential of sedimentation from operations in areas adjacent to water resources. This impact is dependent upon the type of proposed activity, condition of vegetative cover, stormwater management and landscape terrain.
- *Change of flow direction* includes potential alteration of stream flow direction through placement of structures such as surface water crossings. Including the potential to affect aufeis conditions at DTA.
- *Change of velocity* includes the potential alteration of stream flow velocity through stream channelization, placement of culverts and other types of stream crossings such as bridges with abutments within the floodplain.
- *Permanent fill in floodplain* includes the addition of fill material within the 100-year floodplain of surface waters. Including the potential for fill activities to affect aufeis conditions at DTA.

A Finding of No Practicable Alternative (FNPA) was prepared to address unavoidable impacts to floodplains resulting from specific projects analyzed by this EA. The FNPA determined that no practicable alternative exists to entirely avoid floodplains as each proposed project involves enhancements to existing infrastructure that are already located within areas potentially containing floodplain (See Appendix G). Implementation of BMPs discussed in Appendix D including project design to avoid and minimize floodplain disturbance would help reduce floodplain impacts.

3.3.2.1 No Action

Under the No Action Alternative, USAG FRA and USAG FWA would not implement the Proposed Actions. Routine range maintenance and construction projects would continue, along with site-specific future range projects on a project-by-project basis. Existing SOPs and BMPs, as required, would continue to be implemented both during and after construction to maintain surface water quality to meet NPDES requirements and permitting and plan approval as administered through the Alaska Discharge Elimination System Program. In addition, project-by-project review and issuance of FNPAs would occur for projects located within floodplain areas. Therefore, no to minor adverse impacts to surface waters or floodplains would be anticipated from the No Action alternative.

3.3.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.3.2.2.1 Fort Richardson

Projects R1, R2, R3, R5, R10 and R11 are located within the Ship Creek watershed, Projects R6, R8, R10 and R11 are located within the McVeigh Creek watershed (a tributary to Ship Creek), Project R4 is located within proximity to Knik Arm and the Clunie Creek watersheds, and Project R9 is located within the Eagle River watershed (see Figures B-1a through B-1d, Appendix B). As Project R7 involves road upgrades located throughout FRA range and training lands, the project is located throughout FRA's watersheds, including Ship Creek (along with unnamed and named subwatersheds including McVeigh Creek and Chester Creek), in the Eagle River watershed, and the Clunie Creek watershed.

Due to the small footprints of disturbance of projects R2, R9, R10, and R11, adverse impacts would be minor and managed during construction and operations of these proposed projects.

Based on the size, nature of activity, and location of projects within the Ship Creek and Clunie Creek watersheds, the remaining projects (R1, R3, R4, R5, R6, R7, and R8) have the potential to cause significant adverse impacts to water resources through introducing pollutants (primarily sediments) that could directly or cumulatively degrade water quality standards of their respective receiving streams. All of these 7 projects involve either construction for new facilities or improvements to existing road infrastructure; therefore, the potential to exceed this threshold of significance would likely occur during

the construction stages from introduction of sediments and stormwater runoff from construction sites into receiving tributaries of Ship Creek. Project R9 would not likely contribute to significant adverse impacts as Eagle River is glacially-fed and contains high levels of background sediments. In addition, Project R7 would involve the potential for upgrades to existing stream crossings throughout FRA. Upgrades to these crossings could cause significant adverse impacts if the crossings alter patterns of floodwater movement[9]. Regardless of watershed, adverse impacts to surface waters and floodplains from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of the following BMPs:

- During design and construction, natural vegetation would be retained to the greatest extent possible as a permanent control measure to minimize erosion potential and protect water quality especially in areas characterized by floodplain, wetland, stream banks, steep slopes, and other areas where erosion controls would be difficult to establish, install, or maintain.
- During design, roads and trails in the general direction of preferential water would be designed to allow unrestricted flow and maintain raised trailbeds to minimize concentrated surface water flows during flooding events and design drainage to accommodate snowmelt runoff and rainfall potential to prevent erosion and formation of gullies.
- During construction, placing litter, construction materials and debris, and construction chemicals within proximity (typically 75 feet) to surface waters or flood-prone areas would be avoided to prevent pollutant discharges and all construction staging, fueling, and servicing operations would be kept at a minimum of 100 feet from surface waters to prevent unintentional contamination. Spill kits would also be kept on hand in case of spills to reduce response times.
- During construction, placement of temporary material storage piles within the 100-year floodplain during the rainy season and work excavation equipment from an upland site (e.g., the top of the bridge or culverted road crossing) would be avoided to minimize adding fill into waters of the U.S.
- When feasible, culverts would be installed during low flow periods. Where significant flow is present, acceptable techniques to isolate the construction site from stream flow, including channel bypasses, temporary flumes, sheet pile or sandbag walls, water filled coffer dams, or pumping the stream flow around the work site would be implemented.
- During construction, sediment transport would be controlled and prevented from reaching surface waters through slope stabilization, maintaining 75-foot vegetative buffers, revegetation, using effective filters or barriers such as filter fabric fences and straw bales, fiber matting, stormwater retention/detention basins and settling ponds, drainage control, trenches and water bars, waterproof covers over material piles and exposed soils, avoiding work during heavy precipitation, use of fill free from fine material, and other appropriate measures.
- Sediment laden water resulting from construction activities would be pumped into a settling basin or an area where it can be naturally filtered, before it reenters the stream.
- All construction sites would be closely monitored to evaluate sediment control and stormwater and pollution management practices, inspect for potential damage, and to detect and correct future changes in drainage patterns to prevent impairment of surface waters and alteration of surface hydrology.
- If sediment escapes the construction site, off-site accumulations of sediment would be removed at a frequency sufficient to minimize off-site impacts.

[9] Note: The analysis within this EA for floodplains assumes that a majority of streams within USARAK lands have active floodplains. Federal Emergency Management Agency (FEMA) 100-year floodplain delineations do not exist for a majority of the streams within USARAK lands.

- Following construction, stream bank, lake shore, or coastline affected by the work would be restored to pre-existing contours and stabilized utilizing the most up-to-date bioengineering techniques and use of biodegradable materials, when feasible and practicable (i.e., Streambank Revegetation and Protection: A Guide for Alaska [Muhlberg and Moore 1998]). Techniques may include, but are not limited to, brush layering, brush mattressing, live siltation, and use of jute matting and coir logs to stabilize soil and re-establish native vegetation.

Besides disturbances during construction, Projects R1 and R5 would have the potential to cause significant adverse impacts to surface water resources during operations. These projects involve establishment of new training areas which would experience recurrent use and could degrade over time to cause the potential for sediment runoff into receiving streams or could introduce new sources of pollutants into streams (e.g., oils, heavy metals). Projects R3, R4, and R7 all provide improvements to existing roadways, therefore, these projects would likely result in reducing the current level of impacts to sediment levels in adjacent surface waters, and may result in improvements to surface water quality through repairing existing segments which could act as nonpoint sources of sediments and upgrading these segments to maintain sustainable use. Adverse impacts to surface water resources from recurrent future use would be mitigated to insignificant (minor or moderate) adverse impacts through use of the following BMPs during operations:

- Monitoring and rehabilitation efforts RTLA and LRAM components of the ITAM Program to control soil erosion (see Section 3.2.2.2.1) indirectly prevent sedimentation into surface waters.
- Employ SPPCP measures including proper handling and disposal of substances to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources by measures such as keeping spill kits nearby sites using these substances.
- Follow BMP guidance contained within the *Army Small Arms Training Range Environmental Best Management Practices (BMPs) Manual* to support the selection and implementation of management methods for erosion or lead migration issues from munitions (bullets) based on site specific use and environmental characteristics to improve the environmental quality and ensure the long-term sustainability of essential training areas.

Table 3.3-1a shows the anticipated level of impacts for the FRA site-specific projects with the implementation of the BMPs discussed above. Due to the large amount of surface disturbance associated with FRA roads improvements (Project R7), there would be a greater potential for moderate impacts from increased turbidity and degraded water conditions where construction would occur at existing stream crossings of Ship Creek, Eagle River, Clunie Creek and other named and unnamed tributaries throughout the FRA range lands (Figures B-1, Appendix B). In addition, Project R7 would likely involve road upgrades within floodplain areas having the potential for causing minor adverse impacts from placement of fill to support the upgrades. Other projects that disturb the soils could also lead to increase levels of turbidity or water quality degradation if erosion measures are not enacted during construction (R3, R4, R5, R8, and R11). Projects R10 and R11 (Figure B-1a, Appendix B) are located within proximity to McVeigh Creek, however, these projects would be sited away from the creek (75-foot buffer) and sediment and erosion control measures would be implemented to avoid impacts during construction.

Project R5 would introduce a new bivouac area for Soldiers to use during training. The project, therefore, has the potential to adversely impact surface water quality by increasing the potential of erosion and indirect impacts of surface water turbidity and sedimentation during operations. Incorporation of hardened training surfaces associated with the bivouac area, however, would reduce impacts to none or minor. None of the other projects are anticipated to cause adverse surface water or floodplain impacts from operations as they all involve either new building construction which would be required to incorporate stormwater management in site design (R1, R6, R8, R10, and R11), or involve upgrades to existing training infrastructure which would not involve additional operational surface areas used by Soldiers during training (Projects R3, R4, and R7), and would therefore, not be anticipated to cause increased indirect adverse effects from erosion such as turbidity and sedimentation.

Some projects would have slight beneficial impacts to surface water if they are completed, such as waterless latrines in Project R10 (some replacing existing older latrines) would help ensure prevention of fecal bacteria from being released into stream systems. Other projects (R3, R4, and R7) would help to prevent erosion and runoff into surface streams by upgrading and replacing the existing roads, reducing the need for off-road maneuvering. Road improvements would include stormwater management control such as incorporation of vegetated swales adjacent to improved trails and roadways to manage sediments and runoff. Project R5 could benefit surface water quality by providing hardened surfaces for Soldiers to perform operations, reducing indirect adverse effects from erosion such as turbidity and sedimentation.

Table 3.3-1a Summary of Surface Water and Floodplain Impacts from Site-specific FRA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Channelization of stream	Loss of streambed	Increased turbidity (construction)	Degraded water quality (operations)	Change of flow direction	Change of velocity	Permanent fill in floodplain	Beneficial	***Overall Impact***
(R1) FRA UAC[1]	○	○	⊙	○	○	○	○	○	⊙
(R2) Dig a well at the ISBC Site	○	○	○	○	○	○	○	○	○
(R3) Raise the ISBC Road	○	○	⊙	○	○	○	○	✪	⊙
(R4) Provide Turnaround IPBC	○	○	⊙	○	○	○	○	✪	⊙
(R5) Create Bivouac Site UAC	○	○	⊙	⊙	○	○	○	✪	⊙
(R6) Range Operation Complex	○	○	⊙	○	○	○	○	○	○
(R7) FRA Roads	⊙	○	◎	○	⊙	⊙	⊙	✪	◎
(R8) Vehicle Storage/ Maintenance Building[1]	○	○	⊙	○	○	○	○	○	⊙
(R9) Install Flagpole ER Gate	○	○	○	○	○	○	○	○	○
(R10) Waterless Arctic Latrine	○	○	○	○	○	○	○	✪	✪
(R11) Covered Bleachers[1]	○	○	○	○	○	○	○	○	○

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to verify the absence/presence of surface waters and floodplains within the project site. As stated in Section 3.2.2, projects disturbing over 1 acre of land would be subject to an ADEC Construction General Permit and development of a SWPPP, reducing the potential of surface water quality impacts. The SWPPP would identify nearby surface waters and project site drainage patterns and would also identify all potential sources of pollution during construction (i.e., sedimentation and turbidity from wind or water erosion and potential sources of contamination from construction equipment and stockpiling areas). The SWPPP would also prescribe control measures for preventing or reducing the potential from construction site

runoff or wind erosion to impact surface waters. All construction projects will be required to adhere to standards imposed by State and Federal regulations.

3.3.2.2.2 Fort Wainwright

Projects W2, W3, W6, W8, W10, W11, W12, W13, W14, W16 and W22 are located within the Tanana River watershed near the FWA Main Post. Projects W4, W17 and W22 are located within the Clear Creek watershed, a tributary to the Tanana River. Projects W9, W16, W18, W19, and W20 are located within the Main Post segment of the Chena River watershed, a tributary to the Tanana River. Project W21 is located within the watersheds of unnamed tributaries within TFTA to the Tanana River. Projects W7, W23, W28 and W42 are located within the watersheds of French Creek and Little Salcha River of YTA, tributaries to the Tanana River. Projects W25, W28, W35, W36, W37, W38 and W40 are located within the Moose Creek watershed of YTA, a tributary to the Tanana River. Projects W27 and W34 are located within the YTA watersheds of unnamed tributaries to the Tanana River. Projects W1, W5, W24, W28, W29, W30 and W33 are located within the YTA Stuart Creek watershed, a tributary to the Chena River. Project W35 is located within the YTA Beaver Creek watershed, and Project W26 is located within the YTA South Fork Chena River watershed, both tributaries to the Chena River.

Due to the small footprints of disturbance and/or nature of activity (lack of ground disturbance) of Projects W19, W21, W22, W28 and W32, adverse impacts would be minor and managed during construction and operations of these proposed projects.

Based on the size, nature of activity, and location of projects within the watersheds of the Chena River, Clear Creek, French Creek, Little Salcha River, Moose Creek, Stuart Creek, Beaver Creek and unnamed tributaries to the Tanana River, Projects W1, W4, W5, W7, W9, W12, W15, W17, W18, W20, W23, W24, W25, W26, W27, W29, W30, W31, W33, W34, W35, W36, W37, W38, W39, W40, and W42 have the potential to cause significant adverse impacts to water resources through introducing pollutants (primarily sediments) that could directly or cumulatively degrade water quality standards their respective receiving streams. All of these 28 projects involve either construction for new facilities or improvements to existing road infrastructure, therefore, the potential to exceed this threshold of significance would likely occur during the construction stages from introduction of sediments and stormwater runoff from construction sites into receiving streams. Projects W2, W3, W6, W8, W10, W11, W12, W13, W14, and W16 would not likely contribute to significant adverse impacts as Tanana River is glacially-fed and contains high levels of background sediments. In addition, Projects W5, W31, W39 and W40 would involve the potential for upgrades to existing stream crossings. Upgrades to these crossings could cause significant adverse impacts if the crossings alter patterns of floodwater movement. Regardless of watershed, adverse impacts to surface waters and floodplains from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of the same BMPs during construction and site restoration as identified for FRA construction (see Section 3.3.2.2.1).

Besides disturbances during construction, Projects W1, W9, W11, W12, W23, W24, W25, W30, W33, W35, and W42 would have the potential to cause significant adverse impacts to water resources during operations. These projects involve establishment of new training areas which would experience recurrent use and cause the potential for sediment runoff into receiving streams or could introduce new sources of pollutants into streams (e.g., oils, heavy metals). It is important to note that projects W5, W11, W12, W14, W17, W18, W24, W29, W30, W31, W33, and W39 all contain components which improve existing roadways, therefore, these projects would likely result in reducing the current level of impacts to sediment levels in adjacent surface waters, and may result in improvements to surface water quality through repairing existing segments which could act as nonpoint sources of sediments and upgrading these segments to maintain sustainable use. Adverse impacts to water resources from recurrent future use would be mitigated to insignificant (minor or moderate) adverse impacts through use of BMPs during project operations as those that would be employed during construction at FRA (see Section 3.3.2.2.1).

Table 3.3-1b shows the anticipated level of impacts for the FWA site-specific projects with the implementation of the BMPs. Due to the large amount of surface disturbance associated with FWA road improvements (Projects W5, W31, and W39), there would be a greater potential for moderate impacts from increased turbidity and degraded water conditions where construction would occur at existing stream crossings throughout the range lands (Figures B-2, Appendix B). All remaining projects would create a minor disturbance to soils during construction that could cause minor adverse indirect impacts of increase levels of turbidity or water quality degradation (see Table 3.3-1b).

Projects W1, W5, W9, W24, W25, W30, W33, W35, W36, and W42 would introduce new areas for Soldiers to use during training, therefore, these projects have the potential to adversely impact surface water quality both during construction and training operations by increasing the potential of erosion and indirect impacts of surface water turbidity and sedimentation. Incorporation of hardened (gravel) training surfaces associated with these projects would reduce impacts to none or minor through reducing erosion potential during training use. None of the other projects are anticipated to cause significant adverse surface water or floodplain impacts from operations as they all involve either new building construction which would be required to incorporate stormwater management in site design (W2, W4, W6, W7, W8, W10, and W37), or involve upgrades to existing training infrastructure which would not involve additional operational surface areas used by Soldiers during training (W3, W11, W12, W13, W14, W16, W17, W18, W20, W26, W27, W29, W31, W34, W39, and W40), and would therefore, not be anticipated to cause increased indirect significant adverse effects from erosion such as turbidity and sedimentation.

In addition, Projects W6 and W17 would result in the addition of hardened gravel surfaces to support parking which would create the potential for stormwater runoff and associated pollutants (fuels leaked from vehicles and other petroleum products) to reach receiving waterbodies. Significant impacts, however, would be avoided using site grading and contouring; and stormwater management retention, where appropriated, as specified in site-specific SWPPPs which would be developed for these projects.

Some projects would have slight beneficial impacts to surface water if they are completed. Waterless latrines in Projects W19, W22, and W28 would help ensure prevention of fecal bacteria from being released into stream systems. Other projects (W5, W11, W12, W14, W17, W18, W24, W29, W30, W31, W33, W39, and W40) would help to prevent erosion and runoff into surface streams by upgrading and replacing the existing roads, reducing the need for off-road maneuvering. Road improvements would include stormwater management control such as incorporation of vegetated swales adjacent to improved trails and roadways to manage sediments and runoff. Projects W20, W23, W25, W29, W30, W33, W36, and W42 could benefit surface water quality through upgrading to provide hardened (gravel) surfaces for Soldiers to perform operations, reducing indirect adverse effects from erosion such as turbidity and sedimentation.

Table 3.3-1b Summary of Surface Water and Floodplain Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Channelization of stream	Loss of streambed	Increased turbidity (construction)	Degraded water quality (operations)	Change of flow direction	Change of velocity	Permanent fill in floodplain	Beneficial	***Overall Impact***
FWA									
(W2) Ammunition Breakdown Buildings[1]	○	○	○	○	○	○	○	○	○
(W3) Demo Pond Range[1]	○	○	⊙	○	○	○	○	✪	⊙
(W4) General Instructional Building CACTF	○	○	⊙	○	○	○	○	○	⊙
(W6) Indoor Shooting Range[1]	○	○	⊙	○	○	○	○	○	⊙
(W8) Range Operation Complex [1]	○	○	⊙	○	○	○	○	○	⊙
(W9) FWA C130/17 Mock-up	○	○	⊙	⊙	○	○	○	○	⊙
(W10) Welding/ Carpentry Shop[1]	○	○	⊙	○	○	○	○	○	⊙
(W11) Arctic Village[1]	○	○	⊙	○	○	○	○	✪	⊙
(W12) SAC East Expansion[1]	○	○	⊙	○	○	○	○	✪	⊙
(W13) KD Range Expansion[1]	○	○	⊙	○	○	○	○	○	⊙
(W14) Pave Range Road[1]	○	○	⊙	○	○	○	○	✪	⊙
(W15) SAC Security Fence[1]	○	○	⊙	○	○	○	○	○	⊙
(W16) Rebuild MRF Firing Line[1]	○	○	⊙	○	○	○	○	○	⊙
(W17) Combined Arms Collective Training Facility	○	○	⊙	○	○	○	○	✪	⊙
(W18) Drivers Training Course Phases 1-5	○	○	⊙	○	○	○	○	✪	⊙
(W19) Latrine – Birch Hill Biathlon Range	○	○	○	○	○	○	○	✪	✪
(W20) Warrior Forward Operations Base Phase 3	○	○	⊙	○	○	○	○	✪	⊙
(W22) Latrines[1]	○	○	○	○	○	○	○	✪	✪
TFTA									
(W21) Alpha Impact Area Survey Line	○	○	○	○	○	○	○	○	○
YTA									
(W1) Digital Air Ground Integration Range	○	○	⊙	⊙	⊙	○	○	○	⊙
(W5) Stuart Creek Integrated Target Array	⊙	⊙	◎	⊙	⊙	⊙	⊙	✪	◎
(W7) Firebird UAV Building	○	○	⊙	○	○	○	○	○	⊙
(W23) Charlie Battery FOB	○	○	⊙	○	○	○	○	✪	⊙
(W24) YTA Convoy Live Fire Range Phase 1	○	○	⊙	⊙	○	○	○	✪	⊙
(W25) Winter Camp FOB[1]	○	○	⊙	⊙	○	○	○	✪	⊙
(W26) YTA Firing Point 13	○	○	⊙	○	○	○	○	✪	⊙
(W27) Husky DZ FOB	○	○	⊙	○	○	○	○	✪	⊙

Table 3.3-1b Summary of Surface Water and Floodplain Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Channelization of stream	Loss of streambed	Increased turbidity (construction)	Degraded water quality (operations)	Change of flow direction	Change of velocity	Permanent fill in floodplain	Beneficial	***Overall Impact***
(W28) YTA Latrines	○	○	○	○	○	○	○	✪	✪
(W29) YTA Demolition Range	○	○	⊙	○	○	○	○	✪	⊙
(W30) YTA Firing Point Direct Fire	○	○	⊙	⊙	○	○	○	✪	⊙
(W31) Stuart Creek Access Trails	⊙	⊙	◎	○	⊙	⊙	⊙	✪	◎
(W32) Stuart Creek Impact Area Survey Line	○	○	○	○	○	○	○	○	○
(W33) FP 9 Direct Firing Point	○	○	⊙	⊙	○	○	○	✪	⊙
(W34) Husky DZ Resurface	○	○	⊙	○	○	○	○	○	⊙
(W35) Gravel Source YTA	○	○	⊙	⊙	○	○	○	○	⊙
(W36) Bravo Battery FOB	○	○	⊙	⊙	○	○	○	✪	⊙
(W37) Maintenance Building[1]	○	○	⊙	○	○	○	○	○	⊙
(W38) High Capacity Well[1]	○	○	○	○	○	○	○	○	○
(W39) YTA Roads Upgrade	⊙	⊙	◎	○	⊙	⊙	⊙	✪	◎
(W40) YTA Manchu Trail Bridge Upgrade	⊙	⊙	⊙	○	⊙	⊙	⊙	✪	⊙
(W42) Harden Firebird FP and Bivouac Area	○	○	⊙	⊙	○	○	○	✪	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Similar to FRA, the NEPA Checklist (Appendix C) would be completed to verify the absence/presence of surface waters and floodplains within the project site and projects disturbing over 1 acre of land would be subject to an ADEC Construction General Permit and development of a SWPPP, reducing the potential of surface water quality impacts. All construction projects will be required to adhere to standards imposed by State and Federal regulations.

3.3.2.2.3 Donnelly Training Area

Projects D1, D3, D4, D6, D7, D10, D11, D21, D27, D29, and D30 are located within the Delta River watershed. Projects D5, D9, D10, D12, D15, D17, D18, D19, D22 and D29 are located within the Jarvis Creek watershed, a tributary to the Delta River. Projects D13, D14, D26, D28 and D30 are located within the Delta Creek watershed, a tributary to Delta Creek. Projects D13 and D23 are located within the Camp Terry Creek and Falls Creek watersheds, both tributaries to the Delta River. Projects D13, D24 and D25 are located within watersheds of unnamed tributaries to the Tanana River.

Due to the small footprints of disturbance and/or nature of activity (lack of ground disturbance) of Projects D15, D16, and D29, adverse impacts would be minor and managed during construction and operations of these proposed projects.

Based on the size, nature of activity, and location of projects within the watersheds of tributaries to Delta Creek, Camp Terry Creek, Falls Creek, and unnamed tributaries to the Delta and Tanana rivers. Projects D2, D8, D13, D14, D20, D23, D24, D25, D26, D28, and D31 have the potential to cause significant adverse impacts to water resources through introducing pollutants (primarily sediments) that could directly or cumulatively degrade water quality standards their respective receiving streams. All of these 11 projects involve either construction for new facilities or improvements to existing road infrastructure, therefore, the potential to exceed this threshold of significance would likely occur during the construction stages from introduction of sediments and stormwater runoff from construction sites into receiving streams. Projects D1, D3, D4, D6, D7, D10, D11, D21, D27, and D30 which occur in the Delta River watershed and Projects D5, D9, D10, D12, D17, D18, D19, and D22 which occur in the Jarvis Creek watershed would not likely contribute to significant adverse impacts as these rivers are glacially-fed and contain high levels of background sediments. In addition, Projects D2, D23 and D24 would involve the potential for upgrades to existing stream crossings. Upgrades to these crossings could cause significant adverse impacts if the crossings alter patterns of floodwater movement. Regardless of watershed, adverse impacts to surface waters and floodplains from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of those BMPs identified in Section 3.3.2.2.1 during construction and site restoration.

Besides disturbances during construction, Projects D7, D8, D12, D13, D18, D19, D20, D21, D22, D25, D27 and D31 would have the potential to cause significant adverse impacts to water resources during operations. These projects involve establishment of new training areas which would experience recurrent use and cause the potential for sediment runoff into receiving streams or could introduce new sources of pollutants into streams (e.g., oils, heavy metals). It is important to note, however, that projects D2, D23, and D24 all contain components which improve existing roadways, therefore, these projects would likely result in reducing the current level of impacts to sediment levels in adjacent surface waters, and may result in improvements to surface water quality through repairing existing segments which could act as nonpoint sources of sediments and upgrading these segments to maintain sustainable use. Adverse impacts to water resources from recurrent future use would be mitigated to insignificant (minor or moderate) adverse impacts through use of those BMPs identified in Section 3.3.2.2.1.

Table 3.3-1b shows the anticipated level of impacts surface waters and floodplains for the DTA site-specific projects with the implementation of the BMPs. Due to the large amount of surface disturbance associated with DTA road improvements (Projects D2, D21, D23 and D24), there would be a greater potential for moderate impacts from increased turbidity and degraded water conditions where construction would occur at existing stream crossings throughout the range lands (Figures 2-3, Appendix B). In addition, these projects would likely involve road upgrades within floodplain areas, having the potential for causing minor adverse impacts from placement of fill to support the upgrades. All remaining projects would create a minor disturbance to soils during construction that could cause minor adverse indirect impacts of increase levels of turbidity or water quality degradation (see Table 3.3-1c).

Projects D7, D8, D12, D13, D18, D19, D20, D21, D22, D25, D27 and D31 would introduce new areas for Soldiers to use during training, therefore, these projects have the potential to adversely impact surface water quality both during construction and training operations by increasing the potential of erosion and indirect impacts of surface water turbidity and sedimentation. Incorporation of hardened (gravel) training surfaces associated with these projects would reduce impacts to none or minor through reducing erosion potential during training use. None of the other projects are anticipated to cause adverse impacts to surface water from operations as they all involve either new building construction which would be required to incorporate stormwater management in site design (D1, D5, D6, D9, and D10), or involve upgrades to existing training infrastructure which would not involve additional operational surface areas

used by Soldiers during training (D2, D3, D4, D11, D14, D17, D23, D24, D26, D28 and D30), and would therefore, not be anticipated to cause increased indirect adverse effects from erosion such as turbidity and sedimentation. These projects have been sited to avoid impacts to floodplain resources (also see Appendix G).

In addition, Projects D1, D11, and D27 would result in the addition of hardened gravel surfaces to support parking which would create the potential for stormwater runoff and associated pollutants (fuels leaked from vehicles and other petroleum products) to reach receiving waterbodies. These impacts, however, would be avoided using site grading and contouring and stormwater management retention, where appropriated, as specified in site-specific SWPPPs which would be developed for these projects.

Some projects would have slight beneficial impacts to surface water if they are completed. Waterless latrines in Project D29 would help ensure prevention of fecal bacteria from being released into stream systems. Other road upgrade projects (D2, D23, and D24) would help to prevent erosion and runoff into surface streams by upgrading and replacing the existing roads, reducing the need for off-road maneuvering. Projects D3 and D4 could benefit surface water quality through upgrading to provide hardened surfaces for Soldiers to perform operations, reducing indirect adverse effects from erosion such as turbidity and sedimentation.

Table 3.3-1c Summary of Surface Water and Floodplain Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Channelization of stream	Loss of streambed	Increased turbidity (construction)	Degraded water quality (operations)	Change of flow direction	Change of velocity	Permanent fill in floodplain	Beneficial	***Overall Impact***
(D1) Range Operation Complex[1]	○	○	⊙	○	○	○	○	○	⊙
(D2) DTA Roads	⊙	⊙	◎	○	⊙	⊙	⊙	✪	◎
(D3/D4) DTA Firing Points	○	○	⊙	○	○	○	○	✪	⊙
(D5) New Load Ramps at Donnelly DZ	○	○	⊙	○	○	○	○	○	⊙
(D6) MATCH Shoot House at Colorado South[1]	○	○	⊙	○	○	○	○	○	⊙
(D7) Expand KD Range[1]	○	○	⊙	⊙	○	○	○	○	⊙
(D8) Target Emplacement	○	○	○	⊙	○	○	○	○	⊙
(D9) Construct additional support buildings at BAX/CACTF	○	○	⊙	○	○	○	○	○	⊙
(D10) Maintenance Buildings for units training at DTA[1]	○	○	⊙	○	○	○	○	○	⊙
(D11) Beales Replacement[1]	○	○	⊙	○	○	○	○	○	⊙
(D12) Area of Responsibility Village	○	○	⊙	⊙	○	○	○	○	⊙
(D13) Theater Specific Village	○	○	⊙	⊙	○	○	○	○	⊙

Table 3.3-1c Summary of Surface Water and Floodplain Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Channelization of stream	Loss of streambed	Increased turbidity (construction)	Degraded water quality (operations)	Change of flow direction	Change of velocity	Permanent fill in floodplain	Beneficial	***Overall Impact***
(D14) Expand OP 26 for Range Control West Operations	○	○	⊙	○	○	○	○	○	⊙
(D15) Delineate DTA East Boundary	○	○	○	○	○	○	○	○	○
(D16) Sign the Impact Area	○	○	○	○	○	○	○	○	○
(D17) Improve Buffalo DZ	○	○	⊙	○	○	○	○	○	⊙
(D18) Expand Buffalo DZ	○	○	⊙	⊙	○	○	○	○	⊙
(D19) Extend the Donnelly FLS	○	○	⊙	⊙	○	○	○	○	⊙
(D20) Convert Fuel Break to Airstrip	○	○	⊙	⊙	○	○	○	○	⊙
(D21) New Road to bypass CTR	○	○	◎	⊙	⊙	⊙	⊙	○	◎
(D22) BAX East Maneuver Corridor	○	○	⊙	⊙	○	○	○	○	⊙
(D23) BRTA Roads	⊙	⊙	◎	○	⊙	⊙	⊙	✪	◎
(D24) GRTA Roads	⊙	⊙	◎	○	⊙	⊙	⊙	✪	◎
(D25) Combat Outposts	○	○	⊙	○	○	○	○	○	⊙
(D26) Replace or Relocate Simpsonville Buildings	○	○	⊙	○	○	○	○	○	⊙
(D27) Construct UAV System tracking pad and access	○	○	⊙	⊙	○	○	○	○	⊙
(D28) Delta Creek Assault Strip	○	○	⊙	○	○	○	⊙	○	⊙
(D29) Install Waterless Latrines[1]	○	○	○	○	○	○	○	✪	✪
(D30) Construct FAARPs[1]	○	○	⊙	○	○	○	○	○	⊙
(D31) Add New OPs along the Winter Trail	○	○	⊙	⊙	○	○	○	○	⊙

[1]Note: These projects are located within proposed SAC range adaptable use zone (see Proposed Action 2).

Similar to FRA, the NEPA Checklist (Appendix C) would be completed to verify the absence/presence of surface waters and floodplains within the project site and projects disturbing over 1 acre of land would be subject to an ADEC Construction General Permit and development of a SWPPP, reducing the potential of surface water quality impacts. All construction projects will be required to adhere to standards imposed by State and Federal regulations.

3.3.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.3.2.3.1 Fort Richardson

Approximately 5 linear miles of streams are located within the area of the proposed FRA SAC Range Adaptable Use Zone (see Figure 2-1). These streams generally flow from the east out of the Chugach Mountains, which feeds into McVeigh Creek and travels south along Glenn Highway into McVeigh Swamp. Extensive erosion could occur during construction if 100 percent of the proposed adaptable use zone was cleared, which could cause sediment runoff into the streams and an increased turbidity, significantly impacting water quality. The following factors would mitigate the overall extent of adverse impacts to FRA surface waters to less than significant:

- Development within the proposed FRA SAC Range Adaptable Use Zone would occur over time. As areas within the adaptable use zone become developed, range planners would still be required to use BMPs to control soil erosion both during and after construction (see Section 3.2.2.2.1) and would be bound to NPDES and Alaska Discharge Elimination System Program construction and stormwater permitting requirements. These measures would avoid direct or cumulative degradation of receiving streams.
- Significant impacts would be avoided as projects disturbing over 1 acre of land would be subject to an ADEC Construction General Permit and development of a SWPPP, reducing the potential of surface water quality impacts. The SWPPP would identify nearby surface waters and project site drainage patterns and would also identify all potential sources of pollution during construction (i.e., sedimentation and turbidity from wind or water erosion and potential sources of contamination from construction equipment and stockpiling areas). The SWPPP would also prescribe control measures for preventing or reducing the potential from construction site runoff or wind erosion to impact surface waters. The permit would require use of sediment control devices during construction and incorporation of stormwater management controls following construction to manage sediments and prevent erosion which would avoid direct or cumulative degradation of receiving streams.
- Areas within the proposed adaptable use zone would still be subject to ITAM monitoring and SRP goals, reducing impacts of military training on surface water quality and identifying and restoring areas of identified impairments.

In addition, in order to avoid significant surface water quality impacts within FRA related to SAC range adaptable use zone activities beyond BMPs and permitting, USAG FRA would restrict development activities as a form of mitigation within 75 feet on either side of streams or surrounding waterbodies within the proposed SAC range adaptable use zone to maintain a vegetative buffer for controlling sediment transport and prevent sedimentation into surface waters. The 75-foot vegetative buffer would provide a natural mechanism from capturing erosion sediments and filtering runoff from construction and training use within the SAC ranges. The buffer would also reduce or avoid Soldier movement along streambanks and within streambeds during training, also reducing the potential for impacts to surface water resources. All construction projects will be required to adhere to standards imposed by State and Federal regulations.

3.3.2.3.2 Fort Wainwright

The proposed FWA SAC Range Adaptable Use Zone contains approximately 7 linear miles of streams and approximately 38 acres of open water, primarily comprised of the Tanana River which encompasses the southern portion of the proposed adaptable use zone (see Figure 2-2a). As the Tanana River contains high background levels of sediments, it is unlikely that development activities within the proposed FWA SAC Range Adaptable Use Zone would contribute to levels of impairment to the Tanana River.

The proposed YTA SAC Range Adaptable Use Zone contains approximately 8 linear miles of streams and a waterbody area of approximately 45 acres (see Figure 2-2b). The north side of the proposed adaptable use zone would drain to Moose Creek, which ultimately travels from the east and drains to the Tanana River system. The south side of the proposed adaptable use zone drains through a series of unnamed streams, and eventually joins with French Creek and Moose Creek to the northwest of the Zone. North of the Machu Range area, is Manchu Lake, a lake that is fed by runoff from the south. The area of the proposed adaptable use zone consists of an elongated ridge, so extensive amounts of surface disturbance within sloping areas could increase erosion-based runoff and introduce more turbidity into the streams that feed into the Tanana River. Similar to the proposed adaptable use zone for FRA and FWA, impacts to surface waters could be significant if the entire area was cleared and developed.

Similar factors (discussed for FRA, Section 3.3.2.3.1) would reduce the overall extent of adverse impacts to less than significant (moderate) adverse impacts for both proposed SAC range adaptable use zones. This would include adherence to a 75foot vegetative buffer on either side of streams or surrounding waterbodies within the proposed SAC range adaptable use zones for controlling sediment transport and prevent sedimentation into surface waters to avoid significant surface water quality impacts. All construction projects will be required to adhere to standards imposed by State and Federal regulations.

3.3.2.3.3 Donnelly Training Area

Approximately 4 linear miles of the Delta River and 14 acres of waterbodies are located within the proposed DTA SAC Range Adaptable Use Zone. An intermittent unnamed slough of the Delta River that periodically maintains a flow during wetter periods is located within the eastern part of the proposed SAC range adaptable use zone. This intermittent feature runs from south to north and joins back into the Delta River at the north end of DTA near where Jarvis Creek joins the Delta River. As both the Delta River and Jarvis Creek contain high background levels of sediments, it is unlikely that development activities within the proposed DTA SAC Range Adaptable Use Zone would contribute to levels of impairment to the Tanana River.

Mitigation measures discussed for FRA (Section 3.3.2.3.1) would reduce the overall extent of adverse impacts to an insignificant level. This would include adherence to a 75-foot vegetative buffer on either side of streams or surrounding waterbodies within the proposed SAC range adaptable use zones for controlling sediment transport and prevent sedimentation into surface waters to avoid significant surface water quality impacts. All construction projects will be required to adhere to standards imposed by State and Federal regulations.

3.3.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant 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 significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for surface water and floodplain construction to reduce overall adverse impacts from routine range projects. Table 3.3-4 (page 3-27) summarizes the potential type and intensity of surface water and floodplain impacts as a result of routine

range projects considering use of the proposed environmental stewardship range construction guidelines. All construction projects will be required to adhere to standards imposed by State and Federal regulations.

SOPs to be used for activities within or adjacent to surface waters and floodplains during project design and construction include:

- USARAK garrisons will comply with Executive Order (EO) 11988 *Protection of Floodplains* to minimize adverse Section 404 resources and floodplains impacts during project siting and range operations. For future projects not identified in this PEA, the Army will prepare a supplement to this programmatic document in the event of a proposal to locate the project within a floodplain or a wetland. The supplemental document will include a FNPA.
- USARAK garrisons will maintain natural or established vegetation riparian buffers for projects located near surface water and floodplains to protect the water quality.
- USARAK garrisons will prepare and adhere to Storm Water Prevention Plans per Code of Federal Regulations (CFR) 40 Part 122 *National Pollutant Discharge Elimination System*.
- USARAK garrisons will prepare grading plans for projects involving earthmoving and grading activities that establish drainage patterns and how runoff velocities affect receiving waters. Components of this will be used to manage runoff and sedimentation from construction sites by identifying proximity to surface water resources and erosion and sediment control measures to prevent runoff and sediments from reaching receiving water bodies. These measures would serve to avoid significant adverse impacts from preventing construction stormwater runoff degradation of receiving streams.

BMPs activities to be used within or adjacent to surface waters and floodplains include**:**

Project Design

- Preserve natural vegetation as a permanent control measure to minimize erosion potential and protect water quality especially in areas characterized by floodplain, wetland, stream banks, steep slopes, and other areas where erosion controls would be difficult to establish, install, or maintain.
- Avoid designing roads and trails in the general direction of preferential water and maintain raised trailbeds to minimize concentrated surface water flows during flooding events.
- Design drainage to accommodate snowmelt runoff and rainfall potential to prevent erosion and formation of gullies.
- Design, construct, and maintain bridges to allow unrestricted flow.
- Maintain natural drainage patterns by the installation of culverts of adequate number and size (to prevent ponding or concentrating surface runoff waters).
- Use trenchless utility crossing technology (i.e., directional drilling) below streams and set back from the stream bank by at least 100 feet.

Construction Staging

- Avoid placing litter, construction materials and debris, and construction chemicals within proximity (typically 75 feet) to surface waters or flood-prone areas to prevent pollutant discharges.
- Keep all construction staging, fueling, and servicing operations at a minimum of 100 feet from surface waters to prevent unintentional contamination and keep spill kits on hand in case of spills to reduce response times.
- Avoid placement of temporary material storage piles within the 100-year floodplain during the rainy season unless the following conditions are met: (1) storage does not occur when flooding is imminent; and (2) if storage piles consist of erosive material, they would be covered with plastic tarps (or something similar) and surrounded with compost berms or other erosion control devices.
- Work excavation equipment from an upland site (e.g., the top of the bridge or culverted road crossing) to minimize adding fill into waters of the U.S.
- Install culverts during low flow periods. Where significant flow is present, acceptable techniques to isolate the construction site from stream flow include channel bypasses, temporary flumes,

sheet pile or sandbag walls, water filled coffer dams, or pumping the stream flow around the work site.

- For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.
- Spoil, debris, piling, cofferdams, construction materials, and any other obstructions resulting from or used during construction shall be removed upon project completion.

Sediment Management

- Control sediment transport and prevent sedimentation into surface waters during construction through slope stabilization, maintaining 75-foot vegetative buffers, revegetation, use effective filters or barriers such as filter fabric fences and straw bales, fiber matting, stormwater retention/detention basins and settling ponds, drainage control, trenches and water bars, waterproof covers over material piles and exposed soils, avoiding work during heavy precipitation, use of fill free from fine material, and other appropriate measures.
- Pump sediment laden water resulting from construction activities into a settling basin or an area where it can be naturally filtered, before it reenters the stream.
- Closely monitor all construction sites to evaluate sediment control and stormwater and pollution management practices, inspect for potential damage, and to detect and correct future changes in drainage patterns to prevent impairment of surface waters and alternation of surface hydrology.
- If sediment escapes the construction site, off-site accumulations of sediment would be removed at a frequency sufficient to minimize off-site impacts.
- Construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner).

Stormwater/Surface Water Flow Management

- Place velocity dissipation devices at discharge locations and along outfall channels to provide a non-erosive flow velocity and maintain the hydrological regime of the receiving water.
- Structures, pipes, or associated fill should not impede flood or surface water flows.

Post Construction Riparian Restoration

- Restored stream bank, lake shore, or coastline affected by the work to pre-existing contours and stabilize.
- Restoration and revegetation of streambank and shoreline habitat should utilize the most up-to-date bioengineering techniques and use of biodegradable materials when feasible and practicable (i.e., Streambank Revegetation and Protection: A Guide for Alaska (Muhlberg and Moore 1998)). Techniques may include, but are not limited to, brush layering, brush mattressing, live siltation, and use of jute matting and coir logs to stabilize soil and re-establish native vegetation.

Operations

- Employ SPPCP measures including proper handling and disposal of substances to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources by measures such as keeping spill kits nearby sites using these substances.
- Follow BMP guidance contained within the *Army Small Arms Training Range Environmental Best Management Practices (BMPs) Manual* to support the selection and implementation of management methods for erosion or lead migration issues from munitions (bullets) based on site specific use and environmental characteristics to improve the environmental quality and insure the long-term sustainability of essential training areas.

Table 3.3-4 Summary of Potential Surface Water and Floodplain Impacts from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Channelization of stream	Loss of streambed	Increased turbidity (construction)	Degraded water quality (operations)	Change of flow direction	Change of velocity	Permanent fill in floodplain	Beneficial	***Overall Impact***
Berm Creation & Maintenance	○	○	⊙	⊙	○	○	◎	○	◎
Bleacher Enclosure	○	○	⊙	○	○	○	○	○	⊙
Bridge Installation	◎	⊙	⊙	⊙	◎	⊙	◎	○	◎
Building Construction	○	○	⊙	○	○	○	○	○	⊙
Control Tower	○	○	⊙	○	○	○	○	○	⊙
Covered Hall	○	○	⊙	○	○	○	○	○	⊙
Culvert Installation	⊙	⊙	⊙	○	○	⊙	○	○	⊙
Fencing	○	○	⊙	○	○	○	○	○	⊙
Firing Lane Creation & Maintenance	○	○	⊙	⊙	○	○	○	○	○
Firing Line Creation & Maintenance	○	○	⊙	⊙	○	○	○	○	○
FOBS Creation and Maintenance	○	○	⊙	○	○	○	○	✪	⊙
Grading/Shaping	○	○	⊙	⊙	○	○	◎	○	⊙
Gravel Pits	⊙	⊙	◎	⊙	○	⊙	○	○	◎
Hardened Target Creation & Maintenance	○	○	⊙	⊙	○	○	○	○	⊙
Hardstands Creation and Maintenance	○	○	⊙	⊙	○	○	○	○	⊙
Improvised Explosive Device Defeat	○	○	⊙	○	○	○	○	✪	⊙
Land Clearing & Vegetation	○	○	⊙	⊙	○	○	○	○	⊙
Latrine	○	○	○	○	○	○	○	✪	✪
Mowing	○	○	○	○	○	○	○	○	○
Observation Points Creation & Maintenance	○	○	⊙	○	○	○	○	○	○
Pit Toilets Creation and Maintenance	○	○	○	⊙	○	○	○	○	⊙
Prescribed Fire	○	○	○	○	○	○	○	○	○
Road (Trail) Creation & Maintenance	○	○	◎	⊙	○	○	○	✪	◎
Small Arms Siting	○	○	⊙	⊙	○	○	○	○	⊙
Boundary Line Clearings	○	○	○	○	○	○	○	○	○
Target Emplacement	○	○	○	⊙	○	○	○	○	⊙
Utility Line Creation & Maintenance	○	○	⊙	⊙	○	○	○	○	⊙
UXO Surveys	○	○	○	○	○	○	○	○	○
Wood Pile Burning	○	○	○	○	○	○	○	○	○
Urban Training Village	○	○	⊙	⊙	○	○	○	○	⊙

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. Implementing SOPs and BMPs would reduce many surface water and floodplain impacts from project construction and military activities to minor or no impact. Proper project design and would ensure that drainage and runoff would occur without excessive erosion and increased turbidity, including SWPPP requirements for those projects disturbing over 1 acre of land (see Section 3.3.2.2.1). The use of silt fencing and other erosion control devices would prevent debris from entering streams during construction. Proper stormwater management and post-construction riparian restoration would ensure that streams and other waterbodies would be reestablished properly. While military activities use the project site, an up to date SPPCP would ensure that spills would be cleaned up before they reach the surface water network and continued monitoring and restoration of training sites through the ITAM Program would likely avoid operational impacts.

3.4 WETLANDS

3.4.1 Affected Environment

Wetlands provide numerous ecological and human services including habitat for wildlife, collection and retention of sediments and filtering of pollutants contained within stormwater runoff and provide control of floodwater flows and recharge for groundwater aquifers. Wetland resources are protected under Section 404 of the CWA and EO 11990, *Protection of Wetlands*. USARAK training lands contain numerous wetlands. Wetland resources with USARAK training lands have been mapped under the National Wetlands Inventory (NWI) program (see Figures B-1 through B-3, Appendix B) using aerial photos and maps to predict and classify wetland areas based on vegetation, visible hydrology, topography, and whether there exists a significant nexus between the wetlands and navigable waterways. In addition, the USACE Waterways Experiment Station completed a wetland planning level inventory between 1999 and 2003 which covers a majority of USARAK training lands based on Ecological Land Survey ecotype classes (see Figures B-1 through B-3, Appendix B) (CRREL 1999, 2001 and 2003). Ecotype classification involves mapping areas (1:50,000 scale) that share homogenous topography, terrain, soil, surface-form, hydrology, and vegetation. These homogenous ecotype units can assist range planners and natural resource managers to predict the probability of an ecotype being wetland, with the greatest probability of wetland occurrence anticipated in those ecotypes which occur lower in topography (depressions or lowlands), have hydric soils, hydrophytic vegetation and a consistent source of hydrology (groundwater, surface water). Permafrost also plays a significant role in the formation of wetlands in Alaska, and can also be used to predict the occurrence of wetlands if permafrost information is available, usually through soils surveys. The actual boundaries and locations of these wetlands shown in Figures B-1 through B-3 (Appendix B), therefore, are dependent upon field delineation and Section 404 jurisdictional determination by the USACE.

Both NWI and ecotype classes along with soil surveys are used by USAG Alaska garrisons for resource management and planning of rangelands as a whole, however, a combination of desktop and field delineations are typically used for site-specific management and to maintain compliance with Section 404 and EO 11990 statutes. If the proposed project area is within a wetland area, as confirmed by the inventories and a site visit, the permit process is initiated.

To assist in the management of wetland resources on Army range and training lands, and to comply with Clean Water Act permitting requirements, functional assessments are conducted concurrently with wetland delineations. Two methods USAG Alaska will be using in the near future are the Montana Department of Transportation (MDT) Montana Wetland Assessment Method at FWA and DTA, and the Anchorage Wetlands Assessment Methodology at FRA. Regardless of which protocol is used, these methods assess a wetland's functions and values. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (e.g., groundwater recharge and discharge). Values are benefits that derive from one or more functions and physical characteristics associated with a wetland. These functions and values include wildlife and fish habitat, surface water storage, uniqueness (e.g., in the Interior, emergent

wetlands surrounding open water are more unique then black spruce forests), flood attenuation, and removal/retention of sediments, nutrients and toxicants.

Functional assessments have not been conducted for the wetland systems potentially affected by the Proposed Actions, however, wetland function is considered as part of the Environmental Stewardship Range Construction Guidelines as part of Proposed Action 3.

3.4.1.1 Fort Richardson

Wetlands comprise approximately 8 percent (4,990 acres) of FRA's total land area (USAG 2007b). Wetland types include estuarine and marine (along Cook Inlet and adjacent tidal areas), palustrine (inland), riverine (non-tidal river), and lacustrine (lake). The largest contiguous portion of wetlands (2,165 acres) include the estuarine salt marsh encompassing Eagle River Flats Impact Area, which is outside the range and training lands under consideration for this analysis. This area is characteristic of numerous ponds, many of which are shallow mudflat ponds, less than 6 inches deep, that often dry up during summer. These type of estuarine, tidal-influenced systems are characterized within the Ecological Land Survey as the Coastal Halophytic Zone ecotype. Throughout the remainder of FRA, freshwater and saltwater marshes, bogs, and lakes are interspersed throughout, with larger wetland complexes found along riparian areas such as those along Ship Creek. These wetlands fall within the following ecotypes: lowland forest wetlands (primarily associated with riparian areas), lacustrine wetlands (associated with lake systems), and alpine and subalpine (associated with higher elevation terrain).

3.4.1.2 Fort Wainwright

Wetlands comprise approximately 42 percent (6,500 acres) of FWA's total land area. These wetlands are interspersed throughout the installation and are classified palustrine, riverine, and lacustrine types (USARAK, 2004a). Bogs, fens, and marshes are also distributed throughout the installation. The largest wetland complexes are associated with riparian areas adjacent to the Tanana River and within Training Areas 113 and 114 (see Figure B-2a, Appendix B).

Wetlands comprise approximately 74 percent (483,500 acres) of TFTA's total land area and are classified palustrine, riverine, and lacustrine types (USARAK, 2004a). Most wetlands are characteristic of lowland wet needleleaf forest and lowland forest ecotype, and the scrub thermokarst complex ecotypes which are associated with abandoned floodplains and collapsed bogs.

Wetlands comprise approximately 17 percent (42,600 acres) of YTA's total land area (USARAK, 2004a) with an additional 27 percent (68,650 acres) classified as wetland/upland complex. Similar to FWA and TFTA wetland resources are classified palustrine, riverine, and lacustrine types. The dominant ecotype within YTA is the lowland wet needleleaf forest; shrub wetlands and riverine and lacustrine complexes are also present.

3.4.1.3 Donnelly Training Area

Wetlands comprise approximately 68 percent (431,940 acres) of DTA's total land area (USARAK, 2004a), and are classified as either palustrine, riverine, or lacustrine. The palustrine shrub wetlands are the most common found at DTA. Lowlands associated with the Delta River and Delta Creek support most of the wetlands on DTA. Most wetlands are characteristic of the lowland wet low scrub, lowland tussock scrub bog, and lowland wet needleleaf forest ecotypes of the Ecological Land Survey.

NWI mapping was use to characterize wetland resources within both BRTA and GRTA. Approximately 12 percent (275 acres) of BRTA's total land area are wetlands which consist primarily of emergent and scrub-dominated wetlands. Approximately 44 percent (9,025 acres) of GRTA's total land area are wetlands are dominated by forested wetlands, with lesser components of emergent and scrub wetlands.

3.4.2 Environmental Consequences

Direct impacts are further discussed by the No Action and Proposed Action alternatives in Sections 3.4.2.1 through 3.4.2.4. Indirect impacts of wetland disturbance to surface water and floodplains, wildlife and fisheries, and recreation and subsistence, are discussed in Sections 3.3.2, 3.6.2, and 3.8.2, respectively. Numerous proposed projects involve the upgrade of existing facilities. This section assumes a worse-case scenario for Proposed Actions 1 and 2, assuming the entire acreage of disturbance (Proposed Action 1, Tables 2.2 and Proposed Action 2, Section 2.2.2) contain wetlands if NWI mapping or ecotype classification indicates the presence of wetlands within the vicinity of the proposed project site (Proposed Action 1) or within the proposed SAC range adaptable use zone (Proposed Action 2).

The following categories were used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant) –** The degree to which activities affect installation wetlands. Minor impacts would result from any temporary impacts to wetlands. Activities that permanently impact wetlands but comply with Section 404 and any associated mitigation requirements would represent moderate impacts. In the case of regionally unique or rare wetlands, any temporary or permanent impacts would represent moderate impacts.
- **Severe (significant) –** Activities that result in an unpermitted loss of jurisdictional wetland function or the loss of more than 10 percent of an installation's wetlands would represent a significant impact.

For the purposes of this analysis, it is assumed that all wetlands identified are jurisdictional. In addition, the following bullets provide general descriptions of the type of impacts used in the wetland impact analysis:

- *Permanent loss of wetlands* includes loss of wetland acreage or function due to direct impacts that include additions of fill material or creation of impervious surface in areas containing wetlands or indirect impacts such as alteration of wetland hydrology (see alteration of hydrology definition).
- *Temporary disturbance* includes disturbance to a wetland over a short period of time (i.e., placement of construction matting during construction). When the temporary disturbance is removed, wetlands are capable of restoring to their natural state.
- *Vegetation Alteration (operations)* includes disturbance to vegetation during Army training or use of the site that would alter the vegetative composition of a wetland such as the conversion of forested wetland areas to scrub-shrub or wet meadow.
- *Wetland degradation* includes disturbances that alter wetland composition or functioning, however, does not result in the total acreage loss of a wetland.
- *Alteration of hydrology* includes disturbances that alter the hydrology of wetlands, either by increasing flooding/ponding conditions or by obstructing the level of water reaching a wetland.
- *Beneficial impact* includes those actions that would benefit wetlands by removing or reducing the potential for wetland disturbance during operations.

A FNPA was prepared to address unavoidable impacts to wetlands resulting from the Proposed Actions. The FNPA determined that no practicable alternative exists to entirely avoid wetlands as each proposed project involves enhancements to existing infrastructure that are already located within proximity to wetlands areas (See Appendix G). Implementation of BMPs discussed in Appendix D including project design to avoid and minimize wetland disturbance would help reduce wetland impacts. This includes environmentally sound design to prevent disruption to wetland hydrology, avoidance of wetland areas for stockpiling and construction staging areas, and reseeding/planting disturbed wetland areas with native or other appropriate vegetation. Prior to any construction within area wetlands, USAG FRA and USAG FWA will consult with the USACE, Alaska District, to determine whether the particular action requires a Clean Water Act Section 404 permit. All projects will adhere to mitigation requirements imposed as a condition to receiving a CWA Section 404 permit. These mitigation measures will serve to avoid significant adverse impacts to local wetlands resources.

3.4.2.1 No Action

Under the No Action Alternative, USAG Alaska garrisons would not implement one or more of the Proposed Actions, however, range construction projects would still continue as needed and would undergo a project-by-project evaluation under NEPA. Adverse impacts could occur to wetland resources as no programmatic guidance would be established in the siting of range facilities (Proposed Actions 1 and 2) and no standard list of SOPs and BMPs (Proposed Action 3) would be readily available to employ during routine range activities. Individual planning and siting of projects could result in a net increase of wetland impacts into the future, whereas the programmatic approach would allow for a broad overview of existing range conditions, needs, and environmental resource constraints. USAG FRA and USAG FWA, however, would still be required to comply with CWA Section 404 permitting and EO 11990, therefore, overall adverse impacts could be moderate.

3.4.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.4.2.2.1 Fort Richardson

Projects R1, R2, R4, R5, R6, R8, R9, and R12 would not be anticipated to have any adverse impacts to wetland resources as no wetlands were identified within proximity to the proposed sites (see Figures B-1, Appendix B).

NWI mapping indicates up to 15 acres of wetlands are located within proximity to Projects R3 and R7, which if impacted, would constitute an insignificant adverse impact of less than 1 percent of existing wetlands within FRA. Based on the size, nature of activity, and location of these projects within proximity to wetlands, however, a potential to cause significant adverse impacts exists to wetlands through unmitigated loss. Significance of unmitigated loss of jurisdictional wetlands at FRA would be avoided through the Section 404 permitting process which would likely require mitigation for unavoidable adverse impacts to wetlands. Adverse impacts to wetlands from construction of these projects would be additionally mitigated to insignificant (minor or moderate) adverse impacts through the use of the following BMPs during construction and site restoration:

- During design, trail widths would be narrowed/confined in sensitive wetland habitats or when possible, widened to the upland direction to avoid wetland impact. This would serve to avoid loss of wetlands.
- During design, natural drainage patterns would be maintained by the installation of culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands. This would serve to avoid indirect adverse wetland impacts of loss of wetland or alternation of wetland functioning.
- Prior to construction, functional assessment of wetlands would be conducted within the project study area to provide a means of rating wetlands and to facilitate the prioritization of impact avoidance and minimization measures. The functional assessment would be used to identify appropriate mitigation during the Section 404 permitting process to replace wetland functions lost from unavoidable impacts to wetlands.
- Prior to construction, project limits would be clearly identified in the field (e.g., staking, flagging, silt fencing, use of buoys, existing footprint for maintenance activities, etc.) prior to clearing and construction to ensure avoidance of impacts to waters of the U.S. (including wetlands) beyond project footprints.
- Following construction, all disturbed areas resulting from project construction would be stabilized using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams and restore temporarily disturbed wetlands to original grades using stockpiled wetland topsoils and plant native vegetation.

Table 3.4-1a shows the anticipated level of impacts for the FRA site-specific projects with the implementation of the BMPs discussed above. Although the FRA road improvements have the potential to cause a moderate adverse impact from construction, long-term beneficial impacts could be anticipated as road improvements would restrict vehicles maneuvering off-road in degraded trail segments, reducing long-term wetland degradation along FRA trails and along the ISBC road. Projects R10 (latrine) and R11 (covered bleacher) are not located within wetland areas, however, 2 of the proposed sites for these facilities are directly adjacent to McVeigh Creek and are upstream to McVeigh Swamp (see Figure B-1a, Appendix B, and Section 3.3.2 for potential surface water impacts). As the footprints of these projects are small, they would likely be sited to maintain a minimum 75-foot buffer to McVeigh Creek, avoiding any indirect impacts to McVeigh Swamp (sedimentation). Until site evaluations can be performed, it is assumed that all wetland acreages within Table 3.4-1a are jurisdictional. As Project R7 involves road upgrades throughout FRA, it is likely that segments of this project would have the potential to impact wetlands containing a nexus to navigable waterways.

Table 3.4-1a Summary of Wetland Impacts from Site-specific FRA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Approximate acreage of potential wetland impact	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	***Overall Impact***
(R1) FRA UAC[1]	0	○	○	○	○	○	○	○
(R2) Dig a well at the ISBC Site	0	○	○	○	○	○	○	○
(R3) Raise the ISBC Road	5	◎	⊙	⊙	⊙	⊙	✪	◎
(R4) Provide Turnaround IPBC	0	○	○	○	○	○	○	○
(R5) Create Bivouac Site UAC	0	○	○	○	○	○	○	○
(R6) Range Operation Complex	0	○	○	○	○	○	○	○
(R7) FRA Roads	10	◎	⊙	⊙	⊙	⊙	✪	◎
(R8) Vehicle Storage/ Maintenance Building[1]	0	○	○	○	○	○	○	○
(R9) Install Flagpole ER Gate	0	○	○	○	○	○	○	○
(R10) Waterless Arctic Latrine	0	○	○	○	⊙	○	○	⊙
(R11) Covered Bleachers[1]	0	○	○	○	⊙	○	○	⊙
Total Approximate Acreage	**15**							

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to verify the absence of wetlands or the extent and type of wetlands that would be potentially impacted once a

footprint has been established. During this process, wetlands would also be evaluated for function and whether a nexus between the wetlands and navigable waterways exists.

3.4.2.2.2 Fort Wainwright

FWA

Projects W4, W9, and W19 would not be anticipated to have any adverse impacts to wetland resources as no wetlands were identified within proximity to the proposed sites (see Figure B-2a, Appendix B). NWI mapping did indicate the potential for wetlands in proximity to projects W14, W17, W18 and W20, however, FWA Natural Resource staff has determined that no wetlands would be impacted by these projects.

Unlike the other installations, the NWI mapping indicates the FWA SAC Range as almost entirely wetland (see Figure B-2a, Appendix B); however, this characterization does not reflect the previous Army disturbance and alternation of the landscape. Projects W2, W3, and W22 are located within area of the FWA SAC Range that have been modified during FWA's past and actively serve as training ranges (see Figure B-2a, Appendix B). These areas are unlikely to contain jurisdictional wetland habitat due to past and ongoing military activities, and therefore, would not be anticipated to cause adverse impacts to wetlands.

NWI mapping indicates Projects W6, W11, W12, W13, and W15, are within proximity to wetland areas (totaling approximately 48.5 acres) (see Figures B-2a through B-2c, Appendix B). In addition, FWA Natural Resource staff have determined Projects W3, W8, W10, and W16 are located within proximity to wetland areas (7.2 acres total). If total wetland loss were to occur as a result of these projects, an insignificant adverse impact would result from loss of up to 1 percent of existing wetlands within FWA Main Post range lands. Significance of unmitigated loss of jurisdictional wetlands at FWA would be avoided through the Section 404 permitting process which would likely require mitigation for unavoidable adverse impacts to wetlands. Adverse impacts to wetlands from construction of these projects would be additionally mitigated to insignificant (minor or moderate) adverse impacts through the use of BMPs during construction and site restoration (see Section 3.4.2.2.1).

Table 3.4-1b shows the anticipated level of impacts for the FWA site-specific projects with the implementation of the BMPs. This overall impact to wetlands would be moderate and acreages would likely be smaller as wetland would be avoided during final site design, and projects W11 and W12, (approximately 23 acres combined) involve improvements to existing facilities and access roads. Until site evaluations can be performed, it is assumed that all wetland acreages within Table 3.4-1b are jurisdictional.

TFTA

Project W21 involves an approximate 20-foot clearing around the Alpha Impact Area to demarcate the impact area's boundary (see Figure B-2b, Appendix B). NWI mapping did indicate the potential for wetlands in proximity to project W21, however, FWA Natural Resource staff has determined that no net wetland loss would occur from this project. The clearing of vegetation would cause alteration of vegetation communities (see Table 3.4-1b) which would have a minor to moderate adverse impact to wetlands affected by clearing of taller tree and shrub species.

YTA

Projects W1, W5, W7, W23, W24, W26, W28, W30, W33, W35, W36, W37, W38, and W42 would not be anticipated to have any adverse impacts to wetland resources as no wetlands were identified within proximity to the proposed sites (see Figures B-2c and B-2d, Appendix B). NWI mapping did indicate the potential for wetlands in proximity to project W32, however, FWA Natural Resource staff has determined that no net wetland loss would occur from this project. Similar to project W21 in TFTA, W31 would involve the clearing of vegetation and cause an alteration of wetland vegetation communities (see Table 3.4-1b). This conversion would cause a minor to moderate adverse impact to the wetlands affected.

NWI mapping indicates that up to approximately 185 acres of wetlands are located within proximity to Projects W27, W29, W31, W34, W39, and W40 (see Figures B-2c and B-2d, Appendix B). If total wetland loss were to occur as a result of these projects, an insignificant adverse impact would result from a loss of less than 1 percent of existing wetlands within YTA. Significance of unmitigated loss of jurisdictional wetlands at YTA would be avoided through the Section 404 permitting process which would likely require mitigation for unavoidable adverse impacts to wetlands. Adverse impacts to wetlands from construction of these projects would be additionally mitigated to insignificant (minor or moderate) adverse impacts through the use of BMPs during construction and site restoration (see Section 3.4.2.2.1).

Table 3.4-1b shows the anticipated level of impacts for the YTA site-specific projects with the implementation of the BMPs. The acreage of potential disturbance, however, would likely be smaller as wetlands would be avoided during final site design and Projects W27, W29, W31, W34, and W40 (approximately 146 acres of ground disturbance) involve improvements to existing facilities and access roads that contain previously disturbed areas, reducing the probability of wetlands occurring within the entire footprint of disturbance. Until site evaluations can be performed, is assumed that all wetland acreages within Table 3.4-1b are jurisdictional.

Table 3.4-1b Summary of Wetland Impacts from Site-specific FWA Range Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Approximate acreage of potential wetland impact	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	***Overall Impact***
FWA								
(W2) Ammunition Breakdown Buildings[1]	<1	⊙	⊙	○	⊙	○	○	⊙
(W3) Demo Pond Range[1]	1.8	◎	⊙	⊙	⊙	○	○	◎
(W4) General Instructional Building CACTF	0	○	○	○	○	○	○	○
(W6) Indoor Shooting Range[1]	2	◎	⊙	○	⊙	○	○	◎
(W8) Range Operation Complex [1]	2.1	◎	⊙	○	⊙	○	○	◎
(W9) FWA C130/17 Mock-up	0	○	○	○	○	○	○	○
(W10) Welding/ Carpentry Shop[1]	1.2	◎	⊙	○	⊙	○	○	◎
(W11) Arctic Village[1]	13	◎	⊙	⊙	⊙	○	○	◎
(W12) SAC East Expansion[1]	10	◎	⊙	⊙	⊙	⊙	○	◎
(W13) KD Range Expansion[1]	22	◎	⊙	⊙	⊙	⊙	○	◎
(W14) Pave Range Road[1]	0	○	○	○	○	○	○	○

Table 3.4-1b Summary of Wetland Impacts from Site-specific FWA Range Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Approximate acreage of potential wetland impact	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	***Overall Impact***
(W15) SAC Security Fence[1]	1.5	○	⊙	⊙	⊙	○	○	⊙
(W16) Rebuild MRF Firing Line[1]	2.1	◎	⊙	⊙	⊙	○	○	◎
(W17) Combined Arms Collective Training Facility	0	○	○	○	○	○	○	○
(W18) Drivers Training Course Phases 1-5	0	○	○	○	○	○	○	○
(W19) Latrine – Birch Hill Biathlon Range	0	○	○	○	○	○	○	○
(W20) Warrior Forward Operations Base Phase 3	0	○	○	○	○	○	○	○
(W22) Latrines[1]	0	○	○	○	○	○	○	○
Total Approximate Acreage	**57**							
TFTA								
(W21) Alpha Impact Area Survey Line	0	○	⊙	⊙	○	○	○	⊙
Total Approximate Acreage	**0**							
YTA								
(W1) Digital Air Ground Integration Range	0	○	○	○	○	○	○	○
(W5) Stuart Creek Integrated Target Array	0	○	○	○	○	○	○	○
(W7) Firebird UAV Building	0	○	○	○	○	○	○	○
(W23) Charlie Battery FOB	0	○	○	○	○	○	○	○
(W24) YTA Convoy Live Fire Range Phase 1	0	○	○	○	○	○	○	○
(W25) Winter Camp FOB[1]	5	◎	⊙	⊙	⊙	⊙	○	◎
(W26) YTA Firing Point 13	0	○	○	○	○	○	○	○
(W27) Husky DZ FOB	2.3	◎	⊙	⊙	⊙	⊙	○	◎
(W28) YTA Latrines	0	○	○	○	○	○	○	○
(W29) YTA Demolition Range	18	◎	⊙	⊙	⊙	⊙	○	◎
(W30) YTA Firing Point Direct Fire	0	○	○	○	○	○	○	○
(W31) Stuart Creek Access Trails	26	◎	⊙	⊙	⊙	⊙	✪	◎

Table 3.4-1b Summary of Wetland Impacts from Site-specific FWA Range Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Approximate acreage of potential wetland impact	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	***Overall Impact***
(W32) Stuart Creek Impact Area Survey Line	0	○	⊙	⊙	○	○	○	⊙
(W33) FP 9 Direct Firing Point	0	○	○	○	○	○	○	○
(W34) Husky DZ Resurface	100	◎	⊙	⊙	⊙	⊙	○	◎
(W35) Gravel Source YTA	0	○	○	○	○	○	○	○
(W36) Bravo Battery FOB	0	○	○	○	○	○	○	○
(W37) Maintenance Building[1]	0	○	○	○	○	○	○	○
(W38) High Capacity Well[1]	0	○	○	○	○	○	○	○
(W39) YTA Roads Upgrade	32	◎	⊙	⊙	⊙	⊙	✪	◎
(W40) YTA Manchu Trail Bridge Upgrade	2	◎	⊙	⊙	⊙	⊙	✪	◎
(W42) Harden Firebird FP and Bivouac Area	0	○	○	○	○	○	○	○
Total Approximate Acreage	**185**							

Note: [1]These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Similar to FRA, prior to construction of any project however, the NEPA Checklist (Appendix C) would be completed to verify the absence of wetlands or the extent and type of wetlands that would be potentially impacted once a footprint has been established. During this process, wetlands would also be evaluated for function and whether a nexus between the wetlands and navigable waterways exists.

3.4.2.2.3 Donnelly Training Area

Projects D1, D4-D6, D9-D12, D13, D17, D19, D22, and D25, and D27-D30 would not be anticipated to have any adverse impacts to wetland resources as no wetlands were identified within proximity to the proposed sites (see Figures B-3, Appendix B). Project D13 (Figure B-3f, Appendix B) also indicated the potential for wetland impact, however, the facility would be constructed within mountainous terrain above the treeline; therefore, impacts to wetlands are unlikely. Projects D9 and D22 have undergone field delineated wetland verification and are being sited to avoid wetland areas. In addition, project D16 involves placements of signs on trees or posts, therefore, no adverse wetland impacts would be anticipated from this activity if BMPs are used to restrict heavy equipment from wetland areas, and removal of vegetation is avoided.

NWI mapping indicates that up to 400 acres of wetlands are located within proximity to Projects D2, D3, D7, D8, D14, D15, D18, D20, D21, D26, and D31 (see Figures B-3a through B-3h, Appendix B). If total wetland loss were to occur as a result of these projects, an insignificant adverse impact would result from a loss of less than 1 percent of existing wetlands within DTA and would constitute an overall moderate adverse impact. Significance of unmitigated loss of jurisdictional wetlands at DTA would be avoided through the Section 404 permitting process which would likely require mitigation for unavoidable adverse impacts to wetlands. Adverse impacts to wetlands from construction of these projects would be additionally mitigated to insignificant (minor or moderate) adverse impacts through the use of BMPs during construction and site restoration (see Section 3.4.2.2.1).

Table 3.4-1c shows the anticipated level of impacts for the DTA site-specific projects with the implementation of the BMPs. This acreage, however, would likely be smaller as wetlands would be avoided during final site design and Projects D20, D26, and D31 (approximately 32 acres of ground disturbance) involve improvements to existing facilities and access roads that contain previously disturbed areas which would likely lack wetlands within the entire footprint of disturbance. Project D3 has undergone field verification and only 2 acres of the potential 26 acres of wetland impacts were determined unavoidable. These unavoidable impacts are associated with improvements to the Meadows Roads FPs. In addition, Project D15 involves demarcation of DTA East's eastern boundary and would unlikely cause a conversion of wetland resources; the clearing of vegetation would cause alteration of vegetation communities and the potential for wetland degradation with 7 acres identified by NWI mapping as wetland.

NWI mapping indicates that Project D23 is located within proximity to 5 acres of wetland and Project D24 is located within proximity to 164 acres of wetland. If total wetland loss were to occur as a result of these projects, an insignificant adverse impact would result from a loss of up to 2 percent of both BRTA and GRTA wetlands. Table 3.4-1c shows the anticipated level of impacts for these projects with the implementation of the BMPs. Until site evaluations can be performed, is assumed that all wetland acreages within Table 3.4-1c are jurisdictional.

Table 3.4-1c Summary of Wetland Impacts from Site-specific DTA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Approximate acreage of potential wetland impact	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	*Overall Impact*
(D1) Range Operation Complex[1]	0	○	○	○	○	○	○	○
(D2) DTA Roads	303	◎	⊙	⊙	⊙	⊙	✪	◎
(D3) DTA Firing Points	2	◎	⊙	⊙	⊙	○	○	◎
(D4) DTA Firing Points	0	○	○	○	○	○	○	○

Table 3.4-1c Summary of Wetland Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Approximate acreage of potential wetland impact	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	*Overall Impact*
(D5) New Load Ramps at Donnelly DZ	0	○	○	○	○	○	○	○
(D6) MATCH Shoot House at Colorado South[1]	0	○	○	○	○	○	○	○
(D7) Expand KD Range[1]	<1	○	⊙	⊙	⊙	○	○	⊙
(D8) Target Emplacement	<1	○	⊙	⊙	⊙	○	○	⊙
(D9) Construct additional support buildings at BAX/CACTF	0	○	○	○	○	○	○	○
(D10) Maintenance Buildings for units training at DTA[1]	0	○	○	○	○	○	○	○
(D11) Beales Replacement[1]	0	○	○	○	○	○	○	○
(D12) Area of Responsibility Village	0	○	○	○	○	○	○	○
(D13) Theater Specific Village	11	◎	⊙	⊙	⊙	○	○	◎
(D14) Expand OP 26 for Range Control West Operations	5	◎	⊙	⊙	⊙	○	○	◎
(D15) Delineate DTA East Boundary	7	○	⊙	⊙	⊙	○	○	⊙
(D16) Sign the Impact Area	0	○	○	○	○	○	○	○
(D17) Improve Buffalo DZ	0	○	○	○	○	○	○	○
(D18) Expand Buffalo DZ	40	◎	⊙	⊙	⊙	○	○	◎
(D19) Extend the Donnelly FLS	0	○	○	○	○	○	○	○
(D20) Convert Fuel Break to Airstrip	6	◎	⊙	⊙	⊙	⊙	○	◎
(D21) New Road to bypass CTR	18	◎	⊙	⊙	⊙	⊙	○	◎
(D22) BAX East Maneuver Corridor	0	○	○	○	○	○	○	○
(D23) BRTA Roads	5	◎	⊙	⊙	⊙	⊙	✪	◎
(D24) GRTA Roads	164	◎	⊙	⊙	⊙	⊙	✪	◎
(D25) Combat Outposts	0	○	○	○	○	○	○	○
(D26) Replace or Relocate Simpsonville Buildings	<1	⊙	⊙	⊙	⊙	○	○	⊙
(D27) Construct UAV System tracking pad and access	0	○	○	○	○	○	○	○

Table 3.4-1c Summary of Wetland Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Approximate acreage of potential wetland impact	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	*Overall Impact*
(D28) Delta Creek Assault Strip	0	○	○	○	○	○	○	○
(D29) Install Waterless Latrines[1]	0	○	○	○	○	○	○	○
(D30) Construct FAARPs[1]	0	○	○	○	○	○	○	○
(D31) Add New OPs along the Winter Trail	17	◎	⊙	⊙	⊙	○	○	◎
Total Approximate Acreage	**581**							

Note: [1]These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Similar to the proposed FRA and FWA projects, prior to construction of any project however, the NEPA Checklist (Appendix C) would be completed to verify the absence of wetlands or the extent and type of wetlands that would be potentially impacted once a footprint has been established. During this process, wetlands would also be evaluated for function and whether a nexus between the wetlands and navigable waterways exists.

3.4.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.4.2.3.1 Fort Richardson

According to NWI mapping, the proposed FRA SAC Range Adaptable Use Zone contains approximately 107 acres of wetland. Table 3.4-2a summarizes wetland acreage by wetland type. Until site evaluations can be performed, it is assumed that all wetlands within Table 3.4-2a are jurisdictional. This Proposed Action assumes a worse-case scenario that all wetlands within the proposed adaptable use zone would be impacted from future FRA SAC range development activities which would constitute an insignificant adverse impact as 2 percent of FRA wetlands would be disturbed. To minimize adverse impact to jurisdictional wetlands, the Army would undertake all mitigation measures imposed as a condition to receiving a CWA Section 404 permit. The following factors would further mitigate adverse impacts to wetlands within FRA:

- Existing wetlands within the FRA SAC Range already experience some degree of degradation due to the high use of SAC ranges; therefore, these wetlands would likely be lower in overall wetland function. Concentrating development within the SAC range would reduce the potential for future disturbances of range-related projects to impact wetland systems elsewhere within FRA

lands; including wetland complexes associated with valuable wildlife habitat areas such as McVeigh Swamp and riparian wetlands along Ship Creek.

- Wetland loss within the FRA SAC Range would occur over time. As areas within the adaptable use boundary become developed, range planners would still be required to exhibit avoidance and minimization measures for future projects as required under Section 404 of the CWA and by EO 11990, and would be bound to FNPA requirements and any mitigation requirements as part of Section 404 permitting. Overall regulatory requirements and permitting stipulations (i.e., mitigation) would aid in the no net loss goals of wetland loss within local watersheds.
- The likelihood of 100 percent disturbance to wetland resources would be highly unlikely. As described in Section 3.1, both the requirements of concealment during Soldier training, and SDZ building limitations would likely prevent the extent of disturbance analyzed by the worst-case-scenario.
- BMPs for siting and construction (see Section 3.4.2.2.1) would be implemented to avoid wetlands during the planning process, and to protect remaining wetlands during construction.

Table 3.4-2a. NWI Wetland Communities at FRA SAC Range

Type of Wetland	Approximate Acres
PUB	0
PEM	3
PSS	67
PFO	37
Total Wetlands	**107**

3.4.2.3.2 Fort Wainwright

According to NWI mapping, the proposed FWA SAC Range Adaptable Use Zone contains approximately 3,408 acres of wetland. Table 3.4-2b summarizes wetland acreage by wetland type for the proposed adaptable use zone. Until site evaluations can be performed, it is assumed that all wetlands within Table 3.4-2b are jurisdictional. Assuming a "worst-case scenario" if all wetlands were impacted within the proposed adaptable use zone, 52 percent of wetlands within FWA would be impacted over time, which would constitute a significant adverse impact to FWA Main Post range land wetlands. The NWI characterization, however, does not reflect wetland delineation or NWI ground-truth verification. The actual extent of wetlands within the FWA SAC Range would likely be less, especially within the northern portion of the SAC where Soldier training areas currently exist (see Figure 2-2a). GIS range mapping data indicates that approximately 500 acres of land within the proposed 5,054-acre SAC range adaptable use zone is characterized as "military activity area", indicating the potential of Army disturbance (past alternation of the landscape or active on-going military use of the area) exists. Delineation of wetlands within the proposed FWA SAC Range Adaptable Use Zone would be required to effectively characterize the extent of wetland systems. For actions that adversely impact jurisdictional wetlands, the Army would undertake all mitigation measures imposed by regulators as a condition for receiving a CWA Section 404 permit.

The proposed YTA SAC Range Adaptable Use Zone contains approximately 2,267 acres of wetland. Table 3.4-2b summarizes wetland acreage by wetland type for the proposed adaptable use zone. Similar to FWA, a worse-case scenario is assumed that all wetlands within the proposed adaptable use zone would be impacted from future YTA SAC range development activities. This would constitute an insignificant adverse impact as up to 5 percent of YTA wetlands would be disturbed.

Table 3.4-2b. NWI Wetland Communities at FWA/YTA SAC Ranges

Type of Wetland	Approximate Acres	
	FWA	*YTA*
PUB	22	0
PEM	79	3
PSS	2,656	1,830
PFO	651	434
Total Wetlands	**3,408**	**2,267**

Similar factors (discussed for FRA, Section 3.4.2.3.1) would reduce the overall extent of adverse impacts to wetlands. In addition, in order to mitigate significant wetland acreage loss within FWA related to SAC range adaptable use zone activities, USAG FWA would develop a special area management protocol (SAMP). These plans are designed to be conducted in geographic areas of special sensitivity under development pressure. The SAMP would include delineation and functional assessment of wetlands within the proposed FWA SAC Range Adaptable Use Zone to accurately characterize the extent, quality and function of existing wetlands within the proposed adaptable use zone and in relation to their associated watersheds and would provide a guide for range planners to focus development in areas containing either no wetlands or lower quality wetlands. The SAMP could also be used to develop a general wetland permit for construction activities within the proposed adaptable use zone. This permit would allow both the Army and USACE to quantify and monitor wetland impacts within the proposed FWA SAC Range Adaptable Use Zone and develop project-specific mitigation measures to avoid significance of wetland impacts.

3.4.2.3.3 Donnelly Training Area

According to NWI mapping, the proposed DTA SAC Range Adaptable Use Zone contains approximately 2,259 acres of wetland. Table 3.4-2c summarizes wetland acreage by wetland type. Until site evaluations can be performed, it is assumed that all wetlands within Table 3.4-2c are jurisdictional. This Proposed Action assumes a worse-case scenario that all wetlands within the proposed adaptable use zone would be impacted from future DTA SAC range development activities which would constitute an insignificant adverse impact as less than 1 percent of DTA wetlands would be disturbed. Prior to construction, Army planners would evaluate specific areas to determine the existence of jurisdictional wetlands. The Army shall conform to all requirements imposed by regulators as a condition for receiving CWA Section 404 permits.

Similar factors (discussed for FRA, Section 3.4.2.3.1) would reduce the overall extent of adverse impacts to wetlands.

Table 3.4-2c. NWI Wetland Communities at DTA SAC Range

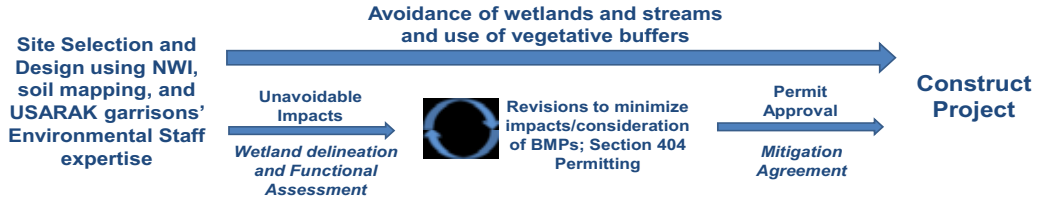
Type of Wetland	Approximate Acres
PUB	0
PEM	17
PSS	776
PFO	1,466
Total Wetlands	**2,259**

3.4.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts to wetlands unmitigated loss of jurisdictional wetland function. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for wetlands to reduce overall adverse impacts from routine range projects. Table 3.4-3 summarizes the potential type and intensity of wetland impacts as a result of routine range projects considering use of the proposed environmental stewardship range construction guidelines.

SOPs for activities involving wetlands include:

- Preparation of a FNPA to justify unavoidable impacts to wetland resources and submitted with the Section 404 permit. This would be prepared in conjunction with the NEPA Checklist.
- Project planning and the Section 404 permitting process:



BMPs for activities involving wetlands include:

Project Design

- Narrow/confine trail widths in sensitive wetland habitats or when possible, widen trails to the upland direction to avoid wetland impact.
- Maintain natural drainage patterns by the installation of culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.
- Use trenchless utility crossing technology (i.e., directional drilling) below wetlands.
- Conduct a functional assessment of wetlands within the project study area to provide a means of rating wetlands and to facilitate the prioritization of impact avoidance and minimization measures. The functional assessment would be used to identify appropriate mitigation during the Section 404 permitting process to replace wetland functions lost from unavoidable impacts to wetlands.
- To the extent practicable, avoid siting projects where regionally unique or rare wetlands could be affected.

Construction Staging

- Clearly identify project limits in the field (e.g., staking, flagging, silt fencing, use of buoys, existing footprint for maintenance activities, etc.) prior to clearing and construction to ensure avoidance of impacts to waters of the U.S. (including wetlands) beyond project footprints.
- Limit construction staging and extra work areas at least 50 feet away from wetlands.
- Conduct vegetation clearing activities during the winter months within wetland areas when soils are frozen to avoid impacts to sensitive wetland soils.
- Use of a hydro-ax during vegetation clearing within wetlands to reduce impacts to hydric soils and low-lying vegetation.
- Place temporary fill in wetlands on geotextile fabric laid on top the existing wetland grade, especially during non-frozen conditions.
- Separately stockpile wetland topsoil and organic surface material such as root mats from overburden and return material to the surface of restored wetland sites.
- Disperse load of heavy equipment by working in frozen or dry ground conditions, employing mats when working in wetlands or mudflats, and using tracked rather than wheeled vehicles, so that the bearing strength of the soil is not exceeded.

- In peat wetlands, systematically removing the natural vegetative mat (with root masses intact) prior to construction, storing it in a manner to retain viability (usually frozen or hydrated), then replacing it after re-contouring the ground following construction, with final contours within 1 foot of adjacent undisturbed soil surfaces after 1 growing season and 1 freeze/thaw cycle. For minor utility projects where no imported bedding or backfill material is used (e.g., "plowed in" cables or small utility lines installed with ditch-witches), simple restoration to pre-work contours and appropriate revegetation shall suffice.

Post Construction Restoration

- Stabilizing of all disturbed areas resulting from project construction using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.
- Restore temporarily disturbed wetlands to original grades using stockpiled wetland topsoils and plant native vegetation.

Operations

- Avoid training and maneuver activities in wetlands, especially during non winter months.

Table 3.4-3 Summary of Potential Wetland Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial						
	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	***Overall Impact***
Berm Creation & Maintenance	◎	⊙	◎	◎	◎	○	◎
Bleacher Enclosure	⊙	⊙	⊙	⊙	⊙	○	⊙
Bridge Installation	⊙	◎	⊙	⊙	⊙	✪	⊙
Building Construction	⊙	⊙	⊙	⊙	⊙	○	⊙
Control Tower	⊙	⊙	⊙	⊙	○	○	⊙
Covered Hall	⊙	⊙	⊙	⊙	⊙	○	⊙
Culvert Installation	⊙	⊙	○	⊙	⊙	✪	⊙
Fencing	⊙	◎	◎	◎	⊙	✪	◎
Firing Lane Creation & Maintenance	⊙	◎	◎	◎	○	○	◎
Firing Line Creation & Maintenance	⊙	⊙	⊙	⊙	○	○	⊙
FOB Creation and Maintenance	◎	◎	◎	◎	◎	○	◎
Grading/Shaping	◎	⊙	◎	◎	◎	○	◎
Gravel Pits	⊙	⊙	⊙	⊙	⊙	○	⊙

Table 3.4-3 Summary of Potential Wetland Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial						
	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration (operations)	Wetland degradation	Alteration of hydrology	Beneficial Impact	***Overall Impact***
Hardened Target Creation & Maintenance	⊙	⊙	⊙	⊙	○	○	⊙
Hardstands Creation and Maintenance	⊙	⊙	⊙	⊙	⊙	○	⊙
Improvised Explosive Device Defeat	◎	◎	◎	◎	◎	○	◎
Land Clearing & Vegetation	⊙	◎	◎	◎	⊙	○	◎
Latrine	○	○	○	○	○	○	○
Mowing	○	⊙	⊙	⊙	○	○	⊙
Observation Points Creation & Maintenance	⊙	⊙	⊙	⊙	⊙	○	⊙
Pit Toilets Creation and Maintenance	○	○	○	○	⊙	○	○
Prescribed Fire	○	⊙	⊙	⊙	⊙	○	⊙
Road (Trail) Creation & Maintenance	◎	◎	◎	◎	◎	✪	◎
Small Arms Siting	◎	◎	◎	◎	◎	○	◎
Boundary Line Clearings	○	◎	◎	◎	○	○	◎
Target Emplacement	⊙	⊙	⊙	⊙	○	○	⊙
Utility Line Creation & Maintenance	◎	◎	◎	◎	◎	○	◎
UXO Surveys	⊙	⊙	○	⊙	○	○	⊙
Wood Pile Burning	○	○	○	○	○	○	○
Urban Training Village	◎	◎	◎	◎	◎	○	◎

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. Overall wetland resources could experience minor to moderate adverse impacts from routine range projects. Projects involving larger footprints (e.g., FOBS, Small Arms Siting, Urban Training Village) and projects which are linear in nature (e.g., roads, fencing, boundary line clearings 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 only minor to moderate adverse impacts to wetland resources. Those activities involving grading and shaping 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). Maintenance projects (mowing) and small temporary structures would likely have no impacts to wetland resources due to the nature and size of routine range project. In addition, bridge and culvert installation would likely have beneficial impact to wetlands through directing Soldier movement along bridge structures (avoiding riparian areas which likely contain wetlands) and from allowing necessary surface water flows across the landscape to maintain wetland hydrology. Similar to Proposed Action 1 road improvement construction projects would provide long-term beneficial impacts as road improvements would restrict vehicles maneuvering off-road in degraded trail segments, reducing long-term wetland degradation along USARAK trails.

With employment of identified SOPs and BMPs, project design and construction staging could be conducted to reduce or avoid wetland impacts. 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 all 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 which 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; reducing the extent of temporary disturbance and wetland degradation. Finally, restricting training activities (seasonal or operational area) that have the potential to degrade wetlands would avoid impacts from training operations.

3.5 VEGETATION

3.5.1 Affected Environment

Vegetative cover on USARAK lands is summarized within this section. USARAK lands are located within the polar domain of Bailey's (1995) ecoregion classification system, which is characterized by low temperatures, severe winters, and relatively low precipitation. These lands are also classified within the subarctic division, which is influenced by cold, snowy climate. Dominant forests in the subarctic division are boreal subarctic forests, open lichen woodlands, and taiga. Vegetation plays an important role within USARAK range and training lands including providing concealment and realistic training conditions, habitat to wildlife, filtering of surface water runoff, and stabilization of soils. On a global scale, vegetation plays an important role in the global carbon budget[10] and can act as a carbon sink for carbon dioxide; a recognized greenhouse gas and a primary contributor to global warming. Invasive species are non-native to an ecosystem, typically out-compete native vegetation, and are difficult to control.

3.5.1.1 Fort Richardson

Many different vegetative communities are present on FRA, from coastal salt marsh and boreal forest types to high alpine tundra, talus slopes, shrub lands, snow beds, heaths, and meadows. An ecological survey of FRA (CRREL, 2003) indicates the installation is covered by forest (55.3 percent), scrub lands (23.7 percent), barren lands (5.5 percent), human disturbed lands (13.1 percent), bog and wetland (1.6

[10] The global carbon budget is the balance of the exchanges (incomes and losses) of carbon between the carbon reservoirs or between one specific loop (e.g., atmosphere ↔ biosphere) of the carbon cycle. An examination of the carbon budget of a pool or reservoir can provide information about whether the pool or reservoir is functioning as a source or sink for carbon dioxide. Forests take up carbon from the atmosphere through photosynthesis, and lose it through respiration, decomposition, and through emissions associated with disturbances like fire, insect mortality, and harvesting. The balance between carbon uptake and losses determines whether the forest is a net sink or source for a given period. This balance is influenced by factors at both the stand and landscape level.

percent), meadow (0.7 percent) and water (0.5 percent). Forest types include white spruce, paper birch, and quaking aspen in upland sites; cottonwood and poplar along principle streams with black spruce in wetter areas; and white spruce, mountain hemlock, and balsam poplar along tree lines. A floristic inventory of FRA was also conducted in 1997 and included vascular plants, ferns and fern allies, the more common mosses, liverworts, and lichens. The inventory documented 561 vascular species (representing approximately 30 percent of Alaska's vascular flora types) and 239 non-vascular species. A complete inventory of flora found on FRA can be found in FRA's INRMP (USAG Alaska, 2007a).

The Alaska Natural Heritage Program tracks rare vascular plant species in Alaska, approximately 21 of which are known to occur on FRA (USAG Alaska, 2007a). Some alpine and wetland areas contain plant species that are considered rare in Alaska or globally imperiled. USARAK also lists three types of vascular plants found on FRA as species of concern: *Viola selkirkii* is rare in Alaska, *Taraxacum carneocoloratum* is taxonomically questionable but is rare globally and in Alaska, and *Saxifraga adscendens oregonensis* whose status is secure globally but is considered to be rare and imperiled in Alaska. No legal protection is conferred by these listings.

3.5.1.2 Fort Wainwright

An ecological survey of FWA (CRREL, 1999), including portions of FWA Main Post, and the entire TFTA and YTA, identified 49 vegetation types and indicated the installation consisted primarily of forest (53.4 percent), scrub lands (17.5 percent), tundra (<0.1 percent), barren lands (0.4 percent), meadows, bogs, and fens (22.6 percent), miscellaneous plant community complexes (5.4 percent), and water (0.8 percent). TFTA alone consisted of 41.5 percent forest and YTA, 83.3 percent. Alder and willow scrub communities are common at FWA Main Post, TFTA, and YTA. Alpine tundra occurs above 2,500 feet in YTA, with barren lands occurring at higher altitudes. Due to the variable climate, as well as physiographic and geographic patterns throughout the region, a wide variety of forest types exist, including white spruce, paper birch, balsam poplar, black spruce, spruce/hardwood, and quaking aspen (USAG Alaska, 2007a).

A floristic inventory of FWA Main Post, TFTA, and YTA identified 217 non-vascular species and 561 vascular species (plants, ferns and fern allies, common mosses, liverworts, and lichens) (USAG Alaska, 2007a). The vascular species represent about 26 percent of Alaskan vascular plants.

At least 16 species of concern, as identified by the Alaska Natural Heritage Program, are known to occur on FWA (USAG Alaska, 2007a). USARAK has listed 4 plants of concern that are prioritized for Army posts in Interior Alaska: *Apocynum androsaemifolium* is rare in Alaska, *Dodecatheon pulchellum pauciflorum* is taxonomically questionable but is imperiled in Alaska, *Festuca lenensis* is rare in Alaska and globally imperiled, and *Minuartia yukonensis* which is secure globally but is uncommon in Alaska.

3.5.1.3 Donnelly Training Area

An ecological survey (CRREL, 2001) reported vegetation cover as forest (29.0 percent), scrub lands (58.1 percent), tundra (4.4 percent), barren lands/partially vegetated (3.6 percent), human disturbed (0.6 percent), and water (4.3 percent). Forest cover at DTA is diverse and includes pure stands of spruce, hardwoods, and spruce/hardwood mixtures. The dominant types include white spruce, paper birch, quaking aspen, balsam poplar, black spruce, and spruce/hardwood. Scrub communities (typically composed of alder, willow, and dwarf birch) occur at high mountain elevations, in small stream-valley bottoms, and as pioneer vegetation on disturbed sites. Dense thickets of scrub communities exist along floodplains or disturbed sites such as gravel pits, road shoulders, rights-of-way, and military trails. Most barren areas on DTA are located on gravel bars along the Delta River, the Little Delta River, Delta Creek, Jarvis Creek, and Granite Creek (CRREL, 2001). Barren lands also occur above tree line, along ridges, and adjacent to rivers and streams. Higher elevation sites along the southern portion of DTA support moist tundra, which grades into alpine tundra and then into barren land.

A floristic inventory of DTA did not include all possible taxa on post but identified 497 vascular species, representing about 26 percent of Alaskan vascular plants (USAG Alaska, 2007a). At least 15 species of rare vascular plants on DTA are being monitored by the Alaska Natural Heritage Program. Two plant species of concern, *Artemisia laciniata* and *Phlox hoodii*, are ranked in USARAK's short list of species of concern for ecosystem management.

3.5.2 Environmental Consequences

Direct impacts are further discussed by the No Action and Proposed Actions below. Indirect impacts resulting from vegetation disturbance to soils, surface water quality, wildlife habitat, and wildfire management are further discussed in Sections 3.2.2, 3.3.2, 3.6.2, and 3.9.2, respectively. Another indirect long-term impact of vegetation removal is the reduction of existing carbon sinks, reducing the potential for future carbon storage. This potential indirect impact is discussed in Section 4.2.3 of the cumulative effects analysis. Numerous proposed projects involve the upgrade of existing facilities. This section assumes a worst-case scenario for Proposed Actions 1 and 2, assuming the entire acreage of disturbance (Proposed Action 1, Tables 2.2-1 and Proposed Action 2, Section 2.2.2) would be cleared if mapping indicates the presence of vegetation within the vicinity of the proposed project site (Proposed Action 1) or within the proposed SAC range adaptable use zone (Proposed Action 2).

The following categories are used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant)** – The degree to which activities alter the local or regional vegetation patterns.
- **Severe (significant)** – Activities that eliminate local populations of rare or sensitive plant species, allow the propagation of non-native plant species, eliminate regional native plant species, eliminate more than 25 percent of an installation's vegetative resources, or segment habitat such that regional wildlife species are jeopardized, would represent a significant impact.

In addition, the following bullets provide general descriptions of the type of impacts used in the vegetation impact analysis:

- *Permanent loss of vegetation* includes loss of vegetation cover due to direct impacts which include removal of vegetation and the creation of impervious surface such as buildings, roads, or parking lots.
- *Temporary disturbance* includes disturbance to vegetation over a short period of time (i.e., removal of vegetation to accommodate construction staging areas). When the temporary disturbance is removed, vegetation is capable of restoring to a natural community.
- *Vegetation community alteration* includes disturbance to vegetation during Army training or use of the site which would alter the vegetative composition such as the conversion of forested areas to scrub-shrub or meadow.
- *Vegetation crushing (operations)* includes the trampling of vegetation by Soldiers or equipment during training operations.
- *Beneficial impact* includes those actions which would benefit vegetation by removing or reducing the potential for vegetation disturbance during operations.

Many of these projects discussed under Proposed Action 1 and 2 are in the preliminary planning stages, and therefore, the exact footprint, limits of disturbance for the site-specific projects, as well as specific vegetative communities affected have not been determined. To ensure impacts to vegetation and wildlife habitat remain below the "severe" or significant threshold, use of specifically identified BMPs and SOPs, such as designing projects to avoid elimination of rare or sensitive plant species and loss of regional plant species. Specifically, the 2007-2011 INRMP, developed in consultation with other State and Federal agencies, provides guidance for mitigating severe impacts to vegetation resources to an insignificant level. A separate NEPA review (i.e., checklist or other level of analysis determined appropriate by USAG Alaska Environmental staff) would be conducted during project design, once an actual footprint of

disturbance has been determined. Alterations to scope, design, techniques or further refinement of the project footprint may require more substantive NEPA review (EA tiered off this PEA or an EIS).

3.5.2.1 No Action

Under the No Action Alternative, USAG Alaska garrisons would not implement one or more of the Proposed Actions; however, range construction projects would still continue as needed and would undergo a project-by-project evaluation under NEPA. Adverse impacts could occur to vegetation as no programmatic guidance would be established in the siting of range facilities (Proposed Actions 1 and 2) and no standard list of SOPs and BMPs (Proposed Action 3) would be readily available to employ during routine range activities. Individual planning and siting of projects could result in a net increase of vegetation impacts into the future, whereas the programmatic approach would allow for a broad overview of existing range conditions, needs, and environmental resource constraints. USAG FRA and USAG FWA, however, would still be required to comply with EO 13112 to prevent the spread of invasive species, utilize existing BMPs during construction, and would continue implementation of the ITAM Program. Overall adverse impacts, therefore, would be minor.

3.5.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.5.2.2.1 Fort Richardson

Projects R2, R4, R9, R10, and R11 would not be anticipated to have any adverse impacts to vegetation, as their small footprints would likely enable them to be sited to avoid impacts. In addition, these projects would be located in or near military activity areas, which are unlikely to contain high-quality vegetation (habitat) due to past and ongoing military activities. Project R8 (Figure B-1a, Appendix B) is located in a barren area and, thus, would also have no impact to vegetation.

Ecological land cover GIS mapping indicates that Projects R1, R5, and R6 are located within areas containing vegetation (see Figures B-1a and B-1b, Appendix B). Up to 35 acres of vegetation could be lost. This would constitute an insignificant adverse impact, with a total loss of less than 1 percent of existing vegetation within FRA. These activities, however, could cause a significant adverse impact through allowing the propagation of non-native plant species. The temporary disturbance to vegetation communities during clearing could cause an increase in the presence of invasive species. If introduced, invasive species could spread into undisturbed areas.

Adverse impacts to vegetation from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of the following BMPs:

- During design, overall vegetation disturbance would be limited to maintain ecological functions, to include avoidance of habitat segmentation. Reduction of overall footprints of disturbance and maintaining ecological functions would reduce the potential for invasive species establishment.
- During design, previously disturbed areas would be utilized before open ground and open ground before forested areas. This would minimize the level of disturbance to natural vegetation communities and would reduce the potential for invasive species establishment.
- During construction, invasive species prevention measures would be implemented such as washing of construction equipment prior to on-site construction activities and requiring gravel pits to be free of invasive species to prevent introduction and spread of invasive species.
- Following construction, disturbed areas during project construction would be revegetated as soon as possible with native grass or other appropriate vegetation, preferably in the same growing season as the disturbance, to prevent the establishment and spread of invasive species.

- Following construction, invasive species management would be implemented to control invasive species (i.e., manual pulling, mowing, and herbicides) and would help reduce establishment and proliferation of invasive plant species.
- Following construction, monitoring of invasive species presence would be performed to determine extent within the project area and continue collaborative invasive species management efforts with local area agencies and entities.

Table 3.5-1a shows the anticipated level of impacts for the FWA site-specific projects with implementation of the BMPs. The table also includes estimated loss vegetation acreage. Actual loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified. The intent of the Checklist is to identify specific BMPs and SOPs, 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 "severe" or significant threshold.

The overall acreage, however, would likely be less as Project R1 (10 acres) involves upgrading existing facilities. Projects R1 and R5 would disturb up to 10 acres and 5 acres of scrub, respectively. Project R6 would be sited adjacent to Glenn Highway and impact up to 20 acres[11] of a combination of open meadow and broadleaf forest.

Projects R3 and R7 would involve permanent losses of vegetation due to widening of existing roads. Road shoulders would be graded and stabilized with native grassy vegetation, allowing for some of the disturbed area to be converted to grassy vegetation. Approximately 390 acres of vegetation would be cleared to accommodate Project R7, which would constitute an insignificant adverse impact to less than 1 percent of existing vegetation within FRA (an overall minor adverse impact). These existing unpaved roads are primarily located in human-modified areas (320 acres), where the potential for adverse vegetation impacts would further reduced due to existing human disturbance and lower habitat quality. The remaining road segments are located in a variety of vegetation types, consisting of broadleaf forest (35 acres), mixed forest (27 acres), needleleaf forest (7 acres), scrub (<1 acre), bog, meadow, or marsh (<1 acre), and barrens (<1 acre) (see Figures B-1c and B-1d, Appendix B). Project R3 would disturb 5 acres of bog, meadow, or marsh (see Figure B-1b, Appendix B). Although Projects R3 and R7 would cause minor adverse impacts existing vegetation within FRA, long-term impacts would be substantially reduced, as the road improvements would restrict off-road vehicle maneuvers in degraded road segments, reducing long-term vegetation degradation along FRA roads.

The total acreage of vegetation disturbance to accommodate all of the site-specific range projects (434 acres) would remain insignificant, with a total potential loss of less than 1 percent of range lands at FRA.

[11] This project is located within proximity to multiple ecological landcover types, therefore, the acreage of impact by landcover cannot be estimated. Total loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified.

3.5-1a Summary of Vegetation Impacts from Site-specific FRA Projects

Project Name	Approximate acreage of potential vegetation impact	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
		Permanent loss of vegetation	Temporary disturbance	Vegetation community alteration	Vegetation crushing (operational)	***Overall Impact***
(R1) FRA UAC[1]	10	⊙	⊙	⊙	⊙	⊙
(R2) Dig a well at the ISBC Site	0.01	○	○	○	○	○
(R3) Raise the ISBC Road	5	⊙	⊙	⊙	✪	⊙
(R4) Provide Turnaround IPBC	0.5	○	○	○	○	○
(R5) Create Bivouac Site UAC	5	⊙	⊙	⊙	⊙	⊙
(R6) Range Operation Complex	20	⊙	⊙	○	○	⊙
(R7) FRA Roads	390	⊙	⊙	⊙	✪	⊙
(R8) Vehicle Storage/Maintenance Building[1]	1	○	○	○	○	○
(R9) Install Flagpole ER Gate	0.01	○	○	○	○	○
(R10) Waterless Arctic Latrine	0.5	○	○	○	○	○
(R11) Covered Bleachers[1]	0.5	○	○	○	○	○
Total Approximate Acreage	**433**					

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to determine whether the project would occur in an area where rare plant species or invasive plant species are present, as well as the extent and type of vegetation that would be potentially impacted once a footprint has been established. In the event that either species are found in a future project location, the Army would undertake reasonable measures to protect rare species and to eradicate invasive species. Furthermore, projects would be designed to minimize the overall loss of local populations of rare or sensitive plant species and regional native plant species, taking into consideration 2007-2011 INRMP guidance on habitat preservation.

3.5.2.2.2 Fort Wainwright

FWA

Projects W4, W9, W17, and W19 would not be anticipated to have any adverse impacts to vegetation resources, as the proposed sites are located within barren or cantonment areas (see Figure B-2a, Appendix B). The following projects are located within the FWA SAC Range within areas that have been modified during FWA's past and actively serve as training ranges (see Figure B-2a, Appendix B): W3, W8, W10, W12, W13, W14, W16, and W22. These areas are unlikely to contain high-quality vegetation (habitat)

due to past and ongoing military activities, and therefore, would result in only minor adverse impacts to area vegetation resources.

Based on ecological land cover GIS mapping information, Projects W2, W6, W11, W15, W18, and W20 are located within areas containing vegetation (see Figure B-2a, Appendix B). Up 86 acres of vegetation have the potential of being lost, which would constitute an insignificant adverse impact from loss of up to 2 percent of existing vegetation within FWA Main Post range lands. This acreage, however, would likely be smaller as projects W11, W15, W18, and W20 (approximately 83 acres combined) involve improvements to existing facilities and access roads.

The total acreage of disturbance to accommodate all of the FWA Main Post range projects (211 acres) would be 4 percent of range lands at FWA, constituting an overall adverse insignificant. In addition, Projects W14, W17, and W18 would likely provide beneficial long-term impacts as these projects improve hardened surfaces (training areas or roads) which would reduce the amount of vegetation degradation during operations as Soldiers would have a defined area to conduct operations, reducing the potential for trampling vegetation. The majority of the vegetation communities impacted would be needleleaf and mixed forest, however, the ecological landcover data for FWA Main Post is incomplete, therefore, acreages of the eight landcover categories cannot be estimated. Total loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified. The intent of the Checklist is to identify specific BMPs and SOPs, 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 "severe" or significant threshold.

TFTA

Project W21 involves an approximate 20-foot clearing around the Alpha Impact Area to demarcate the impact area's boundary. This would require clearing of 64 acres of primarily scrub vegetation (49 acres), as well as broadleaf forest (5 acres), needleleaf forest (3 acres), mixed forest (2 acres), and lowland forest (2 acres) (see Figure B-2b, Appendix B). The remaining 3 acres classified as bog, meadow or marsh community types would not require clearing. The project would ultimately cause alteration of vegetation communities within the cleared boundary (see Table 3.5-1b), which would impact less than 1 percent of existing vegetation within TFTA and would constitute an insignificant adverse impact.

YTA

Project W34 would not be anticipated to have substantial adverse impacts to vegetation due to its location within a military activity area (see Figure B-2c, Appendix B) already subjected to disturbance, which is likely to contain existing areas of degradation and disturbance (low value to native species) due to past and ongoing military activities. Additionally, Project W28 would not be anticipated to impact vegetation, as latrines would likely be sited to avoid impacts to vegetation.

Projects W37 and W38 occur outside of ecological land cover data coverage for YTA; and therefore, the types of vegetation in their vicinity are uncertain. It is anticipated, however, that these projects would not result in impacts to vegetation, as these projects involve small footprints (0.02 acres and 0.04 acres, respectively) which would likely enable them to be sited to avoid impacts.

Project W32 would involve clearing approximately 60 acres of vegetation around the Stuart Creek Impact Area, primarily consisting of broadleaf forest (20 acres) and mixed forest (20 acres), and also including needleleaf forest (12 acres) and scrub (8 acres). The project would ultimately cause alteration of vegetation communities within the cleared boundary area, which would impact less than 1 percent of existing vegetation within YTA and would constitute an overall insignificant adverse impact.

Project W39 would disturb a total of 309 acres (50 acres of which are located in human-modified areas), and traverses through a variety of vegetation types, including mixed forest (90 acres), scrub (60 acres),

broadleaf forest (55 acres), needleleaf forest (50 acres), and bog, meadow, or marsh (4 acres) (see Figures B-2c and B-2d, Appendix B). The project would involve permanent losses of vegetation due to widening of existing roads. Road shoulders would be graded and stabilized with native grassy vegetation, allowing for some of the disturbed area to be converted to grassy vegetation. Although Project W39 would cause minor adverse impacts to less than 1 percent of existing vegetation within YTA, long-term beneficial impacts would be anticipated, as the road improvements would restrict off-road vehicle maneuvers in degraded road segments, reducing long-term vegetation degradation along YTA roads.

Ecological land cover GIS mapping indicates that Projects W1, W5, W7, W23, W24, W25, W26, W27, W29, W30, W31, W33, W35, W36, W40, and W42 are within areas containing vegetation[12] (see Figures B-2c andB-2d, Appendix B). Up to 217 acres of vegetation have the potential of being lost, which would constitute an insignificant adverse impact with less than 1 percent of existing vegetation within YTA lost. This acreage, however, would likely be smaller as all of the projects, except W7 (1 acre), involve improvements to existing facilities and access roads. The total acreage of potential vegetation loss to accommodate all of the YTA range projects (804 acres) would constitute an insignificant adverse impact with less than 1 percent of vegetation potentially being lost. In addition, Projects W23 and W31 would likely provide beneficial long-term impacts as these projects improve hardened surfaces (training areas or roads) which would reduce the amount of vegetation degradation during operations as Soldiers would have a defined area to conduct operations, reducing the potential for trampling vegetation.

All construction activities, however, could cause a significant adverse impact through allowing the propagation of non-native plant species. The temporary disturbance to vegetation communities during clearing could cause an increase in the presence of invasive species. If introduced, invasive species could spread into undisturbed areas. Adverse impacts to biological resources from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of BMPs (see Section 3.5.2.2.1).

Table 3.5-1b shows the anticipated level of impacts for the FWA site-specific projects with implementation of the BMPs. The table also includes estimated loss vegetation acreage. Actual loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified, as well as assigning specific BMPs and SOPs to ensure impacts to vegetation remain insignificant.

[12] All of these projects are located within proximity to multiple ecological landcover types, therefore, the acreage of impact by landcover cannot be estimated. Total loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified. The intent of the Checklist is to identify specific BMPs and SOPs, such as designing projects to avoid elimination of rare or sensitive plant species and loss of regional plant species, to ensure impacts to vegetation and wildlife habitat remain below the "severe" or significant threshold.

Table 3.5-1b Summary of Vegetation Impacts from Site-specific FWA Projects

Project Name	Approximate acreage of potential vegetation impact	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
		Permanent loss of vegetation	Temporary disturbance	Vegetation community alteration	Vegetation crushing (operations)	***Overall Impact***
FWA						
(W2) Ammunition Breakdown Buildings[1]	<1	⊙	⊙	○	○	⊙
(W3) Demo Pond Range[1]	1.8	○	⊙	⊙	⊙	⊙
(W4) General Instructional Building CACTF	0.2	⊙	⊙	○	○	⊙
(W6) Indoor Shooting Range[1]	2	⊙	⊙	○	○	⊙
(W8) Range Operation Complex [1]	2.1	⊙	⊙	○	○	⊙
(W9) FWA C130/17 Mock-up	2	⊙	⊙	○	○	⊙
(W10) Welding/ Carpentry Shop[1]	2.5	⊙	⊙	○	○	⊙
(W11) Arctic Village[1]	13	⊙	⊙	○	⊙	⊙
(W12) SAC East Expansion[1]	10	⊙	⊙	○	⊙	⊙
(W13) KD Range Expansion[1]	22	⊙	⊙	○	⊙	⊙
(W14) Pave Range Road[1]	18.4	⊙	⊙	○	✪	⊙
(W15) SAC Security Fence[1]	17.5	⊙	⊙	○	○	⊙
(W16) Rebuild MRF Firing Line[1]	2.6	○	⊙	⊙	○	⊙
(W17) Combined Arms Collective Training Facility	9	⊙	⊙	⊙	✪	⊙
(W18) Drivers Training Course Phases 1-5	44.7	⊙	⊙	⊙	✪	⊙
(W19) Latrine – Birch Hill Biathlon Range	0.4	○	○	○	○	○
(W20) Warrior Forward Operations Base Phase 3	7	○	○	○	○	○
(W22) Latrines[1]	0.7	○	○	○	○	○
Total Approximate Acreage	**157**					
TFTA						
(W21) Alpha Impact Area Survey Line	64	○	⊙	⊙	○	⊙
Total Approximate Acreage	**64**					
YTA						
(W1) Digital Air Ground Integration Range	10	⊙	⊙	○	⊙	⊙
(W5) Stuart Creek Integrated Target Array	21.7	⊙	⊙	⊙	⊙	⊙
(W7) Firebird UAV Building	1	⊙	⊙	○	○	⊙
(W23) Charlie Battery FOB	28	⊙	⊙	○	○	⊙
(W24) YTA Convoy Live Fire Range Phase 1	22	⊙	⊙	⊙	✪	⊙
(W25) Winter Camp FOB[1]	5	⊙	⊙	○	○	⊙
(W26) YTA Firing Point 13	3.1	○	⊙	⊙	○	⊙

Table 3.5-1b Summary of Vegetation Impacts from Site-specific FWA Projects

Project Name	Approximate acreage of potential vegetation impact	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
		Permanent loss of vegetation	Temporary disturbance	Vegetation community alteration	Vegetation crushing (operations)	***Overall Impact***
(W27) Husky DZ FOB	2.3	⊙	⊙	○	⊙	⊙
(W28) YTA Latrines	2.4	○	○	○	○	○
(W29) YTA Demolition Range	18	⊙	⊙	⊙	⊙	⊙
(W30) YTA Firing Point Direct Fire	4.5	⊙	⊙	⊙	○	⊙
(W31) Stuart Creek Access Trails	37.4	○	⊙	○	✪	⊙
(W32) Stuart Creek Impact Area Survey Line	59.5	○	⊙	⊙	○	⊙
(W33) FP 9 Direct Firing Point	15	⊙	⊙	○	○	⊙
(W34) Husky DZ Resurface	217	○	⊙	⊙	⊙	⊙
(W35) Gravel Source YTA	20	⊙	⊙	○	○	⊙
(W36) Bravo Battery FOB	17	⊙	⊙	○	○	⊙
(W37) Maintenance Building[1]	0.04	○	○	○	○	○
(W38) High Capacity Well[1]	0.02	○	○	○	○	○
(W39) YTA Roads Upgrade	309	⊙	⊙	⊙	✪	⊙
(W40) YTA Manchu Trail Bridge Upgrade	2	⊙	⊙	○	○	⊙
(W42) Harden Firebird FP and Bivouac Area	9.6	⊙	⊙	⊙	○	⊙
Total Approximate Acreage	**804**					

Note: [1]These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Similar to FRA, prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to determine whether the project would occur in an area where rare plant species or invasive plant species are present, as well as the extent and type of vegetation that would be potentially impacted once a footprint has been established. In the event that either species are found in a future project location, the Army would undertake reasonable measures to protect rare species and to eradicate invasive species. Reasonable measures would also be utilized to minimize the overall loss of local populations of rare or sensitive plant species and regional native plant species during project siting, design and construction.

3.5.2.2.3 Donnelly Training Area

Projects D5, D6, D9, D12, D17, and D29 would not be anticipated to have any adverse impacts to vegetation resources, as the proposed sites are located within human-modified areas and military activity areas that have been previously been disturbed (see Figures B-3, Appendix B). These areas are likely to contain degraded and disturbed vegetation (low value to native species) due to past and ongoing military

activities, and therefore, would not be anticipated to cause adverse impacts to vegetation. In addition, Projects D8, D16, D29, and D30 would not likely result in adverse impacts to existing vegetation quality and function. Projects D8 (target emplacement), D29 (latrines), and D30 (FAARPs) have small, scattered footprints that would enable them to be sited to avoid impacts. Project D16 involves the placement of signs on trees or posts, therefore, no adverse impacts would be anticipated from this activity if BMPs are used to restrict heavy equipment and avoid vegetation removal.

Ecological land cover GIS mapping indicates that 1,085 acres of vegetation are located within proximity to Project D2. This includes human-modified areas (495 acres) scrub (335 acres), bog, meadow, or marsh (120 acres), needleleaf forest (70 acres), broadleaf forest (35 acres), mixed forest (30 acres), and barrens (less than 1 acre). If the entire area of vegetation were lost, Project D2 would cause an insignificant adverse impact, disturbing less than 1 percent of existing vegetation within DTA. Road shoulders would be graded and stabilized with native grassy vegetation, allowing for some of the disturbed area to be converted to grassy vegetation. Project D2 involves road improvements that would serve to reduce future impacts by restricting off-road vehicle maneuvers in degraded road segments, reducing long-term vegetation degradation along DTA roads.

Project D15 would involve clearing approximately 54 acres of vegetation around the eastern boundary of DTA East, including scrub (33 acres), needleleaf forest (10 acres), broadleaf forest (7 acres), mixed forest (4 acres), and bog, meadow, or marsh (less than 1 acre). The project would ultimately cause alteration of vegetation communities within the cleared boundary area, which would constitute an insignificant adverse impact of less than 1 percent of existing vegetation within DTA.

In addition to the Project D21 No Action Alternative, which would not impact vegetation, Project D21 includes Alternatives 2, 3, and 4 (see Figure B-3c, Appendix B). Alternative 2 would result in a loss of up to 44 acres of vegetation which are located in human-modified areas (20 acres), scrub (19 acres), bog, meadow, or marsh (4 acres), broadleaf forest (1 acre), mixed forest (less than 1 acre), and needleleaf forest (less than 1 acre). Alternative 3 would result in a loss of up to 26 acres which are located in human-modified areas (4 acres), scrub (18 acres), bog, meadow, or marsh (3 acres), broadleaf forest (less than 1 acre), mixed forest (less than 1 acre), and needleleaf forest (less than 1 acre). Alternative 4 would result in a loss of up to 30 acres which is located in human-modified areas (1 acre), bog, meadow, or marsh (18 acres), scrub (10 acres), needleleaf forest (1 acre), and mixed forest (less than 1 acre). Road shoulders would be graded and stabilized with native grassy vegetation, allowing for some of the disturbed area to revert back to grassy vegetation. Regardless of Project D21 alternative, impacts to DTA vegetation would be insignificant, resulting in a loss of less than 1 percent of the total vegetation within DTA. Long-term beneficial impacts would be anticipated, as road improvements would restrict off-road vehicle maneuvers in degraded road and trail segments, reducing long-term vegetation degradation along DTA roads and trails.

Ecological land cover GIS mapping indicates that Projects D1, D3, D4, D7, D10, D11, D13, D14, D18-D20, D22- D28, and D31 are within areas containing vegetation[13] (see Figures B-3, Appendix B). Up to 766 acres of vegetation have the potential of being lost, which would constitute an insignificant adverse impact, resulting in a loss of less than 1 percent of the total vegetation within DTA. This acreage,

[13] All of these projects are located within proximity to multiple ecological landcover types, therefore, the acreage of impact by landcover cannot be estimated. Total loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified. The intent of the Checklist is to identify specific BMPs and SOPs, such as designing projects to avoid elimination of rare or sensitive plant species and loss of regional plant species, to ensure impacts to vegetation and wildlife habitat remain below the "severe" or significant threshold.

however, would likely be smaller as projects D3, D4, D7, D11, D13, D18, D20, D23, D24, D26, D28, and D31 (approximately 736 acres combined) involve improvements to existing facilities and access roads.

The total acreage of vegetation disturbance to accommodate all of the site-specific range projects (up to 1,489 acres) would constitute an insignificant impact, with a total disturbance to less than 1 percent of vegetation.

Two projects occur within training areas associated with DTA, D23 (85 acres) in the BRTA and D24 (373 acres) in the GRTA. Ecological landcover mapping was not available to determine the potential vegetation types that would be impacted by Project D23 within the BRTA (see Figure B-3g), however, it is assumed that in significant adverse impacts would result to vegetation, as these projects involve upgrades to existing roadways. Similar to other linear projects, the trails in the GRTA (Project D24) traverse through a variety of landscapes and habitats, including grassland/low shrub vegetation and a combination of broadleaf, mixed, and needleleaf forest (see Figure B-3h, Appendix B). Both of these projects would constitute an insignificant impact to vegetation as less than 1 percent of existing vegetation would be disturbed. In addition, long-term beneficial impacts would be anticipated, as the road improvements would restrict off-road vehicle maneuvers in degraded road segments, reducing long-term vegetation degradation along BRTA and GRTA roads.

All construction activities, however, could cause a significant adverse impact through allowing the propagation of non-native plant species. The temporary disturbance to vegetation communities during clearing could cause an increase in the presence of invasive species. If introduced, invasive species could spread into undisturbed areas. Adverse impacts to biological resources from these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of BMPs (see Section 3.5.2.2.1).

Table 3.5-1c shows the anticipated level of impacts for the DTA site-specific projects with implementation of the BMPs. The table also includes estimated loss vegetation acreage. Actual loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified, as well as assigning specific BMPs and SOPs to ensure impacts to vegetation remain insignificant.

Table 3.5-1c Summary of Vegetation Impacts from Site-specific DTA Projects

Project Name	Approximate acreage of potential vegetation impact	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
		Permanent loss of vegetation	Temporary disturbance	Vegetation community alteration	Vegetation crushing (operations)	***Overall Impact***
(D1) Range Operation Complex[1]	7	⊙	⊙	○	○	⊙
(D2) DTA Roads	1,085	⊙	⊙	⊙	✪	⊙
(D3/D4) DTA Firing Points	26	⊙	⊙	○	○	⊙
(D5) New Load Ramps at Donnelly DZ	0.1	○	○	○	○	○
(D6) MATCH Shoot House at Colorado South[1]	0.1	○	○	○	○	○

Table 3.5-1c Summary of Vegetation Impacts from Site-specific DTA Projects

Project Name	Approximate acreage of potential vegetation impact	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
		Permanent loss of vegetation	Temporary disturbance	Vegetation community alteration	Vegetation crushing (operations)	***Overall Impact***
(D7) Expand KD Range[1]	6.6	○	⊙	⊙	⊙	⊙
(D8) Target Emplacement	0.01	○	○	○	○	○
(D9) Construct additional support buildings at BAX/CACTF	5	○	○	○	○	○
(D10) Maintenance Buildings for units training at DTA[1]	1	⊙	⊙	○	○	⊙
(D11) Beales Replacement[1]	7	⊙	⊙	○	○	⊙
(D12) Area of Responsibility Village	11	○	○	○	○	○
(D13) Theater Specific Village	11	○	⊙	○	⊙	⊙
(D14) Expand OP 26 for Range Control West Operations	5	⊙	⊙	○	○	⊙
(D15) Delineate DTA East Boundary	54	○	⊙	⊙	○	⊙
(D16) Sign the Impact Area	N/A	○	○	○	○	○
(D17) Improve Buffalo DZ	50	○	○	○	○	○
(D18) Expand Buffalo DZ	180	○	⊙	⊙	⊙	⊙
(D19) Extend the Donnelly FLS	13	⊙	⊙	⊙	⊙	⊙
(D20) Convert Fuel Break to Airstrip	9.2	⊙	⊙	○	⊙	⊙
(D21) New Road to bypass CTR	up to 44	⊙	⊙	⊙	✪	⊙
(D22) BAX East Maneuver Corridor	6	⊙	○	⊙	⊙	○
(D23) BRTA Roads[2]	85	⊙	⊙	⊙	✪	⊙
(D24) GRTA Roads[2]	373	⊙	⊙	⊙	✪	⊙
(D25) Combat Outposts	5	⊙	⊙	○	○	⊙
(D26) Replace or Relocate Simpsonville Buildings	6	⊙	⊙	○	⊙	⊙
(D27) Construct UAV System tracking pad and access	1.5	⊙	⊙	○	○	⊙
(D28) Delta Creek Assault Strip	13	⊙	⊙	⊙	⊙	⊙
(D29) Install Waterless Latrines[1]	<1	○	○	○	○	○
(D30) Construct FAARPs[1]	3	○	○	○	○	○
(D31) Add New OPs along the Winter Trail	17	⊙	⊙	○	○	⊙
Total Approximate Acreage	**2026**					

Note: [1]These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).
[2]Environmental mapping was unavailable for Projects D23 and D24, however, impacts are anticipated to be less than significant.

Similar to DTA, prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to determine whether the project would occur in an area where rare plant species or invasive plant species are present, as well as the extent and type of vegetation that would be potentially impacted once a footprint has been established. In the event that either species are found in a future project location, the Army would undertake reasonable measures to protect rare species and to eradicate invasive species. Reasonable measures would also be utilized to minimize the overall loss of local populations of rare or sensitive plant species and regional native plant species during project siting, design and construction.

3.5.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.5.2.3.1 Fort Richardson

The proposed FRA SAC Range Adaptable Use Zone contains 3,128 acres of vegetation. Table 3.5-2a summarizes vegetation distribution by type. Proposed Action 2 assumes a worst-case scenario that all vegetation within the proposed adaptable use zone would be impacted from future FRA SAC range development activities. This would cause a loss of approximately 6 percent of FRA vegetation and would constitute an insignificant adverse impact to vegetation at FRA. The following factors would further mitigate adverse impacts to vegetation to insignificant within FRA:

- Existing vegetation within the FRA SAC Range already experiences some degree of degradation due to the high use of SAC ranges; therefore, this vegetation would likely be lower in overall habitat quality and training related activities within these areas would not likely change the existing vegetation community composition and functioning.
- Loss of vegetation within the FRA SAC Range would occur over time. As areas within the proposed adaptable use zone become developed, range planners would still avoid and minimize removal of vegetation on a project-by-project basis, and employ mitigating measures (BMPs and SOPs listed in Appendix D) to minimize the possibility of vegetation loss on a regional basis and prevent elimination of local populations of rare or sensitive plant species (if found present), implement invasive species control measures, and avoid segmentation of vegetation (habitat) which could cause a significant adverse impact on wildlife.
- The likelihood of 100 percent loss of vegetation resources would be highly unlikely. As described in Section 3.1, both the requirements of concealment during Soldier training, and SDZ building limitations would likely prevent the extent of disturbance analyzed by the worst-case-scenario and would require the retention of vegetation.
- Many of these projects are in the preliminary planning stages, and therefore, the exact limits of disturbance, as well as specific vegetative communities affected have not been determined. To ensure impacts to vegetation and wildlife habitat remain below the "severe" or significant threshold, use of specifically identified BMPs and SOPs, such as designing projects to avoid elimination of rare or sensitive plant species and loss of regional plant species. Specifically, the 2007-2011 INRMP, developed in consultation with other State and Federal agencies, provides guidance for mitigating severe impacts to vegetation resources to an insignificant level. A separate NEPA review (i.e., checklist or other level of analysis determined appropriate by USAG Alaska Environmental staff) would be conducted during project design, once an actual footprint of disturbance has been determined. Alterations to scope, design, techniques or further refinement of the project footprint may require more substantive NEPA review (EA tiered off this PEA or an EIS).

Table 3.5-2a. Types of Vegetation at FRA SAC Range

Type of Vegetation	Approximate Acres	Percentage by Vegetation Type
Barrens	N/A	N/A
Scrub	190	6
Broadleaf Forest	305	10
Mixed Forest	1,500	48
Needleleaf Forest	260	8
Bog, Meadow, or Marsh	3	<1
Lowland Forest	N/A	N/A
Human-Modified/Military Activity Area	870	28
Total	**3,128**[1]	**100**

[1] This would cause a loss of up to approximately 6 percent of FRA vegetation and would constitute an insignificant adverse impact to vegetation at FRA.

3.5.2.3.2 Fort Wainwright

The proposed FWA SAC Range Adaptable Use Zone contains approximately 3,974 acres of vegetation. Although the ecological landcover mapping does not exist for the FWA Main Post SAC, GIS data coverage indicated that of the 5,054 acres encompassing the proposed adaptable use zone, approximately 334 acres are forested, 500 acres are human-disturbed, 1,080 acres contain the Tanana River, and the remaining 3,140 acres are either barrens, bog, meadow, marsh or scrub. Table 3.5-2b summarizes vegetation distribution by type. Proposed Action 2 assumes a worst-case scenario that all vegetation within the proposed adaptable use zone would be impacted from future FWA SAC range development activities. This would cause a significant adverse impact to vegetation at FWA Main Post range lands as approximately 29 percent of existing vegetation would be disturbed.

The proposed YTA SAC Range Adaptable Use Zone contains 8,472 acres of vegetation. Table 3.5-2b summarizes vegetation distribution by type. Proposed Action 2 assumes a worst-case scenario that all vegetation within the proposed adaptable use zone would be impacted from future YTA SAC Range development activities. This would cause an insignificant adverse impact to vegetation at YTA as approximately 3 percent of total YTA vegetation would be disturbed.

Similar factors discussed for FRA (Section 3.5.2.3.1) would reduce the overall extent of adverse impacts to vegetation. In addition, in order to avoid significant vegetation impacts within FWA related to SAC range adaptable use zone activities. USAG FWA would consider also development of a SAMP, in coordination with appropriate State and Federal agencies. This plan is designed to be conducted in geographic areas of special sensitivity under development pressure. The SAMP would include classification and habitat assessment of vegetation communities within the proposed FWA SAC Range Adaptable Use Zone to accurately characterize the extent, quality and function of existing vegetation communities within the proposed adaptable use zone and would provide a guide for range planners to focus development in areas containing existing disturbed or low quality vegetation communities and to reduce indirect impacts of vegetation removal such as fragmentation of habitat. Using the SAMP, USAG FWA would use site fingerprinting, which involves clearing and grading only those areas necessary for building activities and equipment traffic could be used during site planning and concentrate development in areas where past development has occurred to help maintain vegetation cover within the proposed FWA Adaptable Use Zone.

Table 3.5-2b. Types of Vegetation at FWA/YTA SAC Ranges

Type of Vegetation	Approximate Acres			
	FWA[1]	Percent by Vegetation Type	YTA	Percent by Vegetation Type
Barrens	3,140	79	97	1
Scrub	–	–	235	3
Broadleaf Forest	–	–	2,790	32
Mixed Forest	–	–	2,500	30
Needleleaf Forest	–	–	1,710	20
Bog, Meadow, or Marsh	–	–	240	3
Lowland Forest	–	–	–	–
Human-Modified/Military Activity Area	500	13	900	11
General Forest	334	8	–	–
Total	**3,974**[2]	**100**	**8,472**[3]	**100**

[1]The Ecological Classification System survey did not cover the FWA SAC Range area, therefore, vegetation types are not as detailed as for other SAC ranges. The remaining 3,140 acres indicated as barren are assumed to be a combination of barrens, bog, meadow, marsh or scrub and military activity areas.

[2] This would cause the potential for a significant adverse impact to vegetation at FWA Main Post as approximately 29 percent of total FWA Main Post vegetation would be disturbed.

[3]This would cause an insignificant adverse impact to vegetation at YTA as approximately 3 percent of total YTA vegetation would be disturbed.

3.5.2.3.3 Donnelly Training Area

According to GIS range mapping, the proposed DTA SAC Range Adaptable Use Zone contains 10,744 acres of vegetation. Mapping data indicates that approximately 1,750 acres of land within the proposed SAC Range Adaptable Use Zone is characterized as "military activity area," indicating that past activities have already impacted the area, and that future impact will have negligible further impact. Table 3.5-2c summarizes vegetation acreage by type. Proposed Action 2 assumes a worst-case scenario that all vegetation within the proposed adaptable use zone would be impacted from future DTA SAC range development activities. This would cause an insignificant adverse impact to vegetation at DTA as approximately 2 percent of total DTA vegetation would be disturbed. Similar factors (discussed for FRA, Section 3.5.2.3.1) would reduce the overall extent of adverse impacts to vegetation.

Table 3.5-2c. Types of Vegetation at DTA SAC Range

Type of Vegetation	Approximate Acres	Percentage by Vegetation Type
Barrens	1,950	18
Scrub	410	4
Broadleaf Forest	1,780	17
Mixed Forest	104	<1
Needleleaf Forest	4,750	44
Bog, Meadow, or Marsh	–	–
Lowland Forest	–	–

Table 3.5-2c. Types of Vegetation at DTA SAC Range

Type of Vegetation	Approximate Acres	Percentage by Vegetation Type
Human-Modified/Military Activity Area	1,750	17
Total	**10,744**[1]	**100**

[1] This would cause an insignificant adverse impact to vegetation at DTA as approximately 2 percent of total DTA vegetation would be disturbed.

3.5.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts to vegetation through eliminating local populations of rare or sensitive plant species or by allowing the propagation of non-native plant species. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for vegetation to reduce overall adverse impacts from routine range projects. Table 3.5-3 summarizes the potential type and intensity of vegetation impacts as a result of routine range projects considering use of the proposed environmental stewardship range construction guidelines.

SOPs to be used for activities regarding vegetative cover during project design and construction include:

- USARAK garrisons will continue vegetation management within its ranges, including invasive species monitoring and management per the INRMP and ITAM. This will help prevent the spread of invasive species from routine maintenance, upgrade, and construction activities, and would serve to manage existing timber resources.
- To the extent possible, USARAK garrisons will continue to preserve natural vegetation (protection of desirable trees, bushes, and grasses) from damage during project development.
- For those projects affecting salvageable timber, USARAK garrisons will continue to make available usable timber salvaged from range projects that cannot be sold in a timber sale to the public at no cost.
- Use site fingerprinting, which involves clearing and grading only those areas necessary for building activities and equipment traffic could be used during site planning and concentrate development in areas where past development has occurred.

BMPs to be used to help mitigate impacts:

Project Design

- Consideration of vegetation preservation during project planning to maintain ecological functions described above, particularly in floodplains, wetlands, stream banks, steep slopes, and other areas where erosion controls would be difficult to establish, install, or maintain.
- Review ecotype mapping within the project area to determine if the project has the potential to be located within the preferred habitat of a rare plant species.
- Utilize previously disturbed areas before open meadow and open meadow before forested areas to reduce possibility of elimination of regional native plant species.
- Clear only land needed for building activities, range operations and vehicle traffic needs.
- Retain as much vegetation as possible to provide cover, concealment, and realism for training.
- Retain 75-foot vegetation buffer areas along either side of ephemeral and intermittent streams or other specifically designated areas and a 100-foot buffer along EFH streams to prevent surface water quality impairment.

Construction Staging

- Clearly mark trees and areas for preservation and protect from ground (root) disturbances around the base of the tree.
- Restrict nailing of objects (signage) to trees during building operations.
- Avoid placement of fill dirt within the limit of preserved areas and during final site cleanup, barriers around preserved areas and trees should be removed.
- Implement invasive species prevention measures during construction activities such as washing of construction equipment prior to on-site construction activities and require gravel pits to be free of invasive species to prevent introduction and spread of invasive species.

Vegetation Preservation Considerations

- Tree vigor: Preserve healthy trees that will be less susceptible to damage, disease, and insects.
- Tree age: Older trees are more aesthetically pleasing as long as they are healthy.
- Tree species: Preserve tree species well-suited to present and future site conditions. Preserving a mixture of evergreens and hardwoods can help to conserve energy when evergreens are preserved on the northern side of the site to protect against cold winter winds and deciduous trees are preserved on the southern side to provide shade in the summer and sunshine in the winter.
- Wildlife benefits: Choose tree species that are preferred by wildlife for food, cover, and nesting.
- Drainage patterns: Following natural contours and maintaining preconstruction drainage patterns would prevent alteration of hydrology and the potential die-off of preserved vegetation.

Site Restoration

- Revegetate areas disturbed during project construction as soon as possible with native grass or other appropriate vegetation, preferably in the same growing season as the disturbance to prevent erosion and maintain habitat integrity.
- Revegetate areas that are not recovering naturally through the LRAM Program to prevent erosion and maintain habitat integrity.
- Monitor mitigation efforts to ensure goals are reached, and initiate additional measures required to meet restoration goals.
- Monitor to determine extent of invasive species presence on Army lands in Alaska and continue collaborative invasive species management efforts with local area agencies and entities.

Operations

- Restrict vehicle traffic trails and roads as practical and still meet training mission requirements.

Table 3.5-3 Summary of Potential Vegetation Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Permanent loss of vegetation	Temporary disturbance	Vegetation community alteration	Vegetation crushing (operations)	***Overall Impact***
Berm Creation & Maintenance	○	⊙	⊙	○	⊙

Table 3.5-3 Summary of Potential Vegetation Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Permanent loss of vegetation	Temporary disturbance	Vegetation community alteration	Vegetation crushing (operations)	***Overall Impact***
Bleacher Enclosure	⊙	⊙	○	⊙	⊙
Bridge Installation	⊙	⊙	○	○	⊙
Building Construction	⊙	⊙	○	○	⊙
Control Tower	⊙	○	○	○	⊙
Covered Hall	⊙	⊙	○	○	⊙
Culvert Installation	○	⊙	⊙	○	⊙
Fencing	○	○	○	○	○
Firing Lane Creation & Maintenance	⊙	⊙	⊙	⊙	⊙
Firing Line Creation & Maintenance	⊙	⊙	⊙	⊙	⊙
FOB Creation and Maintenance	⊙	⊙	○	○	⊙
Grading/Shaping	⊙	⊙	○	○	⊙
Gravel Pits	⊙	⊙	⊙	○	⊙
Hardened Target Creation & Maintenance	○	⊙	⊙	○	⊙
Hardstands Creation and Maintenance	⊙	⊙	⊙	⊙	⊙
Improvised Explosive Device Defeat	◎	⊙	⊙	○	◎
Land Clearing & Vegetation	◎	◎	◎	⊙	◎
Latrine	○	○	○	○	○
Mowing	○	⊙	⊙	○	⊙
Observation Points Creation & Maintenance	⊙	⊙	⊙	⊙	⊙
Pit Toilets Creation and Maintenance	○	○	○	○	○
Prescribed Fire	⊙	⊙	⊙	⊙	⊙
Road (Trail) Creation & Maintenance	◎	◎	◎	✪	◎
Small Arms Siting	⊙	⊙	⊙	⊙	⊙
Boundary Line Clearings	○	⊙	⊙	○	⊙
Target Emplacement	⊙	⊙	⊙	○	⊙
Utility Line Creation & Maintenance	◎	◎	◎	○	◎
UXO Surveys	○	⊙	○	⊙	⊙
Wood Pile Burning	○	○	○	○	○
Urban Training Village	⊙	⊙	⊙	⊙	⊙

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. Actual loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified. The intent of the Checklist is to identify specific BMPs and SOPs, 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 "severe" or significant threshold.

Overall, vegetation could experience minor to moderate adverse impacts from construction of routine range projects. Projects involving larger footprints (e.g., FOBS, Small Arms Siting, Urban Training Village) and projects which are linear in nature (e.g., roads, fencing, boundary line clearings and utility lines) 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 to vegetation resources due to the nature and size of routine range project. Construction of facilities within SACs could likely use existing disturbed areas, avoiding impacts to vegetation. Similar to Proposed Action 1, road improvement construction projects could provide long-term beneficial impacts as they would restrict vehicles maneuvering off-road in degraded trail segments, reducing vegetation loss and degradation along USARAK trails.

3.6 WILDLIFE AND FISHERIES

3.6.1 Affected Environment

Wildlife and fisheries resources on USARAK lands, including priority wildlife species, are summarized within this section. As discussed in Section 1.5, no Federally- or State-listed threatened or endangered species have been found on USARAK lands. The State of Alaska maintains a list of sensitive species, endangered species, and species of special concern for wildlife, and special concern species found on USARAK lands are discussed below. USARAK Regulation 350-2, Range Regulation, has many general provisions to protect environmental resources, including special interest areas, which are also discussed below. These special interest areas harbor sensitive or unique wildlife species or represent unique plant communities.

All native birds in Alaska are protected under the Migratory Bird Treaty Act (MBTA) (16 USC 703), except grouse and ptarmigan, which are protected by the State of Alaska. USAG FRA and USAG FWA adhere to both the MBTA and the Bald and Golden Eagle Protection Act (BGEPA). The MBTA prohibits the taking, killing, or possessing of migratory birds unless permitted by regulations promulgated by the Secretary of the Interior. Section 315 of the 2003 National Defense Authorization Act provided that the Secretary of the Interior prescribe regulations to exempt the Armed Forces for the incidental taking of migratory birds during military readiness activities. In accordance with 50 CFR Part 21, (Migratory Bird Rule) the regulation does not allow an installation to take migratory birds indiscriminately during readiness activities but requires that installations consider the protection of migratory birds when planning and executing military readiness activities. Readiness activities have been further defined as activities that are related specifically to the active training of Soldiers. The BGEPA (16 USC 668-668d) prohibits the taking (pursuit, wounding, killing, molestation, or disturbance) of any bald or golden eagle, or any part, nest, or egg of these eagles.

In addition, fisheries are Federally protected under the Magnuson-Stevens Fishery Conservation and Management Act and are state protected under the Alaska Fishway Act and Anadromous Fish Act. USARAK is required to coordinate with the National Marine Fisheries Service regarding activities that may affect EFH. The Alaska Fishway Act requires USARAK to notify and obtain authorization from the ADF&G, Division of Habitat, for activities within or across a stream used by fish if uses or activities could represent an impediment to the efficient passage of fish. The Anadromous Fish Act requires all activities within or across a specified anadromous waterbody and all instream activities affecting a

specified anadromous waterbody require approval from the ADF&G, Division of Habitat, and may be subject to a fish habitat permit for projects directly impacting streams.

3.6.1.1 Fort Richardson

Mammals

Large mammals on FRA include black bear, brown bear, grizzly bear, moose, and Dall sheep. Small game and furbearers include coyote, lynx, red squirrel, snowshoe hare, hoary marmot, pine marten, beaver, river otter, wolverine, red fox, porcupine, mink, beaver, muskrat, and ermine or short-tailed weasel (USAG Alaska, 2007b). All land mammal species are managed under regulations promulgated by the State of Alaska. Two wolf packs inhabit the east side of the Glenn Highway and another pack probably occupies the west side, near Eagle River Flats (USAG Alaska, 2007b). The Ship Creek pack occupies the eastern portion of FRA, and the Eagle River Flats pack occupies the western portion.

In recent years, Cook Inlet Beluga whales, listed as endangered under Section 7 of the Endangered Species Act, have been sighted within Eagle River Flats, as far as 1.25 miles up the Eagle River and in Cook Inlet adjacent to Elmendorf AFB. Beluga whales have also been observed pursuing salmon along rivers (USAG Alaska, 2007b). Harbor seals and orca whales are sighted occasionally.

Avian Species

Surveys have identified 75 species of birds in tidal salt marshes, including 24 species of waterfowl. Additionally, approximately 40 species of passerines and neotropical migratory birds and 6 species of raptors are found at FRA (USAG Alaska, 2007b).

Three species on the list of Priority Species for Conservation are confirmed to be on FRA. These include the northern shrike, varied thrush, and blackpoll warbler. The golden-crowned sparrow, also a priority species, is also found on FRA (USAG Alaska, 2007b).

Reptiles and Amphibians

The wood frog, an important prey species for sandhill cranes, is commonly found in bogs, lake margins, and freshwater and saltwater marshes on post. No reptiles occur on FRA.

Fisheries

Ten species of fish are found in FRA's lakes and waterways. Four lakes on FRA (Clunie, Gwen, Otter, and Walden) are stocked under the FRA Army Base Subdistrict Plan. In addition, chinook and coho salmon are stocked in Ship Creek under the ADF&G Enhancement Plan (USAG Alaska, 2007b). Wild populations of game fish within these waterbodies include king salmon, chum salmon, silver salmon, red salmon, pink salmon, and Dolly Varden.

Species of Concern

State of Alaska species of special concern located on FRA include the American peregrine falcon (*Falco pereginus anatum*), olive-sided flycatcher (*Contopus cooperi*), gray-cheeked thrush (*Catharus minimus*), Townsend's warbler (*Dendroica townsendii*), and blackpoll warbler (*Dendroica striata*); occasionally the northern goshawk (*Accipiter gentiles laingi*), harbor seal (*Phoca vitulina*), and beluga whale (*Delphinapterus leucas*); and possibly the brown bear (*Ursus arctos horribilis*) utilize FRA habitat.

Special Interest Areas

Two special interest areas are located on FRA (USAG Alaska, 2007a). Ship Creek and its riparian habitat are important and sensitive areas on FRA, requiring protection to insure maintenance of its health and natural function. Water quality on Ship Creek is important because any deterioration on Army lands will affect downstream locations on Elmendorf AFB and in the city of Anchorage. USAG Alaska's goal is to

maintain Ship Creek in a condition as pristine as possible and to repair portions that may become damaged. It is especially important to maintain water quality in Ship Creek and other tributaries leading to Cook Inlet, where the endangered beluga whale population is found. In addition, the vegetated riparian corridor along Ship Creek serves as an important corridor for the movement of wildlife.

Eagle River Flats and its associated tidal wetlands are important for both natural resources conservation and for military training. The Eagle River Flats is a 2,140 acre estuarine salt marsh located at the mouth of Eagle River on FRA Army Post. Glacially-fed Eagle River flows through the flats before discharging into Eagle Bay of Knik Arm in Upper Cook Inlet. The Eagle River Flats has been used since the 1940s as an impact area. Because the flats are off-limits, no development has occurred, preserving much of the ecosystem. Firing is restricted to upland, dryer areas. Live-fire activities may not target wildlife, including beluga whales when they are present in the Eagle River. USAG FRA is currently preparing an EIS to analyze a potential change in firing restrictions at the Eagle River Flats Impact Area; the Draft EIS document is anticipated for release in December of 2009.

3.6.1.2 Fort Wainwright

Mammals

Large mammals on FWA include black bear, grizzly bear, moose, and caribou. TFTA is particularly important for moose and supports the state's largest population. Caribou have historically used YTA and TFTA, but populations have declined over the years, possibly due to predation and severe winters (USAG Alaska, 2007a).

Fifteen species of furbearers inhabit TFTA and YTA. These include wolverines, coyotes, lynx, red fox, pine marten, wolves, snowshoe hare, and red squirrel. Other species include muskrat, beaver, and 4 species of weasel. River otter exist, but they are not common (USAG Alaska, 2007a).

Known small mammals include 5 vole species, 2 lemming species, 2 species of mice, and 4 species of shrew. The little brown bat is found in wooded areas and in abandoned buildings. Introduced mammals such as the house mouse, Norway rat, and woodchuck also exist in the cantonment area of Main Post.

Avian Species

Spruce grouse, ruffed grouse, sharp-tailed grouse, and ptarmigan are common in the region. Grouse hunting is popular at YTA and they are also harvested on FWA Main Post. The variety of nongame birds on lands associated with FWA includes at least 58 passerines. Sixty-one species of birds were observed during a 1998 survey at TFTA. Although no threatened, endangered, or species of special concern were observed, several Priority Species for Conservation were observed. In addition, 6 species of woodpecker, the rock dove, Rufous hummingbird, and belted kingfisher have been observed on these lands (USAG Alaska, 2007a).

At least 25 species of waterfowl and 20 species of raptors use FWA. Twenty-six species of shorebirds, three gull species, and the Arctic tern have also been observed (USAG Alaska, 2007b). Four species of loon and 2 types of grebes have been observed to use waterways on FWA and associated lands (USAG Alaska, 2007b).

Reptiles and Amphibians

The wood frog is the only amphibian species found at FWA within forested wetland areas. No reptiles exist on FWA (USAG Alaska, 2007b).

Fisheries

Most ponds or lakes on FWA do not support fish populations during winter. However, a stocking program provides recreational fishing opportunities for the public during summer. Stocked lakes include

River Road Pond, Monterey Lake, Weigh Station Ponds 1 and 2, and Manchu Lake (USAG Alaska, 2007a).

The Tanana River supports seasonal populations of Arctic grayling, king salmon, chum salmon, sheefish, humpback whitefish, round whitefish, Arctic lamprey, least cisco, Alaska blackfish, burbot, longnose sucker, northern pike, slimy sculpin, and lake chub (USAG Alaska, 2007a).

The Chena and Salcha rivers support Arctic grayling, king salmon, chum salmon, sheefish, humpback whitefish, round whitefish, Arctic lamprey, least cisco, Alaska blackfish, burbot, longnose sucker, northern pike, slimy sculpin, and lake chub. These rivers and clear-running tributaries are important spawning areas for summer chum and king salmon. Horseshoe Lake, located in the northwest corner of the YTA, supports a native population of northern pike (USAG Alaska, 2007b).

Species of Concern

State of Alaska species of special concern located on FWA include the olive-sided flycatcher (*Contopus cooperi*), gray-cheeked thrush (*Catharus minimus*), Townsend's warbler (*Dendroica townsendii*), the sharp-tailed grouse (*Tympanuchus phasianellus*), rusty blackbird (*Euphagus carolinus*) and blackpoll warbler (*Dendroica striata*); and occasionally the American peregrine falcon (*Falco pereginus anatum*) (USAG Alaska, 2007a).

Special Interest Areas

Special interest areas on FWA include buttes (isolated hills) associated with the Wood River (located adjacent to the southwest corner of TFTA) and Clear Creek (centrally located within TFTA; see Figure B-2b, Appendix B) and the Tanana Flats Migratory Bird Special Interest area. Buttes near Blair Lakes and along the Wood River have ecological significance. Many of these buttes have cleared helicopter pads for military training, especially since they are on high, relatively dry ground. These buttes are placed off-limits to ground and vegetation-disturbing activities with exception of existing helicopter pads. This restriction should not impact military training since most missions on buttes require vegetative cover for concealment (USAG Alaska, 2007a).

The Tanana Flats Migratory Bird Special Interest area is located between Crooked Creek and Willow Creek in the TFTA (see Figure B-2b for creek locations) and harbors undisturbed fen wetlands and significant migratory bird nesting areas. No recreational activities are permitted in this area during 1 May through 15 July. This area presently has no trails and no new trails would be developed in this area.

3.6.1.3 Donnelly Training Area

Mammals

Large mammals on DTA include black bear, grizzly bear, moose, Dall sheep, caribou, and bison. DTA typically has three or 4 wolf packs, although the structure, distribution, and numbers of packs in a given area are highly variable. Other furbearers on the training area include lynx, beaver, river otter, pine marten, muskrat, mink, coyotes, red fox wolverine and 6 species within the weasel family. A small mammal survey at DTA found 11 species of small mammals (USAG Alaska, 2007a).

Avian Species

Several upland game species are found on DTA, including three species of both ptarmigan and grouse. Twenty-eight species of ducks and geese use lands and waterways on the training area. Approximately 300,000 sandhill cranes, a large portion of the world's population, migrate through DTA from late April through mid-May (see Special Interest Areas discussion).

Reported sightings of black-backed woodpecker, gray-cheeked thrush, varied thrush, bohemian waxwing, Townsend's warbler, blackpoll warbler, Smith's longspur, and rusty blackbird have occurred on DTA

(USAG Alaska, 2007a). The dark-eyed junco, savanna sparrow, Wilson's warbler, and orange-crowned warbler were observed most frequently. A variety of other bird species are found on DTA including three loon, 2 grebe, three gull, 1 tern, 1 dove, 1 hummingbird, 1 kingfisher, and 6 woodpecker (USAG Alaska, 2007a).

Reptiles and Amphibians

Wood frogs are the only amphibians on DTA. No reptiles exist on DTA (USAG Alaska, 2007b).

Fisheries

DTA West is within the Fairbanks Management Area for fisheries and DTA East is within the Delta Junction Management Area. Sixteen lakes on DTA, ranging from three to 320 acres, are stocked. Naturally occurring populations of lake chub, northern pike, sculpin, and the northern longnose sucker are found in lakes at DTA (USAG Alaska, 2007b).

Major streams on DTA are generally silt laden and do not support fisheries. Jarvis Creek and the Delta River are glacially fed and flow from the north side of the Alaska Range to the Tanana River. Downstream of DTA, the Tanana River provides year-round habitat for some species, overwintering habitat for others, and supports migratory species. The mouth of the Delta River is important to chum salmon. Grayling migrate through these glacial streams to clear tributaries to spawn, and a few clear streams provide summer habitat for grayling (USAG Alaska, 2007b).

Species of Concern

State of Alaska species of special concern located on DTA include the American peregrine falcon (*Falco pereginus anatum*), olive-sided flycatcher (*Contopus cooperi*), gray-cheeked thrush (*Catharus minimus*), Townsend's warbler (*Dendroica townsendii*), and blackpoll warbler (*Dendroica striata*) (USAG Alaska, 2007a).

Special Interest Areas

DTA has three special interest management areas (USAG Alaska, 2007a): the Delta bison area, the sandhill crane roosting area, and the Delta caribou calving and post-calving areas. Restrictions in these areas limit disturbance when bison and sandhill cranes are present.

The 2007 Memorandum of Agreement with the ADF&G (USAG Alaska, 2007a) identified areas on DTA as important bison calving and summer range (see Figure B-3a through B-3d, Appendix B). Bison use areas for the spring and summer are located along the Delta River floodplain, which serve as calving areas. USAG FWA has imposed restrictions to limit disturbance to bison habitat areas from mid-February to early September when bison are present.

USARAK has developed and maintained approximately 50 acres of bluegrass and fescue food plots for bison since 1999. Currently, 55 acres of bluegrass food plots are still in production. Maintenance of the food plots has included harrowing the fields to break up bison manure and application of herbicide to remove foxtail barley. Also, a 3,300 acre prescribed burn in 2007 to maintain military training ranges in and adjacent to Texas Range created sedge/grass communities that were subsequently utilized by bison. A bison working group consisting of representatives from USARAK, ADF&G, Salcha-Delta Soil and Water Conservation District, and the University of Alaska Cooperative Extension have set forth future habitat improvement suggestions to improve bison habitat on DTA. Habitat improvements planned in 2010 will include fertilization of existing food plots and additional natural forage areas east and west of the Delta River within the historic bison calving area. In addition to fertilization, new bison food plots may also be created. Military training needs also require continued use of prescribed fire on the 3,300 acres in and adjacent to Texas Range continuing in 2010 and repeating every 2 to 3 years. This action will subsequently promote early succession sedge/grass communities, benefitting bison.

The 2007 Agreement with the ADF&G identified several areas along the Delta River on DTA as important for migrating sandhill cranes (see Figure B-3a throughB-3d, Appendix B). Consultation with ADF&G for the military Lands Withdrawal Renewal EIS identified additional areas along Delta Creek near the Delta Creek Assault Landing Strip as important for migrating sandhill cranes (USAG Alaska, 2007b). The agreement limited disturbance in designated sandhill crane areas each year from 25 April to 15 May, and 1 September through 30 September when sandhill cranes are present. The Army may conduct military activities in these areas if they first consult with ADF&G.

3.6.2 Environmental Consequences

Direct impacts are further discussed by the No Action and Proposed Action alternatives. Indirect impacts resulting from wildlife and fisheries disturbance to subsistence and to recreation are further discussed in Section 3.8.2.

The following categories are used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant)** – (a) The degree to which activities affect local plants, animals, and biological conditions or cause regional impacts to habitat; (b) The degree to which activities affect bald and golden eagles on or near the installation; or (c) The degree to which activities affect a given waterways' fish population.
- **Severe (significant)** – (a) Activities that reduce regional wildlife populations below State management levels or eliminate a habitat type from an installation or region would represent a significant impact; (b) Activities that violate the Bald and Golden Eagle Protection Act or otherwise cause discernible population-level impacts at the installation or regional level would represent a significant impact; or (c) Activities that 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.

In addition, the following bullets provide general descriptions of the type of impacts used in the wildlife and fisheries impact analysis:

- *Permanent loss of terrestrial habitat* includes loss of vegetation cover due to direct impacts which include removal of vegetation and the creation of impervious surface such as buildings, roads, or parking lots.
- *Permanent loss of aquatic habitat* includes loss of streambed and streambanks from morphology from direct impacts to stream morphology from placement of permanent structures such as culverts.
- *Decrease of habitat quality* includes the degradation of habitat from either loss of ecosystem function (i.e., change in vegetation composition or introduction of invasive species) or change to water quality such as increased sedimentation.
- *Impacts to large mammal movement* includes disturbance to large mammal movement from either placement of structures (fencing), construction activities or from training activities which disrupt mammal migration.
- *Impacts to EFH or anadramous fish* includes disturbance to aquatic habitat such as temporary or permanent streambed disturbance or change to water quality such as increased sedimentation.
- *Impacts to migratory birds/nesting* includes the removal of vegetation or disruption to migratory bird species during the nesting season.
- *Noise disturbance* includes the temporary or permanent introduction of noise either during construction or training which effects wildlife behavior.
- *Increase vehicle collision potential* includes the increased potential for wildlife-vehicle strikes during operations.
- *Beneficial impact* includes those actions which would benefit vegetation by removing or reducing the potential for wildlife and fisheries disturbance during operations.

The 2007 INRMP was developed by consulting other State and Federal agencies. The plan identifies guidance for the USAG-FWA Ecosystem Management Team to provide input for mitigating severe impacts on wildlife and fishery resources.

3.6.2.1 No Action

Under the No Action Alternative, USAG Alaska garrisons would not implement one or more of the Proposed Actions; however, range construction projects would still continue as needed and would undergo a project-by-project evaluation under NEPA. Adverse impacts could occur to wildlife and fisheries as no programmatic guidance would be established in the siting of range facilities (Proposed Actions 1 and 2) and no standard list of SOPs and BMPs (Proposed Action 3) would be readily available to employ during routine range activities. Individual planning and siting of projects could result in a future net increase of wildlife and fisheries impacts such as fragmentation or development within riparian areas, whereas the programmatic approach would allow for a broad overview of existing range conditions, needs, and environmental resource constraints. USAG FRA and USAG FWA, however, would still be required to comply with Federal and state wildlife and fisheries conservation and management regulations, therefore, overall adverse impacts would be minor.

3.6.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.6.2.2.1 Fort Richardson

Projects R2, R4, R8, R9, R10, and R11 would not be anticipated to have adverse impacts to wildlife and fisheries due to their small footprints or siting within existing military activity areas.

Projects R1 and R5 would likely have unavoidable impacts to wildlife as they are located within moose browse habitat. Overall impacts would be insignificant as this loss would not reduce regional wildlife populations below State management levels or eliminate a habitat type from FRA. Additionally, FRA would coordinate with their wildlife biologist to replace any lost acreages with an equal amount of moose browse elsewhere within FRA.

Project R6 would impact open meadow and broadleaf forest habitat. This habitat, however, would likely be of lower quality due to the project's location adjacent to Glenn Highway in proximity to human activities (see Figure B-1a, Appendix B) and up to 20 acres of habitat have the potential of being disturbed. Similar to Projects R1 and R5, impacts would be insignificant as this loss would not reduce regional wildlife populations below State management levels or eliminate a habitat type from FRA.

Projects R3 and R7 would involve permanent losses of habitat due to widening of existing roads (see Section 3.5.2.1.1). As Project R7 would traverse virtually every habitat type within FRA, the likelihood exists that the proposed road upgrades would impact preferred habitat of priority wildlife species and the potential to directly impact fisheries through stream construction activities (see Section 3.3.2.1.1). Project R7 would primarily be located in human-modified areas (320 acres), where impacts would be reduced due to existing human disturbance and lower habitat quality. The remaining road segments traverse through a variety of primarily forested habitat (see Section 3.5.2.1.1 for specific vegetation types). Additionally, Project R7 would impact 7 acres of moose browse habitat. FRA would coordinate with their wildlife biologist to replace any lost acreages with an equal amount of moose browse elsewhere. Any impacts to wetland habitat (see Section 3.4.2) could impact wood frogs if they are present. Project R3 would impact up to 5 acres of bog, meadow, or marsh habitat (see Figure B-1b, Appendix B). In addition these projects would occur adjacent to the existing FRA roads and would not exacerbate segmentation of habitat, increase the amount of edge habitat and would not likely cause a reduction in specific preferred habitat of any particular species. Road shoulders would be graded and stabilized with native grassy vegetation, allowing for some of the disturbed area to be converted to grassy vegetation. Periodic maintenance of the road shoulders would reduce overall quality of any habitat that re-established in these areas. Due to the

linear nature of these projects and upgrading existing roadway segments, it is unlikely that either of these projects would result in significant adverse impacts involving a reduction in regional wildlife populations below State management levels or eliminate a habitat type from FRA.

Project R7 would also involve up stream crossings (see Section 3.3.2 for specific surface water information and affected watersheds), therefore, direct impact to fisheries habitat could occur from an increased amount of bridged and culverted streams. Instream construction (streambed stabilization) would cause localized disruption to streambed habitat and would create a temporary increase in turbidity (see Section 3.3.2.2.2.1). Increased sedimentation in streams typically carrying lower amounts of sediments would experience a temporary increase in sediments during construction. Localized impacts could occur to eggs of aquatic species in these stream reaches if construction occurs after these species lay their eggs. Coordination with ADNR and NMFS and compliance with Fish Habitat permit requirements and NMFS recommendations would avoid significance of impact as stream crossings would be designed, and construction sites managed to avoid direct and long-term impact to aquatic species and habitat (also see Section 3.3.2.2.1 for specific BMPs to protect water resources). Additionally, as these impacts would occur adjacent to existing culverted areas and would be offset by removal of vehicles maneuvering the stream channel, further reducing the intensity of adverse impacts from upgrades to these roads.

No projects would be anticipated to affect the Eagle River Flats Special Interest Area. With the exception of existing road crossing upgrades of Ship Creek riparian areas, no projects would affect the Ship Creek Riparian Special Interest Area. Impacts to the special interest area resulting from Project R7 would be anticipated to be minor with the use of BMPs to reduce and avoid riparian and surface water impacts to Ship Creek (see Section 3.3.2.2.1).

Noise from construction and training activities (see Section 3.11.2) may disturb animals or displace them to less favorable habitat; however, wildlife responses to noise may be species-specific, and could result in either avoidance or habituation. Avoidance could cause species to under-use high quality habitat near disturbance areas, resulting in decreased fecundity and survival.

The total acreage of habitat disturbance to accommodate all of the range projects is approximately 434 acres. In order to further mitigate impacts to wildlife and fishery resources, including potential impacts to terrestrial species, migratory birds, and aquatic species, USARAK garrisons would utilize the following BMPs:

- During design, range planners would avoid siting projects in higher functioning habitats such as riparian areas or those containing rare or sensitive species. The NEPA Checklist would be utilized to verify habitat types within proximity to the project footprint. This measure would avoid disturbance to local populations of rare or sensitive species.
- During design, range planners would use site fingerprinting, which involves clearing and grading only those areas necessary for building activities and concentrate development in areas where past development has occurred. Although a majority of the projects involve upgrades to existing facilities, this measure would reduce the amount of habitat fragmentation and preserve the maximum extent of vegetation.
- Following construction, disturbed areas during project construction would be revegetated as soon as possible with native grass or other appropriate vegetation, preferably in the same growing season as the disturbance to reduce the overall loss of native habitat from project construction.
- Continued monitoring of effects of military training on select wildlife species (especially herd animals and waterfowl) and fisheries during vital seasons such as breeding, rearing of young, and migration would continue.
- Vegetation clearing during the USFWS Region 7 guidelines for South-central and Interior Alaska (1 May through 15 July) as described in the 2007-2011 INRMP would be avoided to prevent impacts to migratory birds.

- Instream construction activities would be restricted, if feasible, in breeding areas for migratory waterfowl, spawning areas, or areas of concentrated shellfish populations.
- During design, range planners would engineer culverts installed in fish bearing streams for a width that is at least 120 percent of the ordinary high water width of the stream and should be bedded 20 percent of the diameter to maintain sufficient depth of flow and appropriate water velocities for fish passage, and would reflect the natural contour of the stream should be followed for culvert installation. These design elements would avoid long term adverse impacts to fish species and would likely be requirements of Fish Habitat permits.
- FRA would continue to comply with Federal and State laws and regulations relating to fish and wildlife conservation or management, including those listed in Table 1.8-1 to avoid significant adverse impacts.

Projects benefiting surface waters and vegetation (see Sections 3.3.2 and 3.5.2) would likely indirectly benefit wildlife and fisheries through preventing degradation of aquatic and terrestrial habitat.

Table 3.6-1a shows the anticipated level of impacts for the FWA site-specific projects with implementation of the BMPs. The table also includes estimated loss of habitat. Actual loss of acreage by habitat type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified.

Table 3.6-1a Summary of Wildlife and Fisheries Impacts from Site-specific FRA Projects

Project Name	Approximate acreage of potential habitat impact	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
		Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to EFH or anadromous fish	Impacts to migratory birds/nesting	Noise disturbance (operations)	Increased vehicle collision potential	***Overall Impact***
(R1) FRA UAC[1]	10	⊙	○	⊙	○	○	○	⊙	○	⊙
(R2) Dig a well at the ISBC Site	0.01	○	○	○	○	○	○	○	○	○
(R3) Raise the ISBC Road	5	⊙	○	⊙	○	○	○	⊙	○	⊙
(R4) Provide Turnaround IPBC	0.5	○	○	⊙	○	○	○	⊙	○	⊙
(R5) Create Bivouac Site UAC	5	⊙	○	⊙	○	○	○	⊙	○	⊙
(R6) Range Operation Complex	20	⊙	○	○	⊙	○	○	⊙	○	⊙
(R7) FRA Roads	390	⊙	⊙	⊙	○	⊙	○	⊙	○	⊙
(R8) Vehicle Storage/ Maintenance Building[1]	1	○	○	○	○	○	○	○	○	○
(R9) Install Flagpole ER Gate	0.01	○	○	○	○	○	○	○	○	○

Table 3.6-1a Summary of Wildlife and Fisheries Impacts from Site-specific FRA Projects

Project Name	Approximate acreage of potential habitat impact	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
		Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to EFH or anadromous fish	Impacts to migratory birds/nesting	Noise disturbance (operations)	Increased vehicle collision potential	***Overall Impact***
(R10) Waterless Arctic Latrine	0.5	○	○	○	○	○	○	○	○	○
(R11) Covered Bleachers[1]	0.5	○	○	○	○	○	○	○	○	○
Total Approximate Acreage	**433**									

[1]Note: These projects are located within the proposed SAC Range Adaptable Use Zone (see Proposed Action 2).

Prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to determine whether the project would occur in an area under Coastal Zone Management Act jurisdiction, within proximity to Ship Creek or other tributaries to Cook Inlet which could impact the Federally endangered beluga whale, or in an area where migratory birds or Federally or State-listed rare, endangered, or threatened species are present. FRA would continue to comply with Federal and State laws and regulations relating to fish and wildlife conservation or management, including those listed in Table 1.8-1 to avoid significant adverse impacts, if these species are present.

3.6.2.2.2 Fort Wainwright

FWA

Project W9 would not be anticipated to have any adverse impacts to wildlife and fisheries, as the proposed site is located within the cantonment area (see Figure B-2a, Appendix B) and has already experienced past and ongoing human disturbance. The following projects are located within the FWA SAC Range within areas that have been modified during FWA's past and actively serve as training ranges (see Figure B-2a, Appendix B): W2, W3, W4, W8, W10, W12, W13, W16, and W22. These areas are likely to contain degraded and disturbed habitat due to past and ongoing military activities, and therefore, would not be anticipated to cause adverse impacts to wildlife and fisheries if these facilities were sited in existing disturbed areas.

Projects W2, W4, W6, W11, W15, W18, and W20 would likely have unavoidable adverse impacts to wildlife habitat. In addition, Project W15 involves installing a fence around the entire SAC range, impacts to large mammal movement would be reduced through incorporating pass through structures and allowing access to any winter browse habitat within the SAC range. Projects are located in wetland areas (see Section 3.4.2) could potentially impact wood frogs. The total acreage of loss to accommodate all of the range projects is approximately 211 acres. This acreage, however, would likely be smaller as projects W11, W15, W18, and W20 (approximately 83 acres combined) involve improvements to existing

facilities and access roads. FWA would further mitigate impacts to wildlife and fishery resources, including potential impacts to terrestrial species, migratory birds, and aquatic species, through utilizing BMPs discussed in Section 3.6.2.2.1.

TFTA

Overall Project W21 would have minor adverse impacts to wildlife and fisheries (see Table 3.6-1b) and would impact less than 1 percent of TFTA habitat. Project W21 would ultimately result in the conversion of 64 acres of primarily scrub and forest habitat (see Section 3.5.2.1.2 for specific vegetation types) to early successional grasses or other low-lying vegetation. Woody vegetation removal would change the habitat structure, to the detriment of some local wildlife species, but to the benefit of others (e.g., those that prefer edge habitat, open areas, or early successional vegetation communities). On-going maintenance disturbances (mowing/woody growth clearing) within the cleared boundary would keep vegetation in early successional stages, creating additional habitat for large mammals such as moose. In addition, any clearing within wetlands areas could cause an adverse impact to wood frogs through habitat disruption during clearing activities. Impacts to wood frogs would be minor, localized and would not affect their overall population or habitat availability. No activities would impact the butte or Tanana Flats Migratory Bird special interest areas.

YTA

Project W34 would not be anticipated to have adverse impacts to vegetation due to its location within a military activity area (see Figure B-2c, Appendix B) already subjected to disturbance, which is likely to contain degraded and disturbed habitat due to past and ongoing military activities. Additionally, Projects W7, W28, W37, and W38 would not be anticipated to impact wildlife and fisheries, their small footprints would likely be able to site locations to avoid impacts.

Project W32 would result in the conversion of approximately 60 acres of forest and scrub habitat (see Section 3.5.2.1.2 for specific vegetation types) around the Stuart Creek Impact Area to early successional grasses or other low-lying vegetation. Woody vegetation removal would change the habitat structure, to the detriment of some local wildlife species, but to the benefit of others (e.g., those that prefer edge habitat, open areas, or early successional vegetation communities). On-going maintenance disturbances (mowing/woody growth clearing) within the cleared boundary would keep vegetation in early successional stages, creating additional habitat for large mammals such as moose. In addition, any clearing within wetlands areas could cause an adverse impact to wood frogs through habitat disruption during clearing activities. Impacts to wood frogs would be localized and would not affect the overall population or habitat availability of wood frogs, and would, therefore, be minor.

Project W39 would disturb a total of 309 acres (50 acres of which are located in human-modified areas), and traverses through a variety of primarily forest and scrub habitat (see Section 3.5.2.1.2 for specific vegetation types). In addition, any clearing within wetlands areas could cause an adverse impact to wood frogs through habitat disruption during clearing activities. Impacts to wood frogs would be localized and would not affect their overall population or habitat availability, and would, therefore, be minor. The project would involve permanent losses of habitat due to widening of existing roads. These impacts would be minor as they would occur adjacent to the existing YTA roads, and would therefore not exacerbate segmentation, increase the amount of edge habitat and would not likely cause a reduction in specific preferred habitat of any particular species. Road shoulders would be graded and stabilized with native grassy vegetation, allowing for some of the disturbed area to be converted to grassy vegetation. Project W39 would also involve stream crossings; therefore, direct impact to fisheries habitat could occur and would be similar as those described for Project R7. Actual loss of acreage by vegetation type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified. The intent of the Checklist is to identify specific BMPs and SOPs, 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

"severe" or significant threshold. Furthermore, projects would be designed in such a manner as to minimize the overall loss of local populations of rare or sensitive plant species and regional native plant species, taking into consideration 2007-2011 INRMP guidance on habitat preservation.

Projects W1, W5, W23, W24, W25, W26, W27, W29, W30, W31, W33, W35, W36, W40, and W42 would also likely have unavoidable adverse impacts to wildlife and fisheries due to habitat loss and alteration. Collectively, these projects would result in minor adverse impacts, disturbing less than 1 percent of existing habitat with YTA. In addition, as Projects W5, W31, and W40 involve improvements to existing road networks, the potential exists for minor direct adverse impacts to fisheries from construction activities at existing stream crossings.

The total acreage of disturbance to accommodate all of the range projects would be approximately 804 acres. This acreage, however, would likely be smaller as all of the projects but W7 (1 acre) involve improvements to existing facilities and access roads. Additionally, YTA contains similar habitat available in nearby areas. FWA would further mitigate impacts to wildlife and fishery resources, including potential impacts to terrestrial species, migratory birds, and aquatic species, through utilizing BMPs discussed in Section 3.6.2.2.1.

Noise from construction and training activities (see Section 3.11.2) may disturb animals or displace them to less favorable habitat; however, wildlife responses to noise may be species-specific, and could result in either avoidance or habituation. Avoidance could cause species to under-use high quality habitat near disturbance areas, resulting in decreased fecundity and survival.

Projects benefiting surface waters and vegetation (see Sections 3.3.2 for surface water resources and affected watersheds and 3.5.2 for vegetation resources) would likely indirectly benefit wildlife and fisheries through preventing degradation of aquatic and terrestrial habitat.

Table 3.6-1b shows the anticipated level of impacts for the FWA site-specific projects with implementation of the BMPs. The table also includes estimated loss of habitat. Actual loss of acreage by habitat type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified.

Table 3.6-1b Summary of Wildlife and Fisheries Impacts from Site-specific FWA Projects

Project Name	Approximate acreage of potential habitat impact	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
		Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to EFH or anadromous fish	Impacts to migratory birds/nesting	Noise disturbance (operations)	Increased vehicle collision potential	***Overall Impact***
FWA										
(W2) Ammunition Breakdown Buildings[1]	<1	○	○	○	○	○	○	○	○	○
(W3) Demo Pond Range[1]	1.8	⊙	○	⊙	○	○	○	⊙	○	⊙

Table 3.6-1b Summary of Wildlife and Fisheries Impacts from Site-specific FWA Projects

Project Name	Approximate acreage of potential habitat impact	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
		Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to EFH or anadromous fish	Impacts to migratory birds/nesting	Noise disturbance (operations)	Increased vehicle collision potential	***Overall Impact***
(W4) General Instructional Building CACTF	0.2	○	○	○	○	○	○	○	○	○
(W6) Indoor Shooting Range[1]	2	⊙	○	○	○	○	○	⊙	○	⊙
(W8) Range Operation Complex [1]	2.1	⊙	○	○	○	○	○	⊙	○	⊙
(W9) FWA C130/17 Mock-up	2	⊙	○	○	○	○	○	⊙	○	⊙
(W10) Welding/ Carpentry Shop[1]	2.5	⊙	○	○	○	○	○	○	○	○
(W11) Arctic Village[1]	13	⊙	○	⊙	○	○	○	⊙	○	⊙
(W12) SAC East Expansion[1]	10	⊙	○	⊙	○	○	○	⊙	○	⊙
(W13) KD Range Expansion[1]	22	⊙	○	⊙	○	○	○	⊙	○	⊙
(W14) Pave Range Road[1]	18.4	⊙	⊙	○	○	○	○	⊙	⊙	⊙
(W15) SAC Security Fence[1]	17.5	○	○	○	⊙	○	○	○	○	⊙
(W16) Rebuild MRF Firing Line[1]	2.6	○	○	⊙	○	○	○	⊙	○	⊙
(W17) Combined Arms Collective Training Facility	9	⊙	⊙	⊙	○	○	○	⊙	○	⊙
(W18) Drivers Training Course Phases 1-5	44.7	⊙	⊙	⊙	○	○	○	⊙	⊙	⊙
(W19) Latrine – Birch Hill Biathlon Range	0.4	○	○	○	○	○	○	○	○	○
(W20) Warrior Forward Operations Base Phase 3	7	○	⊙	○	○	○	○	⊙	○	⊙
(W22) Latrines[1]	0.7	○	○	○	○	○	○	○	○	○
Total Approximate Acreage	**157**									
TFTA										
(W21) Alpha Impact Area Survey Line	64	○	○	⊙	○	○	○	⊙	○	⊙
Total Approximate Acreage	**64**									
YTA										
(W1) Digital Air Ground Integration Range	10	⊙	○	○	○	○	○	⊙	○	⊙
(W5) Stuart Creek Integrated Target Array	21.7	⊙	○	⊙	○	○	○	⊙	⊙	⊙
(W7) Firebird UAV Building	1	○	○	○	○	○	○	○	○	○
(W23) Charlie Battery FOB	28	⊙	⊙	⊙	○	○	○	⊙	⊙	⊙
(W24) YTA Convoy Live Fire Range Phase 1	22	⊙	⊙	⊙	○	○	○	⊙	⊙	⊙
(W25) Winter Camp FOB[1]	5	⊙	⊙	⊙	○	○	○	⊙	○	⊙
(W26) YTA Firing Point 13	3.1	⊙	⊙	○	○	○	○	○	⊙	⊙
(W27) Husky DZ FOB	2.3	⊙	⊙	○	○	○	○	○	⊙	⊙

Table 3.6-1b Summary of Wildlife and Fisheries Impacts from Site-specific FWA Projects

Project Name	Approximate acreage of potential habitat impact	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
		Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to EFH or anadromous fish	Impacts to migratory birds/nesting	Noise disturbance (operations)	Increased vehicle collision potential	***Overall Impact***
(W28) YTA Latrines	2.4	○	○	○	○	○	○	○	○	○
(W29) YTA Demolition Range	18	⊙	○	⊙	○	○	○	⊙	○	⊙
(W30) YTA Firing Point Direct Fire	4.5	⊙	○	⊙	○	○	○	⊙	○	⊙
(W31) Stuart Creek Access Trails	37.4	⊙	○	⊙	○	⊙	○	⊙	○	⊙
(W32) Stuart Creek Impact Area Survey Line	59.5	○	○	⊙	○	○	○	⊙	○	⊙
(W33) FP 9 Direct Firing Point	15	⊙	○	⊙	○	○	○	⊙	○	⊙
(W34) Husky DZ Resurface	217	⊙	○	⊙	○	○	○	⊙	○	⊙
(W35) Gravel Source YTA	20	⊙	○	⊙	○	○	○	⊙	○	⊙
(W36) Bravo Battery FOB	17	⊙	⊙	⊙	○	○	○	⊙	○	⊙
(W37) Maintenance Building[1]	0.04	○	○	○	○	○	○	○	○	○
(W38) High Capacity Well[1]	0.02	○	○	○	○	○	○	○	○	○
(W39) YTA Roads Upgrade	309	⊙	⊙	⊙	○	⊙	○	⊙	○	⊙
(W40) YTA Manchu Trail Bridge Upgrade	2	○	○	○	○	⊙	○	⊙	○	⊙
(W42) Harden Firebird FP and Bivouac Area	9.6	⊙	⊙	⊙	○	○	○	⊙	○	⊙
Total Approximate Acreage	**804**									

Note: [1]These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

Similar to FRA, prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to determine whether the project would occur in an area where migratory birds or Federally or State-listed rare, endangered, or threatened species are present. FWA would continue to comply with Federal and state laws and regulations relating to fish and wildlife conservation or management, including those listed in Table 1.8-1 to avoid significant adverse impacts, if these species are present.

3.6.2.2.3 Donnelly Training Area

Projects D3/D4 and D30 are located in the bison spring/summer use area and sandhill crane roosting area, and clearing activities could create a temporary and localized disruption to bison or sandhill cranes if they are present. However, construction would comply with the 2007 Agreement with ADF&G; therefore, disturbance would be limited in the presence of bison and sandhill cranes and impacts would be minor.

Projects D5, D6, D9, D12, D17, D19, and D29 would not be anticipated to have any adverse impacts to wildlife and fisheries, as the proposed sites are located within human-modified areas and military activity

areas that have been previously been disturbed (see Figures B-3, Appendix B). These areas are unlikely to contain high-quality habitat due to past and ongoing military activities, and therefore, the impacts to vegetation resources would be insignificant. In addition, Projects D8, D16, D29, and D30 would likely result in minor adverse impacts to wildlife and fisheries. Projects D8 (target emplacement), D29 (latrines), and D30 (FAARPs) have small, scattered footprints that would enable them to be sited to avoid impacts. Project D16 involves the placement of signs on trees or posts, therefore, no adverse impacts to wildlife and fisheries would be anticipated from this activity.

Project D2 would disturb a total of 1,085 acres (495 acres of which are located in human-modified areas), and traverses through a variety of habitat types, including scrub, forest, and bog, meadow or marsh (see Section 3.5.2.1.2 for specific vegetation types). Additionally, 236 acres are located in the bison spring/summer use area and 145 acres are located in the sandhill crane roosting area. Clearing activities could create a temporary and localized disruption to bison migration if these activities are conducted during the spring migration (early February through mid-April) or fall migration (July 1 until bison are gone), or during sandhill crane migration from late April to mid-May. Construction would comply with the 2007 Agreement with ADF&G; therefore, disturbance would be limited in the presence of bison or sandhill cranes. Of the 1,085 acres of potential habitat loss cause by Project D2, 303 acres are wetlands, which could impact wood frogs through habitat disruption during clearing activities. Impacts to wood frogs would be localized and would not affect their overall population or habitat availability (less than 1 percent), and would, therefore, be minor. The project would involve permanent losses of habitat due to widening of existing roads. These impacts would be minor as they would occur adjacent to the existing DTA roads, and would therefore, not increase the amount of edge habitat and would not likely cause a reduction in specific preferred habitat of any particular species. Road shoulders would be graded and stabilized with native grassy vegetation, allowing for some of the disturbed area to be converted to grassy vegetation.

Project D2 would also involve stream crossings, therefore direct impact to fisheries habitat could occur from an increased amount of bridged and culverted streams. As these impacts would occur adjacent to existing culverted areas and would be offset by removal of vehicles maneuvering the stream channel, impacts to fisheries habitat would be minor. Indirect impacts resulting from sedimentation and runoff during and after construction would be reduced using BMPs, similar to those described in Section 3.6.2.2.1. Instream construction (streambed stabilization) would cause localized disruption to streambed habitat and would create a temporary increase in turbidity (see Section 3.3.2 for surface water resources and affected watersheds). Increased sedimentation in streams typically carrying lower amounts of sediments would experience a temporary increase in sediments during construction. Localized impacts could occur to eggs of aquatic species in these stream reaches if construction occurs after these species lay their eggs and would be minor compared to the overall watershed. Impacts to streams requiring a fish habitat permit through ADNR would be further reduced through required permit mitigation measures.

Project D15 would result in the conversion of approximately 54 acres of primarily scrub and forest habitat (see Section 3.5.2.1.3 for specific vegetation types and acreages) around the DTA East boundary to early successional grasses or other low-lying vegetation. Woody vegetation removal would change the habitat structure, to the detriment of some local wildlife species, but to the benefit of others (e.g., those that prefer edge habitat, open areas, or early successional vegetation communities). On-going maintenance disturbances (mowing/woody growth clearing) within the cleared boundary would keep vegetation in early successional stages, creating additional habitat for large mammals such as bison and moose, benefiting these populations. Potential impacts to training missions from increased large mammal populations within these areas would be avoided through establishing food plots for these species elsewhere within DTA, if necessary. In addition, the DTA East boundary includes 7 acres of wetlands. Impacts to wood frogs could occur through modification of habitat from clearing of trees within wetlands. These impacts, however, would be localized and would not affect the overall population or habitat availability (less than 1 percent) of wood frogs, and would, therefore, be minor. The linear clearing

required for the boundary demarcation would involve a 13 foot clearing, and therefore, would be unlikely to contribute to habitat segmentation.

Project D21 (Alternatives 2, 3, and 4) would also involve loss of habitat (see Section 3.5.2.1.3 for specific vegetation types and acreages). In addition, Alternatives 2 and 3 would each impact 5 acres of bison spring/summer use area (see Figure B-3c, Appendix B). Clearing activities could create a temporary and localized disruption to bison migration if these activities are conducted during the spring migration (early February through mid-April) or fall migration (July 1 until bison are gone), however, construction would comply with the 2007 Agreement with ADF&G; therefore, disturbance would be limited in the presence of bison and impacts would be minor. Wood frogs could be impacted in wetland areas affected by road construction. These impacts, however, would be localized and would not affect the overall population or habitat availability of wood frogs, and would, therefore, be minor. Road shoulders would be graded and stabilized with native grassy vegetation, allowing for some of the disturbed area to revert back to grassy vegetation.

None of the alternatives for Project D21 would involve the crossing of perennial streams or other perennial surface waters, therefore direct impact to fisheries would be avoided. Indirect impacts resulting from sedimentation and runoff during and after construction would be reduced using BMPs.

Projects D1, D3/D4, D7, D10, D11, D13, D14, D18, D20, D22, D23, D24, D25, D26, D27, D28, and D31 would also likely have adverse impacts to habitat (see Figures B-3, Appendix B). Up to 761 acres of various vegetative habitat have the potential of being disturbed. This acreage, however, would likely be smaller as projects D3/D4, D7, D11, D13, D18, D20, D23, D24, D26, D28, and D31 (approximately 736 acres combined) involve improvements to existing facilities and access roads. Projects D20 and D22 involve new linear Soldier training operations, and therefore, could impact large mammal movements. These impacts would be anticipated to be minor, however, due to the existing military activity within proximity to both projects. In addition, projects benefiting surface waters and vegetation (see Sections 3.3.2 and 3.5.2) would likely indirectly benefit wildlife and fisheries through preventing degradation of aquatic and terrestrial habitat.

Two projects occur within training areas associated with DTA, D23 (85 acres) in the BRTA and D24 (373 acres) in the GRTA. Ecological landcover mapping was not available to determine the potential habitat types that would be impacted by Project D23 within the BRTA (see Figure B-3g, Appendix B), however, it is assumed that less than significant adverse impacts would result to wildlife and fisheries, as these projects involve upgrades to existing roadways. Similar to other linear projects, the trails in the GRTA (Project D24) traverse through a variety of habitats, including grassland/low shrub vegetation and a combination of broadleaf, mixed, and needleleaf forest (see Figure B-3h, Appendix B). Both of these projects would constitute a minor impact to wildlife and fisheries. In addition, these projects involve improvements to existing road networks, the potential exists for minor direct adverse impacts to fisheries from construction activities at existing stream crossings.

The total acreage of disturbance to accommodate all of the range projects would be approximately 1,489 acres. This acreage, however, would likely be smaller as Projects D3, D4, D7, D11, D13, D18, D20, D23, D24, D26, D28 and D31 involve improvements to existing facilities and access roads. Additionally, DTA contains similar habitat available in nearby areas. DTA would further mitigate impacts to wildlife and fishery resources, including potential impacts to terrestrial species, migratory birds, and aquatic species, through utilizing BMPs discussed in Section 3.6.2.2.1.

Table 3.6-1c shows the anticipated level of impacts for the DTA site-specific projects with implementation of the BMPs. The table also includes estimated loss of habitat. Actual loss of acreage by habitat type for each project would be determined during completion of the NEPA Checklist, once limits of construction and specific project footprints have been identified.

Table 3.6-1c Summary of Wildlife and Fisheries Impacts from Site-specific DTA Projects

Project Name	Approximate acreage of potential habitat impact	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
		Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to EFH or anadromous fish	Impacts to migratory birds/nesting	Noise disturbance (operations)	Increased vehicle collision potential	***Overall Impact***
(D1) Range Operation Complex[1]	7	⊙	○	○	○	○	○	⊙	○	⊙
(D2) DTA Roads	1,085	⊙	○	⊙	○	⊙	○	⊙	○	⊙
(D3/D4) DTA Firing Points	26	○	○	○	○	○	⊙	⊙	○	⊙
(D5) New Load Ramps at Donnelly DZ	0.1	○	○	○	○	○	○	○	○	○
(D6) MATCH Shoot House at Colorado South[1]	0.1	○	○	○	○	○	○	○	○	○
(D7) Expand KD Range[1]	6.6	⊙	○	⊙	○	○	○	⊙	○	⊙
(D8) Target Emplacement	0.01	○	○	○	○	○	○	○	○	○
(D9) Construct additional support buildings at BAX/CACTF	5	⊙	○	○	○	○	○	⊙	○	⊙
(D10) Maintenance Buildings for units training at DTA[1]	1	⊙	○	○	○	○	○	⊙	○	⊙
(D11) Beales Replacement[1]	7	⊙	○	○	○	○	○	⊙	○	⊙
(D12) Area of Responsibility Village	11	⊙	○	⊙	○	○	○	⊙	⊙	○
(D13) Theater Specific Village	11	○	○	⊙	○	○	○	⊙	○	⊙
(D14) Expand OP 26 for Range Control West Operations	5	⊙	○	○	○	○	○	○	○	⊙
(D15) Delineate DTA East Boundary	54	○	○	⊙	○	○	○	⊙	○	⊙
(D16) Sign the Impact Area	N/A	○	○	○	○	○	○	○	○	○
(D17) Improve Buffalo DZ	50	○	○	○	○	○	○	○	○	○
(D18) Expand Buffalo DZ	180	○	○	⊙	○	○	○	⊙	○	⊙
(D19) Extend the Donnelly FLS	13	⊙	○	⊙	○	○	○	⊙	○	⊙
(D20) Convert Fuel Break to Airstrip	9.2	⊙	○	○	⊙	○	○	⊙	○	⊙
(D21) New Road to bypass CTR	up to 44	⊙	○	⊙	⊙	○	○	⊙	⊙	⊙
(D22) BAX East Maneuver Corridor	6	⊙	○	⊙	⊙	○	○	⊙	○	⊙

Table 3.6-1c Summary of Wildlife and Fisheries Impacts from Site-specific DTA Projects

Project Name	Approximate acreage of potential habitat impact	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
		Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to EFH or anadromous fish	Impacts to migratory birds/nesting	Noise disturbance (operations)	Increased vehicle collision potential	***Overall Impact***
(D23) BRTA Roads[2]	85	⊙	⊙	⊙	○	⊙	○	⊙	○	⊙
(D24) GRTA Roads[2]	373	⊙	○	⊙	○	⊙	○	⊙	○	⊙
(D25) Combat Outposts	5	⊙	○	○	○	○	○	⊙	○	⊙
(D26) Replace or Relocate Simpsonville Buildings	6	⊙	○	○	○	○	○	⊙	○	⊙
(D27) Construct UAV System tracking pad and access	1.5	⊙	○	○	○	○	○	⊙	○	⊙
(D28) Delta Creek Assault Strip	13	⊙	○	⊙	○	○	○	⊙	○	⊙
(D29) Install Waterless Latrines[1]	<1	○	○	○	○	○	○	○	○	○
(D30) Construct FAARPs[1]	3	○	○	○	○	○	⊙	○	○	⊙
(D31) Add New OPs along the Winter Trail	17	⊙	○	⊙	○	○	○	○	○	⊙
Total Approximate Acreage	**2026**									

Note: [1]These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).
[2]Environmental mapping was unavailable for Projects D23 and D24, however, impacts are anticipated to be less than significant.

Similar to FRA and FWA, prior to construction of any project, the NEPA Checklist (Appendix C) would be completed to determine whether the project would occur in an area where migratory birds or Federally- or State-listed rare, endangered, or threatened species are present. DTA would continue to comply with Federal and State laws and regulations relating to fish and wildlife conservation or management, including those listed in Table 1.8-1 to avoid significant adverse impacts, if these species are present.

3.6.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.6.2.3.1 FRA

The proposed FRA SAC Range Adaptable Use Zone contains 3,128 acres of vegetation. Mapping data indicates that approximately 870 acres of land within the proposed adaptable use zone is characterized as "military activity area," indicating that the potential for Army disturbance (past alteration of the landscape

or active on-going military use of the area) exists. The proposed adaptable use zone contains 154 acres of moose browse habitat. Proposed Action 2 assumes a worst-case scenario that all habitat within the proposed adaptable use zone could be impacted from future FRA SAC range development activities. The following factors would mitigate significant adverse impacts to wildlife and fisheries within FRA to insignificant (minor or moderate) adverse impacts:

- Existing habitat within the FRA SAC Range already experiences some degree of degradation due to the high use of SAC ranges; therefore, this habitat would likely be lower in overall quality. Training related activities within these areas would not likely change the existing quality of habitat and would allow range planners to concentrate activities within existing disturbed areas, rather than developing infrastructure elsewhere within FRA range lands. This would avoid potential for significant impacts to wildlife and fisheries which may contain populations of rare or sensitive species, including high value habitat along Ship Creek.
- Loss of habitat within the FRA SAC Range would occur over time. As areas within the proposed adaptable use zone become developed, range planners would still be required to comply with Federal and State wildlife and fisheries conservation and management regulations on a project-by-project basis, avoiding violation of Federal and State laws and regulations relating to fish and wildlife conservation or management, including those listed in Table 1.8-1.
- The likelihood of 100 percent disturbance to vegetation resources and habitat would be highly unlikely. As described in 3.1, both the requirements of concealment during Soldier training, and SDZ building limitations would likely prevent the extent of disturbance analyzed by the worst-case-scenario and would required the retention of vegetation and associated habitats.
- USARAK would still manage the proposed adaptable use zones under the ITAM Program to maintain sustainability of use, indirectly benefiting species.
- Monitoring residential wildlife populations would be conducted to determine whether additional mitigation measures are warranted, such as converting existing undeveloped land into favorable moose browse.

3.6.2.3.2 FWA

The proposed FWA SAC Range Adaptable Use Zone contains 3,974 acres of vegetation. The proposed YTA SAC Range Adaptable Use Zone contains 8,472 acres of vegetation. Mapping data indicates that approximately 500 acres and 900 acres of land, respectively, within the proposed FWA and YTA SAC Range Adaptable Use Zones is characterized as "military activity area," where some level of disturbance has occurred due to past alteration of the landscape or active on-going military use of the area. Proposed Action 2 assumes a worst-case scenario that all vegetation within the proposed adaptable use zone could be impacted from future FWA SAC range development activities. Approximately 3 percent of YTA vegetation would be disturbed, and would constitute a minor impact to habitat.

Factors similar to those listed in Section 3.6.2.3.1 would mitigate significant adverse impacts to wildlife and fisheries within FWA and YTA to insignificant (minor or moderate) adverse impacts.

3.6.2.3.3 DTA

According to GIS range mapping, the proposed DTA SAC Range Adaptable Use Zone contains 10,744 acres of vegetation. Mapping data indicates that approximately 1,750 acres of land within the proposed SAC Range Adaptable Use Zone is characterized as "military activity area," indicating that the potential for Army disturbance (past alteration of the landscape or active on-going military use of the area) exists. The proposed adaptable use zone contains 1,170 acres in the bison spring/summer use area and 3,054 acres in the sandhill crane roosting area. Proposed Action 2 assumes a worst-case scenario that all habitat within the proposed adaptable use zone could be impacted from future DTA SAC range development activities.

Factors similar to those listed in Section 3.6.2.3.1 would mitigate significant adverse impacts to wildlife and fisheries within FWA and YTA to insignificant (minor or moderate) adverse impacts.

In addition, USAG FWA would mitigate significant adverse impacts to bison spring/summer use areas and sandhill crane roosting located within the proposed DTA SAC Range Adaptable Use Boundary through development of specific mitigation measures in consultation with Federal and State management agencies as projects within the adaptable use boundary are identified that have the potential to impact the use of these areas by these species.

3.6.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts to wildlife and fisheries through directly or cumulatively reducing the availability or quality of habitat, or through impacts to species and species populations. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for wildlife and fisheries to reduce overall adverse impacts from routine range projects. Table 3.6-3 summarizes the potential type and intensity of wildlife and fisheries impacts as a result of routine range projects considering use of the proposed environmental stewardship range construction guidelines.

SOPs to be used to maintain biodiversity and local wildlife and fisheries populations during project design, construction, and operations include:

- For those projects affecting or adjacent to surface waters, USARAK garrisons will refer to the state Anadromous Fish Catalogue to determine presence of anadromous streams near construction areas and all projects will conform to any conditions required by State officials, such as vegetation buffers or other appropriate measures.
- In the event that a Proposed Action could adversely affect Essential Fish Habitat, appropriate consultation with the National Marine Fisheries Service would occur, and projects will conform with all conditions imposed by NMFS officials.
- For those projects affecting anadromous streams, all design and unavoidable construction activities affecting anadromous waters will be accomplished in accordance with Alaska Statutes AS 16.05.871 - AS 16.05.901.
- For those projects involving vegetation removal, to the extent possible, USARAK garrisons will obtain permission from the USFWS when necessary to remove bird nests, including partially completed bird nests. In addition, construction activities will avoid clearing of grass, scrub land, and forested areas between 1 May through 15 July to minimize impacts on migratory birds. Prior to initiating any project, construction sites will be surveyed to determine the presence of eagle nests. Should any be found, USFWS officials will be consulted as to whether construction may occur on the intended site, and whether measures are required to minimize any adverse impacts to eagles.
- For those activities involving firing or Soldier training activities, continue to limit firing within 4,921 feet (1,500 meters) of bison and prohibition of disturbance to bison by Soldiers during training events (DTA only).

BMPs to be used to maintain biodiversity and local wildlife and fisheries populations include:

Project Design

- Culverts installed in fish bearing streams would have a width that is at least 120 percent of the ordinary high water width of the stream and should be bedded 20 percent of the diameter.
- Sufficient depth of flow and appropriate water velocities for fish passage would be provided in culvert installations. A minimum of 8 inches (200 mm) of depth would be maintained. Depending upon the grade of the culvert and/or its length, downstream set pool or install baffles

within the culvert to achieve the 8 inches 200 mm minimum depth throughout the culvert may be necessary.
- The natural contour of the stream should be followed for culvert installation.
- Activities that include the construction and maintenance of intake structures must include adequate fish screening devices to prevent the entrainment or capture of fish.
- Directional boring vaults/junction boxes or pads will be provided further than 100 feet (30.5 meters) (measured from ordinary high water [OHW]) of anadromous fish streams.
- Restrict activities in breeding areas for migratory waterfowl, spawning areas, or areas of concentrated shellfish populations.
- Avoid siting projects in higher functioning habitats such as riparian areas or those containing rare or sensitive species.

Construction Sequencing
- Avoid vegetation clearing during the USFWS Region 7 guidelines for South-central and Interior Alaska (1 May through 15 July) as described in the 2007-2011 INRMP to avoid impacts to migratory birds.
- Where required, obtain State permits to erect a fish barrier of netting, both upstream and downstream of the crossing, to prevent fish from entering the work area.
- Move stranded fish found in the dewatered channel downstream.

Site Restoration
- To the maximum extent practicable backfill material shall consist of the excavated material and shall be returned to the hole in the same place on the vertical stratum from which it was excavated. As a contingency, use clean gravel or native cobbles for the upper 1-foot of trench backfill in all waterbodies that contain fisheries.

Operations
- Continue to cooperatively manage the Delta Bison Herd with ADF&G according to conditions outlined in the 2007 MOA and within the INRMP to ensure sustainment of the military mission and the health of the bison population.
- Continue planting of blue grass in designated areas south of DTA's training areas to help bison move away from training areas in a safe, non-harassing manor.
- Continue monitoring of effects of military training on select wildlife species (especially herd animals and waterfowl) and fisheries during vital seasons such as breeding, rearing of young, and migration.
- Continue annual moose, bison, and caribou surveys in partnership with ADF&G and swan surveys with the USFWS.
- Continue development and implementation of an information and education program for personnel using USARAK lands.
- Continue compliance with Federal and State laws and regulations relating to fish and wildlife conservation or management.
- Use of bear-proof containers and bear-resistant dumpsters to reduce incidence of bear-human interaction area (live fire training disruption and Soldier safety) on the SAC ranges.

Table 3.6-3 Summary of Potential Wildlife and Fisheries Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Wildlife and Fisheries Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to essential fish habitat	Impacts to migratory birds	Noise disturbance	Increased vehicle collision potential	***Overall Impact***
Berm Creation & Maintenance	○	○	⊙	○	○	○	⊙	○	⊙
Bleacher Enclosure	○	○	○	○	○	○	○	○	○
Bridge Installation	○	⊙	⊙	○	✪	○	○	○	⊙
Building Construction	⊙	○	○	○	○	○	⊙	○	⊙
Control Tower	⊙	○	○	○	○	○	⊙	○	⊙
Covered Hall	⊙	○	○	○	○	○	⊙	○	⊙
Culvert Installation	○	⊙	○	○	✪	○	○	○	⊙
Fencing	⊙	⊙	○	⊙	⊙	○	○	○	⊙
Firing Lane Creation & Maintenance	○	○	⊙	○	○	○	⊙	○	⊙
Firing Line Creation & Maintenance	○	○	○	○	○	○	○	○	○
FOB Creation and Maintenance	⊙	○	○	⊙	○	○	⊙	⊙	⊙
Grading/Shaping	○	○	○	○	○	○	○	○	○
Gravel Pits	⊙	⊙	⊙	○	⊙	○	○	○	⊙
Hardened Target Creation & Maintenance	⊙	○	⊙	○	○	○	⊙	○	⊙
Hardstands Creation and Maintenance	⊙	○	⊙	○	○	○	○	⊙	⊙
Improvised Explosive Device Defeat	⊙	○	⊙	○	○	○	⊙	⊙	⊙
Land Clearing & Vegetation	⊙	○	⊙	○	○	⊙	⊙	○	⊙
Latrine	○	○	○	○	○	○	○	○	○
Mowing	○	○	⊙	○	○	○	⊙	○	⊙
Observation Points Creation & Maintenance	⊙	○	⊙	○	○	○	○	○	⊙
Pit Toilets Creation and Maintenance	○	○	○	○	○	○	○	○	○
Prescribed Fire	⊙	○	⊙	○	○	○	○	○	⊙
Road (Trail) Creation & Maintenance	⊙	⊙	⊙	○	○	○	⊙	⊙	⊙

Table 3.6-3 Summary of Potential Wildlife and Fisheries Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Wildlife and Fisheries Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial								
	Permanent loss of terrestrial habitat	Permanent loss of aquatic habitat	Decrease of habitat quality	Impacts to large mammal movement	Impacts to essential fish habitat	Impacts to migratory birds	Noise disturbance	Increased vehicle collision potential	***Overall Impact***
Small Arms Siting	⊙	○	⊙	○	○	○	⊙	○	⊙
Boundary Line Clearings	○	○	⊙	○	○	○	○	○	⊙
Target Emplacement	○	○	○	○	○	○	○	○	○
Utility Line Creation & Maintenance	⊙	○	⊙	○	○	○	○	○	⊙
UXO Surveys	⊙	○	⊙	○	○	○	○	○	○
Wood Pile Burning	○	○	○	○	○	○	○	○	⊙
Urban Training Village	⊙	○	⊙	○	○	○	⊙	○	⊙

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. Overall, wildlife and fisheries could experience minor to moderate adverse impacts from routine range projects. Projects involving larger footprints (e.g., FOBS, Small Arms Siting, Urban Training Village) and projects which are linear in nature (e.g., roads, fencing, boundary line clearings, 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. Those activities involving grading and shaping 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). Maintenance projects (mowing) and small temporary structures would likely have no impacts to wildlife and fisheries due to the nature and size of routine range project. In addition, bridge and culvert installation would likely have beneficial impact to fisheries by directing Soldier movement along bridge structures and preventing vehicle maneuvers in stream channels.

As demonstrated with the SOPs and BMPs, 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 which involve unavoidable impacts could reduce or restrict footprints in sensitive areas to reduce the amount of overall adverse impacts.

3.7 LAND USE, ENERGY AND UTILITIES

3.7.1 Affected Environment

3.7.1.1 Installation Overview

Land Use

USARAK contains two primary installations: FRA and FWA. FRA is divided into North and South Posts. FWA is subdivided into 6 major training areas: the Main Post, TFTA, YTA, DTA (formerly Fort Greely), GRTA, and BRTA. Fort Greely was transferred to the Space Missile Defense Command, but is located within the DTA, south of Delta Junction. The total land area of USARAK is approximately 1,651,000 (USARAK, 2004a). A majority of the USARAK lands are on long-term withdrawal from the public domain and were originally assigned to the BLM for which residual responsibility of these withdrawn lands remains. Although the land is under the DoD's long-term management, the BLM still retains interest in the stewardship of the transferred parcel. Along with the Army, other State and Federal agencies, and the public, the BLM is involved with the development of resource management plans for these lands.

Existing land use boundaries, as defined in the USACE's Master Planning Instructions, have been defined for major land use categories and provide the framework for future land use decisions. Each land use category is evaluated against the established criteria to determine compatibilities, constraints and opportunities. The USARAK land use categories include: Transportation; Housing; Community; Installation Support; Range and Training Land; Maintenance; Outdoor Recreation; Rights-of-Way, Easements and Leases; and Miscellaneous.

The USARAK lands provide desirable areas for recreational and subsistence activities and areas are open to the public. However, public use on Army lands is limited in some areas or permanently closed to public access due to specific military training activities. For the protection of public health and welfare, temporary recreational use restrictions also exist. Impact areas are those parts of military lands that are used for weapons targeting and firing practice and are typically off-limits to the public. High hazard impact areas are always closed to the public. Dedicated impact areas are not permanently restricted, but permission to enter these areas is limited. To protect the public, a 2-mile wide buffer zone surrounds each impact area, which is closed during firing maneuvers on that impact area (also see Sections 3.8 and 3.12).

To manage land use impacts resulting from encroachment (the cumulative result of outside influences that inhibit normal military training and testing activities required for force readiness) and provide sustainable use guidelines to minimize environmental impacts, USAG FRA and USAG FWA implement planning and policy initiatives and several management plans/programs. Planning programs and tools that USARAK uses include, but are not limited to, the following:

- INRMP – This plan, which is updated every 5 years, provides guidelines for the implementation of the natural resources programs for USARAK lands (current plan covers 2007 through 2011). The INRMP is designed to support the military mission, manage natural resources and to ensure compliance with related environmental laws and regulations. Major partners in the implementation of the INRMP include the BLM, USFWS, and the ADF&G. Other partners in development of the plan include the ADNR, universities, other Federal and State agencies, native groups, contractors, and private citizens.
- SRP – To meet encroachment challenges, the Army implements the SRP, which integrates three perspectives (the range complex, the real property infrastructure, and the environment) to support the Army mission. The core programs of the SRP include the Range and Training Land Program (RTLP) and the ITAM Plan. The SRP core programs are integrated with the facilities management, environmental management, munitions management, and safety program functions

that support the doctrinal capability to ensure the availability and accessibility of Army ranges and training lands.

- RTLP – The RTLP consists of range modernization and range operations for the central management and prioritization and the planning and programming of live-fire training ranges and maneuver training lands, including the design and construction activities associated with them (procedures of this program are contained in AR 210-21, *Army Ranges and Training Land*). The program defines the quality assurance and inspection milestones for range development projects and the SOPs to safely operate military training, recreational, or approved civilian ranges. RTLP also establishes the procedures and means by which the Army range infrastructure is managed and maintained on a daily basis in support of the training mission.
- ITAM – The ITAM 5-year plan focuses on land management and land maintenance. The plan provides Army range managers with the capabilities to manage and maintain training and testing lands by integrating mission requirements derived from the RTLP with environmental requirements and management practices. The plan covers the RTLA, Training Requirements Integration (TRI), LRAM, and Sustainable Range Awareness (SRA).

These tools provide USARAK guidance for overall range planning to establish current requirements and utilization levels for available training assets and provide near- and long-term project planning for training, public works, and environmental planners.

Energy and Utilities

In 2008, USARAK transferred ownership and responsibility of all utilities at each installation to Doyon Utilities (a joint venture between Doyon Properties and Fairbanks Sewer & Water) (Doyon, 2009). As a regulated public utility, Doyon Utilities maintain, operate, and own all utilities at FRA, FWA, and DTA and is fully responsible for accomplishing any expansion needed to serve the evolving needs of the USARAK installations. During the privatization process, Doyon Utilities completed an extensive study and modeling of existing and projected energy requirements at both FRA and FWA and has commenced upgrades to existing power distribution technology at these installations to ensure full capability for future growth. These upgrades will include a complete re-build of all electric facilities at FRA, FWA, and DTA within the first 5 years of operation, resulting in three new substations and approximately 50 percent extra capacity for electrical supply (USARAK, 2008).

3.7.1.2 Fort Richardson

FRA encompasses approximately 61,600 acres, 3.7 percent of USARAK's total land area. The installation is located in south central Alaska and is adjacent to Anchorage and Elmendorf AFB to the west and the communities of Eagle River and Chugiak to the east. Almost 90 percent of FRA's land is dedicated to training – approximately 60 percent of the installation's area is designated as maneuver training area and nearly 30 percent is designated as ranges or impact areas (USARAK, 2004b).The northern border of FRA is the Knik Arm of the Cook Inlet and the Chugach Mountains lie to the east and southeast. Anchorage's Far North Bicentennial Park is located in the western portion of the installation (and shares FRA's southern boundary). Chugach State Park, FRA's largest neighbor, lies along the installation's eastern and southern border. It encompasses approximately one half million acres and is one of the largest state parks in the nation. FRA also borders a number of developed areas, with Anchorage and Elmendorf AFB to the west and the communities of Eagle River, Chugiak, and Birchwood to the northeast.

Housing on FRA is set in a compact area, approximately 273 acres (USARAK, 2008b). The neighborhoods are bound on the south and east by hills and a large forested area, blocking potential noise and air pollution from the nearby Glenn Highway. The Eagle River Flats Impact area is the only impact area on FRA and is off-limits to the public. In addition, FRA has other non-dudded off-limit areas associated with small arms ranges.

At FRA, the electrical distribution system does not include production of electricity, but is procured from Anchorage (Doyon, 2009). As mentioned previously, utilities at FRA have been transferred to Doyon Utilities for ownership and maintenance. Doyon Utilities plans to update the electrical distribution system to increase carrying capacity of the existing feeder system (USARPAC, 2008). Doyon also plans to install new substations and transformers, and add a depot facility to bypass the old standby power plant located on the installation. Natural gas is supplied by two different suppliers in Anchorage and the distribution system is relatively small. The water treatment and distribution system includes a water treatment plant, the water distribution system, including a connection to Elmendorf AFB, and maintenance of the Ship Creek Dam and reservoir. There are no wastewater treatment facilities at FRA. FRA's wastewater system collects and transports its wastewater to the Anchorage wastewater system.

3.7.1.3 Fort Wainwright

FWA is located in the Tanana River Valley in central Alaska, north of the Alaska Range in the Tanana River Valley. It is about 120 miles south of the Arctic Circle and 360 miles north of Anchorage. The Main Post area consists of the Close-In Training Areas and the cantonment of FWA, which is bordered on the west by Fairbanks and on the north, east, and south by open land. Immediately to the south of the Main Post is the Close-In Range Complex where the majority of the SAC range for FWA is located. FWA encompasses approximately 928,100 acres, 56 percent of USARAK's total area, and also includes the TFTA and YTA. Of FWA's area, approximately 87 percent of the FWA's installation is available for training (USARAK, 2004b).

As mentioned, portions of the City of Fairbanks are adjacent to the western border of the FWA cantonment area. Residential developments have grown eastward, abutting the installation boundary along the North Post, the main cantonment area, and the western side of the small arms range complex. Other developed areas include Fox and Chatanika to the north, and North Pole and Eielson AFB to the east and south. A majority of the land surrounding FWA is state-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 FWA with private and Fairbank's North Star Borough-owned land parcels to the south. Parcels of native-owned land also border FWA. The Chena River State Recreation Area lies adjacent to YTA's northern boundary and is managed for public recreation. Eielson AFB adjoins the western boundary of the YTA. Both TFTA and YTA are relatively isolated and reasonably protected from boundary encroachment, except for remote homesteads.

There are no impact areas within the FWA Main Post and cantonment area; however, access is restricted on the SAC range in the southern portion of the Main Post. TFTA has 2 impact areas: Alpha Impact area and the Blair Lakes Impact Area. Both are off-limits to public access and use. YTA has Stuart Creek Impact Area and is off-limits to public access and use.

The Central Heat and Power Plant is a coal-fired co-generation plant that produces electricity and steam heat for FWA. The electrical distribution system distributes power generated at the power plant to most of FWA. The water treatment plant consists of a small-pressurized green sand filter plant connected water distribution system. Much of the water distribution system is also enclosed in the vast utilidor system. The wastewater collection system is also primarily located in the utilidor system. FWA collects wastewater from throughout the post and discharges the wastewater into the Golden Heart Utilities wastewater system through a central lift station. YTA is included in the FWA utilities privatization to Doyon. Utilities consist primarily of overhead power to the training facilities for infantry type training and Stryker vehicle crew training.

3.7.1.4 Donnelly Training Area

DTA, an annex of FWA, is located approximately 100 miles to the southeast of Fairbanks. DTA is divided into DTA West and DTA East, separated by the Delta River. It is bordered on the south by the Alaska Range. DTA encompasses approximately 656,700 acres within the installation boundary, 40

percent of USARAK's land area (excluding the cantonment area of the former Fort Greely, which has been transferred to the Space Missile Defense Command). Approximately 77 percent of DTA is available for training. Central DTA is dominated by impact areas that are designated as off-limits to the public. DTA is used for large-scale maneuver events and live fire exercises by the US Army and US Air Force (USARAK, 2004b).

The only urban uses adjacent to DTA are located in Delta Junction north of the installation around the junction of the Alaska and Richardson highways, and along the Richardson Highway in the "keyhole," which is made up of non-military lands that are completely surrounded by DTA East. Other developed areas include Big Delta to the north and the Clearwater farming and ranching area to the east. A few scattered residences are located along the Alaska Highway northwest of Jarvis North Training Area. Private land ownership around the remainder of the installation boundary is limited, and private lands are non-urban in character.

GRTA lies between Granite Mountain and Gerstle River. It is 29 miles southeast of Delta Junction and about three miles southwest of the Alaska Highway. BRTA is 39 miles south of Delta Junction and east of the Richardson Highway.

BRTA has utilities for the Northern Warfare training center consisting of a power generator, well, septic system and fuel fired heat system.

3.7.2 Environmental Consequences

Potential adverse impacts would occur to land use if a Proposed Action were to require land expansion areas into adjacent land areas that would hamper those existing uses not related to military use (e.g., recreational use) and/or change land use activities that would be incompatible with adjacent land uses. The extent of such impacts depends largely on the size of the land expansion and nature of the activities. Impacts to public access, recreation and subsistence are discussed in Section 3.8.

Potential impacts would occur to utilities if a Proposed Action were to result in a demand for a utility service and/or require connection/upgrades to existing utilities. Utilities considered for this analysis include electrical, sanitary sewer, storm water, fiber optics, gas, and potable water. Potential adverse impacts include temporarily disrupting service to an existing utility system or increase demand to a level nearing, exceeding a utility's capability to provide adequate service, or requiring excessive utility extensions to connect to an existing system. The extent of impacts to a utility largely depends on the size of the facility and nature of the activity at a new facility.

Direct impacts are further discussed by the No Action and Proposed Action alternatives below. The following categories are used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant)** – The degree to which activities impact local and regional energy, water, and sewer demand and affect regional planning.
- **Severe (significant)** – Activities that create energy, water, or sewer demand in excess of existing supply or that require substantial changes to regional development planning would represent a significant impact.

In addition, the following bullets provide general descriptions of the type of impacts used in the land use, energy and utilities impact analysis:

- *Conflict to existing land use or adjacent land uses* includes incompatibility of a proposed activity to the existing land use designation or to adjacent, offsite land uses.
- *Increased energy demand* includes an increased demand of energy resulting from construction and operations of a proposed facility.
- *Increased utility demand* includes an increased demand for utilities resulting from construction and operations of a proposed facility.

3.7.2.1 No Action

Under the No Action Alternative, USAG Alaska garrisons would not implement one or more of the Proposed Actions and range construction projects would still occur without the direction of a programmatic NEPA analysis. No adverse impacts would be anticipated for land use, energy or utilities. All projects would occur within compatible Range and Training land use designated areas and USARAK would still implement its land management programs as discussed in Section 3.7.1.1. to avoid impacts from new projects do not result in impacts to neighboring communities and utility privatization would continue to provide necessary energy and utility upgrades to accommodate future projects.

3.7.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.7.2.2.1 Fort Richardson

As shown in Table 3.7-1a, the only site-specific project that would result in any impact to existing land use is Project R6 as this project requires construction of a new facility on open area which serves as limited recreational use at FRA; however, this impact is compatible with the Range and Training land use designation and is considered minor (see Section 3.8.2 for impacts to recreation). There are no other land use impacts since changes in land use activities and land expansion areas would not be required.

Insignificant impacts to energy use and other utilities would occur with Projects R1, R6 and R8. These projects involve new facilities that would require new utility connections and demand on services to existing utilities. It is expected that the existing utility systems at FRA would have adequate capacities to meet the demands without compromising service to current users, therefore, impacts would be insignificant. Furthermore, as discussed in Section 3.7.1, Doyon Utilities will maintain, operate, and own all utilities at FRA, FWA, and DTA and has identified upgrades to accommodate projected increased demands on the existing energy system (Doyon, 2009; USARAK, 2004a).

The NEPA Checklist (Appendix C) would be used to confirm conflicts with adjacent land uses and impacts to utilities remain insignificant once the projects are designed and footprints are determined.

Table 3.7-1a Summary of Land Use, Energy and Utilities Impacts from Site-specific FRA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial			
	Conflict to existing land use or adjacent land uses	Increased energy demand	Increased utility demand	***Overall Impact***
(R1) FRA UAC[1]	○	⊙	⊙	⊙
(R2) Dig a well at the ISBC Site	○	○	○	○
(R3) Raise the ISBC Road	○	○	○	○

Table 3.7-1a Summary of Land Use, Energy and Utilities Impacts from Site-specific FRA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial			
	Conflict to existing land use or adjacent land uses	Increased energy demand	Increased utility demand	***Overall Impact***
(R4) Provide Turnaround IPBC	○	○	○	○
(R5) Create Bivouac Site UAC	○	○	○	○
(R6) Range Operation Complex	⊙	⊙	⊙	⊙
(R7) FRA Roads	○	○	○	○
(R8) Vehicle Storage/ Maintenance Building[1]	○	⊙	⊙	⊙
(R9) Install Flagpole ER Gate	○	○	○	○
(R10) Waterless Arctic Latrine	○	○	○	○
(R11) Covered Bleachers[1]	○	○	○	○

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.7.2.2.2 Fort Wainwright

As shown in Table 3.7-1b, the site-specific projects at FWA would have no adverse land use impacts as these projects involve upgrades to existing training areas. Projects W25, W27, W35, and W42 could result in increased conflicts with existing land uses (limited recreational) as these projects involve expansion of existing facilities or construction of new facilities. These projects, however, are compatible with the existing Range and Training land use designation, and would therefore be minor (see Section 3.8.2 for recreation impacts).

Projects W1, W4, W6, W7, W8, W9, W10, W23, W25, W36 and W37 could result in insignificant levels of adverse impacts to energy and utilities as these projects would require new utility connections. These projects also represent a very small increase to overall electricity demand. According to estimates provided by FWA's utility contractor, Doyon Utilities, existing capacity far exceeds current demand (Doyon 2008). The very minor increase to energy demand posed by the projects examined here would not discernibly alter this equation.

Similar to FRA, the NEPA Checklist (Appendix C) would be used to confirm conflicts with adjacent land uses and impacts to utilities remain insignificant once the projects are designed and footprints are determined.

Table 3.7-1b Summary of Land Use, Energy and Utilities Impacts from Site-specific FWA Range Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial			
	Conflict to existing land use or adjacent land uses	Increased energy demand	Increased utility demand	***Overall Impact***
FWA				
(W2) Ammunition Breakdown Buildings[1]	○	○	○	○
(W3) Demo Pond Range[1]	○	○	○	○
(W4) General Instructional Building CACTF	○	⊙	⊙	⊙
(W6) Indoor Shooting Range[1]	○	⊙	⊙	⊙
(W8) Range Operation Complex [1]	○	⊙	⊙	⊙
(W9) FWA C130/17 Mock-up	○	⊙	⊙	⊙
(W10) Welding/ Carpentry Shop[1]	○	⊙	⊙	⊙
(W11) Arctic Village[1]	○	○	○	○
(W12) SAC East Expansion[1]	○	○	○	○
(W13) KD Range Expansion[1]	○	○	○	○
(W14) Pave Range Road[1]	○	○	○	○
(W15) SAC Security Fence[1]	○	○	○	○
(W16) Rebuild MRF Firing Line[1]	○	○	○	○
(W17) Combined Arms Collective Training Facility	○	○	○	○
(W18) Drivers Training Course Phases 1-5	○	○	○	○
(W19) Latrine – Birch Hill Biathlon Range	○	○	○	○
(W20) Warrior Forward Operations Base Phase 3	○	○	○	○
(W22) Latrines[1]	○	○	○	○
TFTA				
(W21) Alpha Impact Area Survey Line	○	○	○	○
YTA				
(W1) Digital Air Ground Integration Range	○	⊙	⊙	⊙
(W5) Stuart Creek Integrated Target Array	○	○	○	○
(W7) Firebird UAV Building	○	⊙	⊙	⊙
(W23) Charlie Battery FOB	○	⊙	⊙	⊙

Table 3.7-1b Summary of Land Use, Energy and Utilities Impacts from Site-specific FWA Range Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial			
	Conflict to existing land use or adjacent land uses	Increased energy demand	Increased utility demand	***Overall Impact***
(W24) YTA Convoy Live Fire Range Phase 1	○	○	○	○
(W25) Winter Camp FOB[1]	⊙	⊙	⊙	⊙
(W26) YTA Firing Point 13	○	○	○	○
(W27) Husky DZ FOB	⊙	○	○	⊙
(W28) YTA Latrines	○	○	○	○
(W29) YTA Demolition Range	○	○	○	○
(W30) YTA Firing Point Direct Fire	○	○	○	○
(W31) Stuart Creek Access Trails	○	○	○	○
(W32) Stuart Creek Impact Area Survey Line	○	○	○	○
(W33) FP 9 Direct Firing Point	○	○	○	○
(W34) Husky DZ Resurface	○	○	○	○
(W35) Gravel Source YTA	⊙	○	○	⊙
(W36) Bravo Battery FOB	○	⊙	⊙	⊙
(W37) Maintenance Building[1]	○	⊙	⊙	⊙
(W38) High Capacity Well[1]	○	○	○	○
(W39) YTA Roads Upgrade	○	○	○	○
(W40) YTA Manchu Trail Bridge Upgrade	○	○	○	○
(W42) Harden Firebird FP and Bivouac Area	⊙	○	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.7.2.2.3 Donnelly Training Area

As shown in Table 3.7-1c, the site-specific projects at DTA would largely have no adverse land use impacts. Projects D13, D18, D21, and D22 could result in increased conflicts with existing land uses (limited recreational) as these projects involve expansion of existing facilities or construction of new facilities. These projects, however, are compatible with the existing Range and Training land use designation, and would therefore be minor (see Section 3.8.2 for recreation impacts).

Projects D1, D8, D9, D13 and D14 could result in insignificant levels of impacts to energy and utilities as these projects would require new utility connections, however, it is expected that these projects would not require additional generation of electric power and existing Doyon Utilities would be able to handle connection and supply to these projects without changing baseline production. Impacts to utilities from all other site-specific projects at DTA would range from none to minor as they would not require any additional utility demands or represent small projects that would result in relatively minor increases in utility usage that could be adequately absorbed by the current capacity (Doyon 2008).

Similar to FRA and FWA, the NEPA Checklist (Appendix C) would be used to confirm conflicts with adjacent land uses and impacts to utilities remain insignificant once the projects are designed and footprints are determined.

Table 3.7-1c Summary of Land Use, Energy and Utilities Impacts from Site-specific DTA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial			
	Conflict to land use or adjacent land uses	Increased energy demand	Increased utility demand	*Overall Impact*
(D1) Range Operation Complex[1]	○	⊙	⊙	⊙
(D2) DTA Roads	○	○	○	○
(D3/D4) DTA Firing Points	○	○	○	○
(D5) New Load Ramps at Donnelly DZ	○	○	○	○
(D6) MATCH Shoot House at Colorado South[1]	○	○	○	○
(D7) Expand KD Range[1]	○	○	○	○
(D8) Target Emplacement	○	○	○	○
(D9) Construct additional support buildings at BAX/CACTF	○	⊙	⊙	⊙
(D10) Maintenance Buildings for units training at DTA[1]	○	⊙	⊙	⊙
(D11) Beales Replacement[1]	○	○	○	○
(D12) Area of Responsibility Village	○	○	○	○
(D13) Theater Specific Village	⊙	⊙	⊙	⊙
(D14) Expand OP 26 for Range Control West Operations	○	⊙	⊙	⊙
(D15) Delineate DTA East Boundary	○	○	○	○
(D16) Sign the Impact Area	○	○	○	○
(D17) Improve Buffalo DZ	○	○	○	○
(D18) Expand Buffalo DZ	⊙	○	○	⊙

Table 3.7-1c Summary of Land Use, Energy and Utilities Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial			
	Conflict to land use or adjacent land uses	Increased energy demand	Increased utility demand	*Overall Impact*
(D19) Extend the Donnelly FLS	○	○	○	○
(D20) Convert Fuel Break to Airstrip	○	○	○	○
(D21) New Road to bypass CTR	⊙	○	○	⊙
(D22) BAX East Maneuver Corridor	⊙	○	○	⊙
(D23) BRTA Roads	○	○	○	○
(D24) GRTA Roads	○	○	○	○
(D25) Combat Outposts	⊙	○	○	⊙
(D26) Replace or Relocate Simpsonville Buildings	○	○	○	○
(D27) Construct UAV System tracking pad and access	○	○	○	○
(D28) Delta Creek Assault Strip	○	○	○	○
(D29) Install Waterless Latrines[1]	○	○	○	○
(D30) Construct FAARPs[1]	○	○	○	○
(D31) Add New OPs along the Winter Trail	○	○	○	○

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.7.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.7.2.3.1 Fort Richardson

Minor adverse impacts to land use could occur as portions of land within this zone are currently open for limited recreational use; however, the proposed adaptable use zone already includes some military activity areas and concentrating the SAC activities and training within this zone would be located within compatible Range and Training land use designated areas (see Section 3.8.2 for recreational impacts). The northeast region of the proposed boundary is adjacent the Chugach State Park, while the southwest corner is near Far North Bicentennial Park in Anchorage, and may indirectly result in minor adverse impacts to recreational users from increased noise levels during training exercises adjacent to these areas (see Section 3.11 for noise impacts). No direct impacts would occur to energy and utilities as a result of the proposed adaptable use zone. Overall impacts to energy use from development of facilities in the proposed FRA SAC Range Adaptable Use Zone would be reduced through Army initiatives, under EO

13423, *Strengthening Federal Environmental, Energy, and Transportation Management*. Under this initiative, the Army has been working to carry out this Presidential goal by incorporating more energy efficient systems in new facilities and equipment, and in exploring viable alternative energy sources. Specific DoD guidance has yet to be offered, and when available, the Army will determine the most appropriate way to incorporate the conservation measures. Energy and utilities demand would be determined on a project basis, and when applicable, additional analysis of potential impacts will be analyzed in supplements to this PEA.

3.7.2.3.2 Fort Wainwright

The FWA SAC Range Adaptable Use Zone would be within the existing SAC boundary and, therefore, would have no direct adverse impacts to land use, energy, or utilities. For the YTA SAC Range Adaptable Use Zone, minor adverse impacts to land use could occur as the area within this zone is currently open for recreational users; however, concentrating training within this zone would reduce the potential for SAC activities to disperse throughout open areas that are currently available to recreational users. Energy and utilities demand would be determined on a project basis, and when applicable, additional analysis of potential impacts will be analyzed in supplements to this PEA.

3.7.2.3.3 Donnelly Training Area

The DTA SAC Range adaptable use zone would be within the existing DTA SAC Range and impact areas and, therefore, would have no direct adverse impacts to land use, energy, or utilities. Some benefits to utilities could occur from focusing the SAC activities into the adaptable use zones as it would limit the length of utility connections. Energy and utilities demand would be determined on a project basis, and when applicable, additional analysis of potential impacts will be analyzed in supplements to this PEA.

3.7.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects would have the potential to cause significant adverse impacts to land use and utilities through creating energy, water, or sewer demand in excess of existing supply or requiring substantial changes to regional development planning. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for land use, energy and utilities to reduce overall adverse impacts from routine range projects. Table 3.7-2 summarizes the potential type and intensity of land use, energy and utilities impacts as a result of routine range projects considering use of the proposed environmental stewardship range construction guidelines.

SOPs to be used during project design to avoid land use conflicts and consider energy and utility aspects of proposed projects include:

- Planning of proposed new facilities and upgrades should follow AR 210-20 (*Real Property Master Planning for Army Installations*).
- Siting of facilities and activities (including ground maneuver) to avoid sensitive areas as much as possible. This includes activities that generate noise, dust, and other nuisance factors.
- Areas open to the public would be separated from active mission areas (using appropriate buffers, fencing, designated access restrictions or recreational use tracking procedures).
- Project planners will avoid placing permanent facilities or ground disturbing activities in sensitive habitats or ecological areas, when practicable.
- Project planners will site facilities in a manner that maximizes the use of existing utility infrastructure.
- Completion of the USAG Alaska Range Project Checklist to determine increases of energy and utility requirements on a project-by-project basis. Where increases of energy demand is likely, have project planners incorporate measures to reduce or offset emissions during project planning, construction and operations in compliance with EO 13423.

BMPs to be used during project design to avoid land use conflicts and consider energy and utility aspects of proposed projects include:

- Encourage sustainable building and development practices (e.g., implementation of the Leadership in Energy and Environmental Design rating system as a guide for projects).
- Should incorporate stormwater management retention devices in the development of parking lots, plazas, and walkways to decrease amount of runoff and to filter out oil and other potential hazardous substances which could occur within parking runoff.
- Prior to new construction, project planners should coordinate with other construction managers of new projects and notify users and operators of existing utilities if an existing utility system needs to be temporarily out of service during construction activities.
- During construction, limit the shut-off of existing utilities to off-peak usage period.

Table 3.7-2 Summary of Potential Land Use, Energy and Utilities Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial			
	Conflict to land use or adjacent land uses	Increased energy demand	Increased utility demand	***Overall Impact***
Berm Creation & Maintenance	○	○	○	○
Bleacher Enclosure	○	○	○	○
Bridge Installation	○	○	○	○
Building Construction	◎	◎	◎	◎
Control Tower	⊙	⊙	○	⊙
Covered Hall	◎	◎	○	◎
Culvert Installation	○	○	✪	✪
Fencing	✪	○	○	✪
Firing Lane Creation & Maintenance	○	○	○	○
Firing Line Creation & Maintenance	○	○	○	○
FOB Creation and Maintenance	○	⊙	⊙	⊙
Grading/Shaping	○	○	○	○
Gravel Pits	◎	○	○	◎
Hardened Target Creation & Maintenance	○	⊙	○	⊙
Hardstands Creation and Maintenance	○	○	○	○
Improvised Explosive Device Defeat	○	○	○	○
Land Clearing & Vegetation	○	○	○	○
Latrine	○	○	○	○
Mowing	○	○	○	○

Table 3.7-2 Summary of Potential Land Use, Energy and Utilities Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial			
	Conflict to land use or adjacent land uses	Increased energy demand	Increased utility demand	***Overall Impact***
Observation Points Creation & Maintenance	○	⊙	○	⊙
Pit Toilets Creation and Maintenance	○	○	○	○
Prescribed Fire	○	○	○	○
Road (Trail) Creation & Maintenance	○	○	○	○
Small Arms Siting	✪	✪	○	✪
Boundary Line Clearings	○	○	○	○
Target Emplacement	○	○	○	○
Utility Line Creation & Maintenance	○	⊙	⊙	⊙
UXO Surveys	✪	○	○	✪
Wood Pile Burning	○	○	○	○
Urban Training Village	◎	⊙	○	◎

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. In general, the levels of adverse impacts from the construction, operations, and maintenance of routine actions would primarily range from none to moderate for land use, energy, and utilities. Moderate impacts could result from the construction of new facilities that would require land area and training operations that might be used by or adjacent to open areas for recreational users. To reduce impacts to the public, consideration of surrounding land uses and guidelines listed in AR 210-20, as part of the SOPs, would be conducted during the planning phase and mitigate such impacts to minor. To minimize impacts to utilities, consideration of the BMPs would reduce potential impacts utilities, mainly during construction.

3.8 PUBLIC ACCESS, RECREATION AND SUBSISTENCE

3.8.1 Affected Environment

USARAK's primary mission is to maintain and enhance the combat readiness of its Soldiers. However, USARAK also recognizes the responsibility to allow public access to military lands in compliance with the Sikes Act. The Sikes Act, as amended in November 1997, requires that every installation provide for public access necessary or appropriate for sustainable use of natural resources by the public to the extent that such use is consistent with the military mission and the needs of fish and wildlife resources, subject to requirements necessary to ensure safety and military security (USARAK, 2007a). The amount of limitations and restrictions on public use of military lands depends on the type of military use (USARAK, 2007a). Military use can be broken down into four general categories that affect access:

***Training areas and non-firing facilities*:** Public access into training areas is allowed subject to safety restrictions and military security, when access does not impair the military mission, as determined by the Installation Commander. Compatible uses generally include natural resources management, habitat improvement, mineral or vegetative resources extraction, hunting, fishing, trapping, bird watching, hiking, skiing, dog sledding, and off-road recreational vehicle use. In general, activities that are not compatible with training areas include any permanent nonmilitary structures, easements, or leases.

***Firing ranges, surface danger zones, and non-dudded impact areas*:** Public access into firing ranges, surface danger zones, and non-dudded impact areas is normally not allowed due to conflicts with the military mission. However, there are times during the year when public use does not conflict with military training and public access is allowed into these areas. Compatible uses generally include natural resources monitoring, range maintenance, fire prevention and suppression, hunting, fishing, and trapping. In general, activities that are not compatible with firing ranges, surface danger zones and non-dudded impact areas include any permanent nonmilitary structures, easements, or leases.

***Dudded impact areas*:** Public access into dudded impact areas is prohibited because of the hazard of unexploded ordnance. Compatible uses include remote monitoring of natural resources and military impacts, and prescribed burning to reduce fire hazards and improve habitat. Activities that are not compatible with dudded impact areas include any on-the-ground natural resources management, digging, mineral extraction, commercial timber sales, hunting, fishing, trapping, bird watching, off-road recreational vehicles of any kind, dog sledding, airboats, camping, new construction, easements, and leases.

***Urban areas*:** Public access into urban areas is allowed subject to safety restrictions and military security, when access does not impair the military mission, as determined by the Installation Commander. Compatible uses generally include natural resources management, habitat improvement, mineral or vegetative resources extraction, bird watching, hiking, and skiing, In general, activities that are not compatible with urban areas are hunting and trapping.

In maintaining a liberal policy of public access, USARAK relies on the public to adhere to installation policies designed to promote physical security, minimize safety hazards, and protect natural and cultural resources. USARAK strives to maintain an interactive relationship with local communities by providing as many opportunities for public access as allowed by current military training, military security, safety and environmental conditions.

Military lands in Alaska provide desirable areas for recreational activities. They contain many stocked lakes and significant game populations in relatively close proximity to the more highly populated areas in Alaska (USARAK, 2007a). These lands include the immediate post lands and adjoining lands under military control for training. All persons (civilian and military) desiring to recreate on Army lands in Alaska must obtain a Recreational Access Permit before entering military lands (USARAK, 2007a). Using their permit number, interested parties must call the U.S. Army Recreational Tracking System (USARTRAK) automated check-in phone system and indicate where they will be going. When individuals check in, the latest information on military range closures and construction can be obtained. Access is closed during range operations or other military activities that are incompatible with outdoor recreation. USARAK lands are available for a variety of recreational uses, such as hunting, fishing, trapping, off-road recreational vehicles (ORRV) use, hiking, boating, picnicking, berry picking, bird watching, skiing, and dog sledding.

USARAK lands have four primary categories of recreation use areas: Open Use, Modified Use, Limited Use, and Off-Limits areas (USARAK, 2007a). All recreational categories are subject to periodic change or restrictions. The categories are defined as follows:

- ***Open Use:*** These areas are open year-round to all forms of recreation, unless closed by the Range Control office. Ground and Off-Road Recreational Vehicle (ORRV) use is permissible here.
- ***Modified Use:*** These areas are available to all non-motorized forms of recreation year-round but limited to areas where frozen conditions exist (more than 6 inches of ice or snow cover present). Modified Use restrictions are largely applicable to USARAK garrison wetlands.
- ***Limited Use:*** These areas are open to all non-motorized forms of recreation year-round. No ORRV use is permitted in these areas at any time. Limited Use areas relate primarily to locations with high average use levels, such as in or near cantonment areas.
- ***Closed***: These areas are closed to all forms of recreation at all times. This is due primarily to either conflicts with military use and the primary military mission, or to human health and safety concerns.

In addition to the recreational uses described, USARAK lands are also used for subsistence activities of rural Alaskans. Section 810 of the Alaska National Interest Lands Conservation Act [16 USC 3120(a)] directs Federal agencies to consider the potential impact a Proposed Action may have on the subsistence activities of rural Alaskans (USARAK, 2007a). Subsistence has been legally defined to include the customary and traditional uses of fish, plant materials, and game in all of Alaska's rural areas. Customary and traditional use is defined by a long-established, consistent pattern of use and incorporating beliefs and customs that have been transmitted from generation to generation. This use plays an important role in the economy of the community. USARAK is responsible for managing subsistence resources for all rural users.

3.8.1.1 Fort Richardson

3.8.1.1.1 Access

Road access onto FRA is possible primarily from the Glenn Highway, the main gate, or along Arctic Valley Road (USARAK, 2004). The post is also accessible via Richardson Drive from Elmendorf AFB. Paved and unimproved roads cover much of the northern and central portions of the post. Two ORRV access trails exist on post and connect green spaces near the cantonment area to more remote locations. Trails also connect the post to Chugach State Park and the Municipality of Anchorage's Far North Bicentennial Park, which share FRA's southern boundary.

3.8.1.1.2 Recreation

FRA is managed for a number of different types of public recreational use including; hunting, fishing, boating, hiking, camping, small game hunting, berry picking, woodcutting, and dog sledding (USARAK, 2008b). No hunting, fishing, or other recreational activities occur in officially designated and marked impact areas and associated buffer zones. Impact areas that have been permanently closed may be opened to hunting and fishing only after approval from the Installation Range and Safety Officers (USARAK, 2007a).

Hunting, according to 2005 USARTRAK usage data, is the most popular form of outdoor recreation on FRA (USARAK, 2007a). Moose hunting, the only authorized big game hunt on FRA, is traditionally the most popular form of hunting on FRA while small game and waterfowl hunting are pursued to a lesser degree (In 2005, moose hunts on FRA accounted for 47 percent of total post use while small game/waterfowl hunts accounted for 11 percent). Hunting occurs on FRA in areas that are open to public access and recreational use in Game Management Unit (GMU) 14C, FRA Management Area, per ADF&G regulations and U.S. Army Alaska Regulation 190-13 (ADF&G, 2009). ADF&G regulations provide a detailed map of GMU 14C and the wildlife species available for hunting (and their associated seasons and regulated hunting limits). Recreational trapping is prohibited on FRA.

Fish stocking is a common activity at 4 lakes (Clunie, Gwen, Otter and Waldon) on FRA and is intended to promote the recreational use of Army lands while improving the health of rainbow trout (*Oncorhynchus mykiss*), chinook salmon (*Onchorhynchus tshawytscha*), and arctic char (*Salvelinus alpinus*) populations . Waters within the installation also support wild populations of the silver salmon (*Oncorhynchus kisutch*), chum salmon, red salmon (*Oncorhynshus nerka*), pink salmon (*Oncorhynchus gorbuscha*), the dolly varden (*Salvelinus malma*), and the three-spine stickleback (*Gasterosteus aculeatus*). River fishing is pursued but to a much lesser degree as it is limited to a section of the Eagle River between the Bailey Bridge and Bravo Bridge.

Recreational boating on post lakes, particularly Otter Lake, is also popular (USARAK, 2007a). Eagle River is heavily used during the summer months by rafters, canoers, and kayakers. Historically, 500-600 Eagle River boating permits were issued by the Army annually. Many boaters make multiple trips down lower Eagle River, some as many as a dozen trips, during the summer. Downhill and cross country skiing is available on the Five Mile Trail and at the Dyea Ski Areas. Bulldog trail is also popular for cross country skiing. The post has also been used for activities such as marathons, backpacking, dog mushing, mountain and road cycling, golfing, scouting, dog trials, and Special Olympics.

3.8.1.1.3 Subsistence

FRA is located in an urban area (as described in 3.8.1), and therefore, not included among the Federal lands covered by special subsistence permits.

3.8.1.2 Fort Wainwright

3.8.1.2.1 Access

Access is allowed on many parts of FWA Main Post. All recreational users requesting access to FWA Main Post and who do not possess an authorized Department of Defense ID card/FWA installation pass holder or who are not on the FWA Installation Access Roster must visit the FWA Visitor's Center at the main gate to obtain a visitor's pass (USARAK, 2007a). Access to TFTA is more difficult than to other parts of FWA. TFTA is bordered by the Tanana and Wood rivers and there are no bridges into the training area. Ground vehicles can access TFTA in winter on constructed ice bridges. Summer access is by boat or plane only. Most of the training area is wetlands and largely categorized as a Modified Use area. YTA is readily accessible from the ground. Access is primarily available via Manchu Road through Eielson AFB. Additional access is possible via Johnson Road, which connects to the Richardson Highway.

Impact areas on TFTA and YTA are closed to access due to unexploded ordnance and the related safety and liability concerns (Army Regulation 385-63, *Range Safety*).

3.8.1.2.2 Recreation

FWA is managed for a number of different types of public recreational uses. Hunting and fishing are the main recreational activities occurring on FWA lands (USARAK, 2008b). As described for FRA, no hunting, fishing, or other recreational activities occur in officially designated and marked impact areas and associated buffer zones. Impact areas that have been permanently or temporarily closed may be opened to hunting and fishing only after approval from the Installation Range and Safety Officers (USARAK, 2007a).

For the most part recreation is not allowed in the cantonment area of FWA. On the Main Post, on the north side of the Chena River big game hunting with bow and small game hunting with a shotgun with BB size shot or smaller is permitted. Trapping is not allowed on north post.

Historically, 5 FWA lakes have been stocked by ADF&G (USARAK, 2007a). However, due to a reduction in available fish and a loss of some public access, only Monterey Lake and a few of the ponds along the Richardson Hwy are/have been stocked with fish and fishing is allowed. In the future more

stocking opportunities may become available. Additional fishing opportunities on FWA lands include the Tanana and Wood rivers and some other small streams, lakes, and ponds. The Chena River is also a popular fishing location where wild Arctic grayling, burbot, sheefish, northern pike, and whitefish are available year-round, and both Chinook (king) and chum salmon may be caught seasonally.

On the YTA, hunting big game and small game and trapping is permitted. In addition, ORRVs and camping are allowed.

The Tanana and Wood rivers and the Salchaket Slough offer good boating opportunities. Other boating rivers and streams in the area include the Chatanika, Nenana, Salcha, Tolovana, and Goodpasture rivers and Birch Creek. Popular area lakes include Birch, Harding, Little Harding, Quartz, Lost, Summit, and Paxson.

Recreational use on TFTA has been a contentious issue over the years. During 2001-2005, USAG FWA conducted a recreational vehicle impact study in TFTA to identify the impacts of airboats and other recreational vehicles on the sensitive fen ecosystem. According to the 2007-2011 INRMP, USAG FWA designated the area on TFTA between Salchaket Slough, Bonnifield Trail, Willow Creek, and the Tanana River as a special use recreational management area. This area is divided in to the upper and lower fens (swamps).

The Tanana Flats Special Use Management Area is open to hunting during valid state season. The special use management area is also open to all types of off-road recreational vehicles with no restrictions for off-road recreational vehicles when soil is frozen. All off-road recreational vehicles must stay on existing trails during unfrozen conditions. Off-road recreational vehicle access into the fens (both upper and lower swamp) between 1 April and 15 July is not permitted. Motorized watercraft are permitted access with no restrictions between August 15 and April 1. Access into the fens (both upper and lower swamp) between 1 April and 15 July is not permitted. Access into the fens during July 15 and August 15 is dependent on water level. Access is permitted with no restrictions between August 15 and April 1. The Tanana Flats Special Use Recreational Management Area is open to all other recreational activities year-round.

Outside the Special Use Management Area, TFTA is managed for off-road recreational. Outside the special use management area, airboats and other motorized watercraft are limited to open water – no fens. In addition, USARAK proposes to create a special interest area between Willow Creek and Crooked Creek. This area contains similar unique floating mat fen wetlands and contains important wildlife nesting habitat. Creation of this special interest area would restrict creation of any new trails in this area.

3.8.1.2.3 Subsistence

FWA Main Post is located in an urban area (as described in 3.8.1) where rural subsistence activities do not occur. However, recreation gathering of berries and other plant materials does occur. YTA and TFTA and their surrounding millions of acres of public and private land provide subsistence activities. The abundance of public and private lands, in addition to installation lands, provide substantial alternative opportunities for subsistence hunting on non-DoD lands by both Native and non-Native people who are residents of Alaska.

3.8.1.3 Donnelly Training Area

3.8.1.3.1 Access

DTA is readily accessible to the public, containing over 150 miles of existing trails, some of which are overgrown and not drivable. In addition to ground access and roads, much of DTA is available to ORRVs and aerial access. ORRV and winter trails exist across both the eastern and western training areas. The 33-Mile Loop Road is one of the more popular trail systems on DTA East and serves as a primary access to the Granite Mountains, a popular hunting area located to the south off military lands. A series of other trails run north-south and east-west which connects into 33-Mile Loop Road. Additional

access roads, including Meadows Road, Dome Road, Old Richardson Highway, and Fleet Street, connect directly to either Richardson or Alaska Highway.

3.8.1.3.2 Recreation

Due to its acreage, condition, and proximity to population centers, DTA is a popular recreational destination for Alaska residents. Recreational opportunities at DTA are similar to those found on FWA. As described for FRA and FWA, no hunting, fishing, or other recreational activities occur in officially designated and marked impact areas and associated buffer zones. Permanent Impact Areas are closed to all recreation activities.

Hunting is a large part of the recreational activity that occurs on DTA, Moose being the most important species. Moose are managed intensively by the State of Alaska, which has established goals for managing the population. DTA West is accessible in winter when the Delta River is frozen over, or by air or boat in summer. DTA East is primarily managed as Open Use. The exception is Jarvis Creek and some isolated wetland areas that are considered Limited Use areas. As portions of DTA West are primarily designated as impact area, most of the central training area is Off-Limits. Modified and Open Use areas exist to the north and south, along the northern boundary of the training area and the foothills of the Alaska Range.

Sixteen lakes at DTA are stocked by ADF&G. Koole Lake, in the DTA West, is reached by floatplane in the summer and snowmachine in the winter. The other fifteen lakes are in DTA East, along Meadows Road, Windy Ridge Road and trails to the west of the Richardson Highway

Trails on DTA include a hiking path to the top of Donnelly Dome. Countless other trails are utilized for mountain biking and hiking, especially 33-Mile Loop Road in the areas east of Jarvis Creek and trails linking the stocked lakes in the Meadows Road area.

3.8.1.3.3 Subsistence

A variety of subsistence resources are readily available on DTA East. Due to the size and relatively remote location of these areas, natural resources, and wildlife populations are generally well preserved. DTA annually hosts a variety of hunting activities based on access and available big game populations (USARAK, 2007a).

Immediately south of DTA East, and running along the length of the Richardson Highway to the town of Glennallen, are vast tracks of Federal land. Much of this land is very similar to that found in DTA East and is managed to allow a subsistence harvest. The close proximity of these lands to a major public highway also offers ready access to game and plant resources (USARAK, 2007a).

Regional rural populations with recognized subsistence interests and rural status on DTA include Healy Lake Village, Village of Dot Lake, Native Village of Tanacross, Native Village of Tetlin, Northway Village, Delta Junction, Big Delta, Deltana, and Dry Creek. Data gathering on subsistence activities on (and around) USARAK lands is currently ongoing (USARAK, 2007a).

3.8.2 Environmental Consequences

Direct impacts are further discussed by the No Action and Proposed Action alternatives in Sections 3.12.2.1 through 3.12.2.2. The following categories are used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant)** – The degree to which activities affect the regional availability of recreational activities, access to public lands, or subsistence opportunities.
- **Severe (significant)** – Activities that eliminate the regional availability of a particular recreational or subsistence opportunity, or that result in long-term closure of an important public access point, would represent a significant impact.

In addition, the following bullets provide general descriptions of the type of impacts used in the public access, recreation and subsistence impact analysis:

- *Temporary impact to public access during construction* includes a temporary closure of areas or access roads within Army lands used by the public.
- *Permanent loss of recreational use* includes a permanent closure of an area due to construction and operations of facility for training.
- *Reduced recreational use* includes an occasional closure of an area due to construction and operations of facility for training.
- *Increase recreational access* includes improved access to Army lands for approved recreation users by activities such as road upgrades. This would be considered a beneficial impact.
- *Impact to subsistence activities* includes an activity which either reduces or eliminates the subsistence activities within a particular area.

3.8.2.1 No Action

Under the No Action Alternative, USAG Alaska garrisons would not implement one or more of the Proposed Actions; however, range construction projects would still occur without the direction of a programmatic NEPA analysis. The No Action Alternative could reduce the efficiency of project review; would not allow for expedited decisions regarding compatible siting of SAC Range projects; and would not provide quick SOP and BMP references. No new impacts would be anticipated for public access, recreation, and subsistence as existing SOPs and BMPs would be maintained.

3.8.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.8.2.2.1 Fort Richardson

Overall, the potential for beneficial to insignificant adverse impacts could be anticipated from the proposed site-specific projects at FRA (see Table 3.8-1a). Projects R2, R9, and R10 would have no impacts due to the small size of their footprints. In addition, Projects R8 and R11 would be constructed within the existing SAC range, which is currently restricted from public use, therefore, these two projects would have no impacts. As described for the FRA, during construction, areas that are currently available for limited use by the public would be temporarily inaccessible (Projects R1, R3, R4, and R7) and would constitute an insignificant adverse impact. In addition, Projects R5 and R6 would permanently remove lands available for recreation and subsistence activities. These actions, however, would not affect regional recreation or subsistence activities, nor would they result in long term closure of important public access points. Project R7 (in areas open to the public) would have a beneficial impact on public access and recreation activities in that it would improve access to areas where recreation and subsistence activities occur. These areas, however, would still be subject to temporary closures as necessary during training activities.

Table 3.8-1a Summary of Public Access, Recreation and Subsistence Impacts from Site-specific FRA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Temporary impact to public access during construction	Permanent loss of recreational use	Reduced recreational use	Increased recreational access	Impact to subsistence activities	***Overall Impact***
(R1) FRA UAC[1]	⊙	○	○	○	○	⊙
(R2) Dig a well at the ISBC Site	○	○	○	○	○	○
(R3) Raise the ISBC Road	⊙	○	○	✪	○	✪
(R4) Provide Turnaround IPBC	⊙	○	○	○	○	⊙
(R5) Create Bivouac Site UAC	○	⊙	○	○	○	⊙
(R6) Range Operation Complex	○	⊙	○	○	○	⊙
(R7) FRA Roads	⊙	○	○	✪	○	✪
(R8) Vehicle Storage/ Maintenance Building[1]	○	○	○	○	○	○
(R9) Install Flagpole ER Gate	○	○	○	○	○	○
(R10) Waterless Arctic Latrine	○	○	○	○	○	○
(R11) Covered Bleachers[1]	○	○	○	○	○	○

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.8.2.2.2 Fort Wainwright

FWA

Subsistence activities do not occur on FWA Main Post; therefore, no impact to subsistence would occur. Overall, no impacts to public access would be anticipated for the site-specific projects at FWA located in SAC range area which is already restricted to the public (Projects W2, W3, W6, W8, W10, W11, W12, W13, W14, W16, and W22) or occur within the cantonment area which is restricted from general recreational use (Projects W4, W9, and W17) (see Table 3.8-1b). In addition, W19 would have no impacts due to the small footprint size. Projects W4, W9, W17, W18, and W20 would permanently remove lands available for recreation and subsistence activities. These actions, however, would not affect regional recreation or subsistence activities, nor would they result in long term closure of important public access points. Project W15 would indirectly benefit public access and recreation by clearly demarcating the SAC range boundary. Overall, these impacts, however, would be considered insignificant when comparing the area unavailable during construction to the overall acreage of USARAK range lands available for recreational use.

TFTA

Project W21 would indirectly benefit public access and recreation by clearly demarcating the impact area boundary.

YTA

Overall, impacts to public access, recreation and subsistence would be beneficial to insignificant adverse impacts (see Table 3.8-1b). Projects W28 and W30 would have no impacts due to the small footprint size and Projects W1, W5, W31, W32, and W33 would have no impacts as they are located within existing impact areas where public access is restricted. Projects W34, W39, and W40 would cause temporary closures during construction; however, these projects would not be anticipated to adversely and permanently impact public access, recreation and subsistence activity as they involve maintenance to existing facilities or roads. The other projects involve construction of additional facilities or upgrades to existing training infrastructure (Projects W7, W23, W24, W25, W26, W27, W29, W30, W35, W36, W37, and W42). These projects would cause minor adverse impacts during construction and would continue to cause minor adverse impacts from closures during training operations. In addition, Projects W39 and W40 which involve roads upgrades would have a beneficial impact on public access and recreation (in areas open to the public) in that it would improve access to areas where recreation and subsistence activities occur. These areas, however, would still be subject to temporary closures as necessary during training activities. Project W32 would indirectly benefit public access and recreation by clearly demarcating the impact area boundary. Overall, these impacts, however, would be considered minor when comparing the area unavailable during construction to the overall acreage of USARAK range lands available for recreational use and subsistence activity.

Table 3.8-1b Summary of Public Access, Recreation, and Subsistence Impacts from Site-specific FWA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Temporary impact to public access during construction	Permanent loss of recreational use	Reduced recreational use	Increased recreational access	Impact to subsistence activities	***Overall Impact***
FWA						
(W2) Ammunition Breakdown Buildings[1]	○	○	○	○	○	○
(W3) Demo Pond Range[1]	○	○	○	○	○	○
(W4) General Instructional Building CACTF	○	○	○	○	○	○
(W6) Indoor Shooting Range[1]	○	○	○	○	○	○
(W8) Range Operation Complex [1]	○	○	○	○	○	○
(W9) FWA C130/17 Mock-up	○	○	○	○	○	○

Table 3.8-1b Summary of Public Access, Recreation, and Subsistence Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Temporary impact to public access during construction	Permanent loss of recreational use	Reduced recreational use	Increased recreational access	Impact to subsistence activities	***Overall Impact***
(W10) Welding/ Carpentry Shop[1]	○	○	○	○	○	○
(W11) Arctic Village[1]	○	○	○	○	○	○
(W12) SAC East Expansion[1]	○	○	○	○	○	○
(W13) KD Range Expansion[1]	○	○	○	○	○	○
(W14) Pave Range Road[1]	○	○	○	○	○	○
(W15) SAC Security Fence[1]	○	○	○	○	○	✪
(W16) Rebuild MRF Firing Line[1]	○	○	○	○	○	○
(W17) Combined Arms Collective Training Facility	○	○	○	○	○	○
(W18) Drivers Training Course Phases 1-5	⊙	○	○	○	○	⊙
(W19) Latrine – Birch Hill Biathlon Range	○	○	○	○	○	○
(W20) Warrior Forward Operations Base Phase 3	⊙	○	○	○	○	⊙
(W22) Latrines[1]	○	○	○	○	○	○
TFTA						
(W21) Alpha Impact Area Survey Line	○	○	○	○	○	✪
YTA						
(W1) Digital Air Ground Integration Range	○	○	○	○	⊙	⊙
(W5) Stuart Creek Integrated Target Array	○	○	○	○	⊙	⊙
(W7) Firebird UAV Building	⊙	⊙	○	○	⊙	⊙
(W23) Charlie Battery FOB	⊙	⊙	○	○	⊙	⊙
(W24) YTA Convoy Live Fire Range Phase 1	⊙	⊙	○	○	⊙	⊙
(W25) Winter Camp FOB[1]	⊙	⊙	○	○	⊙	⊙
(W26) YTA Firing Point 13	⊙	⊙	○	○	⊙	⊙
(W27) Husky DZ FOB	⊙	⊙	○	○	⊙	⊙
(W28) YTA Latrines	○	○	○	○	○	○
(W29) YTA Demolition Range	⊙	⊙	○	○	⊙	⊙
(W30) YTA Firing Point Direct Fire	⊙	⊙	○	○	⊙	⊙
(W31) Stuart Creek Access Trails	○	○	○	○	○	○
(W32) Stuart Creek Impact Area Survey Line	○	○	○	○	○	✪

Table 3.8-1b Summary of Public Access, Recreation, and Subsistence Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Temporary impact to public access during construction	Permanent loss of recreational use	Reduced recreational use	Increased recreational access	Impact to subsistence activities	***Overall Impact***
(W33) FP 9 Direct Firing Point	○	○	○	○	⊙	⊙
(W34) Husky DZ Resurface	⊙	○	○	○	○	⊙
(W35) Gravel Source YTA	⊙	⊙	○	○	⊙	⊙
(W36) Bravo Battery FOB	⊙	⊙	○	○	⊙	⊙
(W37) Maintenance Building[1]	⊙	⊙	○	○	⊙	⊙
(W38) High Capacity Well[1]	○	○	○	○	○	○
(W39) YTA Roads Upgrade	⊙	○	○	✪	○	✪
(W40) YTA Manchu Trail Bridge Upgrade	⊙	○	○	✪	○	✪
(W42) Harden Firebird FP and Bivouac Area	⊙	⊙	○	○	⊙	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.8.2.2.3 Donnelly Training Area

Overall, the potential for beneficial to minor adverse impacts could be anticipated from the proposed site-specific projects at DTA (see Table 3.8-1c). No impacts to public access would be anticipated for the site-specific projects at DTA located in SAC range area or impact areas which are already restricted to the public (Projects D1, D6, D8, D10, D11, D26, D29 and D30). Projects D2-D5, D12, D17-D24, and D28 would cause temporary closures during construction, however, these projects would not be anticipated to adversely and permanently impact public access, recreation and subsistence activity as they involve maintenance to existing training facilities or roads. The other projects involve construction of additional facilities or upgrades to existing training infrastructure (Projects D9, D13, D14, D25, D27 and D31). These projects would cause minor adverse impacts during construction and would continue to cause minor adverse impacts from closures during training operations. In addition, Projects D2, D21, D23 and D24 which involve roads upgrades would have a beneficial impact on public access and recreation (in areas open to the public) in that it would improve access to areas where recreation and subsistence activities occur. These areas, however, would still be subject to temporary closures as necessary during training activities. Projects D15 and D16 would indirectly benefit public access and recreation by clearly demarcating the impact area boundary and the DTA East eastern boundary. Overall, these impacts, however, would be considered minor when comparing the area unavailable during construction to the overall acreage of USARAK range lands available for recreational use and subsistence activity.

Table 3.8-1c Summary of Public Access, Recreation, and Subsistence Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Temporary impact to public access during construction	Permanent loss of recreational use	Reduced recreational use	Increased recreational access	Impact to subsistence activities	***Overall Impact***
(D1) Range Operation Complex[1]	○	○	○	○	○	○
(D2) DTA Roads	⊙	○	○	✪	✪	✪
(D3/D4) DTA Firing Points	⊙	○	○	○	○	⊙
(D5) New Load Ramps at Donnelly DZ	⊙	○	○	○	○	⊙
(D6) MATCH Shoot House at Colorado South[1]	○	○	○	○	○	○
(D7) Expand KD Range[1]	⊙	○	○	○	○	⊙
(D8) Target Emplacement	○	○	○	○	○	○
(D9) Construct additional support buildings at BAX/CACTF	⊙	⊙	○	○	⊙	⊙
(D10) Maintenance Buildings for units training at DTA[1]	○	○	○	○	○	○
(D11) Beales Replacement[1]	○	○	○	○	○	○
(D12) Area of Responsibility Village	⊙	○	○	○	○	⊙
(D13) Theater Specific Village	⊙	⊙	○	○	⊙	⊙
(D14) Expand OP 26 for Range Control West Operations	⊙	⊙	○	○	⊙	⊙
(D15) Delineate DTA East Boundary	○	○	○	○	○	✪
(D16) Sign the Impact Area	○	○	○	○	○	✪
(D17) Improve Buffalo DZ	⊙	○	○	○	○	⊙
(D18) Expand Buffalo DZ	⊙	○	○	○	○	⊙
(D19) Extend the Donnelly FLS	⊙	○	○	○	○	⊙
(D20) Convert Fuel Break to Airstrip	⊙	○	○	○	○	⊙
(D21) New Road to bypass CTR	⊙	○	○	✪	✪	✪
(D22) BAX East Maneuver Corridor	⊙	○	⊙	○	⊙	⊙
(D23) BRTA Roads	⊙	○	○	✪	✪	✪
(D24) GRTA Roads	⊙	○	○	✪	✪	✪
(D25) Combat Outposts	⊙	⊙	○	○	⊙	⊙
(D26) Replace or Relocate Simpsonville Buildings	○	○	○	○	○	○
(D27) Construct UAV System Tracking Pad and Access	⊙	⊙	○	○	⊙	⊙
(D28) Delta Creek Assault Strip	⊙	○	○	○	○	⊙

Table 3.8-1c Summary of Public Access, Recreation, and Subsistence Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Temporary impact to public access during construction	Permanent loss of recreational use	Reduced recreational use	Increased recreational access	Impact to subsistence activities	***Overall Impact***
(D29) Install Waterless Latrines[1]	○	○	○	○	○	○
(D30) Construct FAARPs[1]	○	○	○	○	○	○
(D31) Add New OPs along the Winter Trail	⊙	⊙	○	○	⊙	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.8.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.8.2.3.1 Fort Richardson

Establishment of an FRA SAC Range Adaptable Use Zone would have minor impacts. Currently, portions of these areas are restricted to the public during training activities; other areas are always restricted to the public except during certain times of the year when there is no conflict with military activities. Areas with limited access restrictions would be permanently restricted to public access through implementation of Proposed Action 2. However, this impact would be considered minor when comparing the area unavailable to the overall acreage of USARAK range lands available for public access and recreation. Indirect beneficial impacts would result as USARAK garrisons would be able to focus SAC range development within and surrounding existing ranges, reducing the need for establishing firing ranges elsewhere within FRA, allowing for other range lands to remain open to public access and recreation. In addition, SOPs and BMPs outlined in Proposed Action 3 would be considered for further avoidance and reduction of impacts during project design, construction and operations.

3.8.2.3.2 Fort Wainwright

Establishment of FWA and YTA SAC Range Adaptable Use Zones would have a minor impact similar to those discussed for FRA (Section 3.8.2.3.1).

3.8.2.3.3 Donnelly Training Area

Establishment of a DTA SAC Range Adaptable Use Zones would have a minor impact similar to those discussed for FRA (Section 3.8.2.3.1).

3.8.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts to public access, recreation, and subsistence through resulting in long-term closure of an important public access point. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for public access, recreation and subsistence to reduce overall adverse impacts from routine range projects. Table 3.8-2 summarizes the potential type and intensity of public access, recreation and subsistence impacts as a result of routine range projects and considering use of the proposed environmental stewardship range construction guidelines.

SOPs which avoid impacts to public access, recreation, and subsistence activities include:

- Continued assessment and management of subsistence resources for all users per guidelines outlined in the INRMP.
- Continued establishment of government-to-government relationships with Alaska Native tribes whose interests may be significantly affected by USARAK activities. This would ensure efficient and effective communication between both leadership and staff members of tribal governments and USARAK.
- Continued implementation of the USARTRAK automated check-in phone system. This would provide information regarding daily closures and should greatly simplify the public access process.

BMPs to avoid impacts to public access, recreation, and subsistence activities include:

Site Design

- Determine the placement of access gates to allow for maximum continued recreational use and to maximize public safety.
- Determine the placement of bridges in areas that will not inhibit existing publically-used low-water crossings.

Operations

- Continued implementation of recreational vehicle use policies, per the INRMP. The INRMP outlines specific actions to maintain and improve public access and recreation opportunities on USARAK lands.
- Continued monitoring of recreational usage of each training area through the USARTRAK phone system. This would inform USARAK and ADF&G regarding use patterns, which should improve management for public access and recreation.
- Continued maintenance of kiosks at all primary entrances to recreational areas on USARAK lands and provision of visitor maps and information. Information kiosks can help users quickly identify areas designated for recreational use, as well as the times and locations of military activities.
- Increased use of signs and other public notification measures to increase public awareness of dangers of military training.
- Continue use of advanced public notification of military training activities likely to restrict the use of Alaska Army lands for recreational, subsistence, and other uses.

Table 3.8-2 Summary of Public Access, Recreation, and Subsistence Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Temporary impact to public access during construction	Permanent loss of recreational use	Reduced recreational use	Increased recreational access	Impact to subsistence activities	*Overall Impact*
Berm Creation & Maintenance	⊙	○	○	○	○	⊙
Bleacher Enclosure	⊙	○/⊙	○	○	○	⊙
Bridge Installation	⊙	○	○	✪	✪	✪
Building Construction	⊙	○/⊙	○	○	○	⊙
Control Tower	⊙	○/⊙	○	○	○	⊙
Covered Hall	⊙	○/⊙	○	○	○	⊙
Culvert Installation	○	○	○	○	○	○
Fencing	⊙	⊙	⊙	○	⊙	⊙
Firing Lane Creation & Maintenance	⊙	○	○	○	○	⊙
Firing Line Creation & Maintenance	⊙	○/⊙	⊙	○	○	⊙
FOB Creation and Maintenance	⊙	◎	◎	○	◎	◎
Grading/Shaping	⊙	○	○	○	○	⊙
Gravel Pits	⊙	◎	◎	○	◎	◎
Hardened Target Creation & Maintenance	⊙	○	○	○	○	⊙
Hardstands Creation and Maintenance	⊙	◎	◎	○	◎	◎
Improvised Explosive Device Defeat	⊙	◎	◎	○	◎	◎
Land Clearing & Vegetation	⊙	○/⊙	○	○	○/⊙	⊙
Latrine	○	○	○	○	○	○
Mowing	○	○	○	○	○	○
Observation Points Creation & Maintenance	⊙	○/⊙	○	○	○	⊙
Pit Toilets Creation and Maintenance	○	○	○	○	○	○
Prescribed Fire	⊙	○/⊙	○	○	○/⊙	⊙
Road (Trail) Creation & Maintenance	⊙	○	○	✪	✪	✪
Small Arms Siting	⊙	◎	◎	○	◎	◎
Boundary Line Clearings	○	○	○	○	○	○
Target Emplacement	⊙	○	⊙	○	⊙	⊙
Utility Line Creation & Maintenance	⊙	○	○	○	○	⊙
UXO Surveys	○	○	○	○	○	○
Wood Pile Burning	⊙	○	○	○	○	⊙
Urban Training Village	⊙	◎	◎	○	◎	◎

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. Overall, none to beneficial impacts would be anticipated from the construction, operations, and maintenance of routine range projects. Similar to Proposed Action 1, during construction, areas that are currently available for use by the public would be temporarily inaccessible; however, this impact would be considered minor when comparing the area unavailable during construction to the overall acreage of USARAK range lands available for recreational use. No impacts to public access would be anticipated for projects located in areas restricted to the public; access is currently closed to the public and would remain as such unless there are times where public use does not conflict with military training. Additionally, no impacts to public access would be anticipated for those projects located in areas subject to temporary closures during training activities. Training would not increase as a result of these projects and temporary area closures would continue as necessary.

3.9 FIRE MANAGEMENT

3.9.1 Installation Overview

Interior Alaska ecosystems require fire for continued functionality. However, wildfires are a concern on USARAK lands due to their impact on human activities and structures, and military operations. Fire management is required to protect, maintain, and enhance military training environments. In addition, management of the boreal ecosystem is important to maintain biodiversity, wildlife habitat, and the development of outdoor recreation.

3.9.1.1 Wildfire Management

Wildfire management on USARAK lands is required by the Sikes Act and AR 200-1, as well as Public Law 106-65, the Military Lands Withdrawal Act (USARAK, 2007a). Additional direction regarding fire management comes from USARAK's Integrated Wildland Fire Management Plan (IWFMP) and the Memorandum of Understanding between BLM and USARAK concerning the Management of Certain Public Lands Withdrawn for Military Use and the Interdepartmental Support Agreements WC1SH3-95089-502 and 140138-95089-905 between USARAK and the BLM. The IWFMP directly supports USARAK missions, is consistent with emergency operations plans, and is integrated into the INRMP, the USARAK's fire and emergency services plan, and the ICRMP (USARAK, 2007a). The goal of the IWFMP is to establish fire management procedures and protocols to provide USARAK the capability to complete its mission to maintain combat readiness and fulfill resource management intent.

Three primary management actions are used by USARAK to prevent wildfires. First, a fire danger rating system is used to reduce the likelihood of a fire by limiting military activities. Certain military activities are restricted when thresholds of wildfire risk are reached (USARAK, 2007a). Second, wildfire danger is reduced through the removal of accumulated fuels (e.g., prescribed burning and/or construction and maintenance of fire or fuel breaks). Third, an Initial Attack Response Team remains available during military training activities during high and extreme fire danger to provide a rapid initial response to wildfires in the area.

3.9.1.2 Ignition Sources

The three potential sources of fires are: (1) military training; (2) human, either military or civilian, and not associated with military training; and (3) natural (lightning). Incendiary devices from military training are the major cause of fires on installation lands (USARAK, 2007a). Specific devices include artillery/bullets, phosphorous shells, blasts, and flares. Other less common causes of fire are lightning, field burning, cigarettes, recreation, trash burning, and campfires.

3.9.1.3 Fuels Types

All vegetation either is already a fuel source or is a potential fuel source under certain conditions (USARAK, 2007a). The dry dead foliage or litter produced by all vegetation creates fuel for fire. Living

vegetation becomes a viable fuel source when drought conditions dry the living plants sufficiently or when, during a wildfire, they are dried by the convective or radiant heat of the fire itself. Fuel conditions are directly related to moisture patterns and seasonal rainfall. Dry conditions contribute to an increase in dead foliage and litter in plant communities. When relative humidity decreases, the moisture content of these fuels also drops quickly (more common to Interior Alaska). Surface fuels in Alaska become almost involatile above 15 percent moisture content. They burn readily at 8 to 10 percent, and at 5 to 7 percent, these fuels burn with fierce intensity and can carry fire into tree crowns.

Common fuels found on USARAK installations include: black spruce (highly flammable, located in wetter and cooler sites, crown fires common); white spruce (less flammable, located in warmer and drier sites, crown fires less common); mixed spruce/hardwood stands (mostly white with occasional black spruce, hardwoods less flammable, moderate fire intensity); bluejoint reedgrass (patchy occurrence, fires can start and spread easily, and burn intensely); and tundra (grasses are typically highly flammable, slightly less so in alpine tundra areas) (USARAK, 2007a).

3.9.1.4 Fort Richardson

Although wildfires are a concern at FRA, they are rarely a significant problem. Numerous fires have been recorded in the Matanuska-Susitna Valley to the north, but no major fires have occurred on FRA since 1950 (USARAK, 2007a); the last fire at FRA larger than 50 acres occurred in 2007. Severe drought conditions occur about once every 20 years, and, in normal years, there is an average of less than 5 wildfires greater than 1 acre. These fires are usually mission-related, small, and easily contained. Fire probably had a more important influence on ecosystem functions in the Anchorage area during pre-settlement times. Wildfires were found to be prevalent in the 1800s and early 1900s. Forty eight percent of FRA over the past 200 years has been affected by fire (USARAK, 2007a). This was indicated by the occurrence of early to mid-successional forest stages that have developed since the fires in the 1800s and early 1900s.

There is some concern over the spruce bark beetle that killed most of the larger white spruce in the North and South Post training areas. The dead spruce has resulted in high fuel load conditions on the forest floor. Additionally, the death of the larger spruce trees has allowed areas to be taken over by the grass *Calamagrostis spp*., another potential fire risk (USARAK, 2007a).

The FRA and Elmendorf AFB operates a joint fire department which provides the initial response for wildfire suppression, which has traditionally been confined to areas behind the SAC range (USARAK, 2007a). When necessary, the BLM reimburses the Alaska Division of Forestry to suppress wildfires in the southern half of the state, which includes FRA. The Alaska Fire Service also provides training for wildfire suppression at FRA.

3.9.1.5 Fort Wainwright

From 1980 through 2000, 148 wildfires have been reported from FWA (USARAK, 2007a). Thirty-one of these fires were attributed to natural causes and 117 were attributed to human causes. Of the 117 fires resulting from human activities, 85 were attributed to military training activities. Human-caused fires and, in particular, military training-caused fires, represent nearly 80 percent of the fire ignitions reported on FWA.

On YTA, records indicate that 16 fires of 100 acres or more burned from 1959-2000. Three of these fires occurred between 1998 and 2000. The two largest of these fires happened in 2000. These fires were caused by lightning and affected a total of 4,538 acres. On TFTA, records show that 31 fires of 100 acres or more occurred from 1957-2000. Of the 31 fires, 11 were attributed to natural causes and 16 were from human causes.

The FWA Fire Department is responsible for fire suppression on the Main Post and the Bureau of Land Management's Alaska Fire Service has primary responsibility on YTA and TFTA (USARAK, 2007a).

3.9.1.6 Donnelly Training Area

Approximately 59 percent of DTA has burned since 1950 (CRREL, 2001), and a considerable portion has burned more than once (USARAK, 2007a). Approximately 16 percent of DTA has burned within the past 30 years, and, based on fires recorded on the installation since 1950, 1.2 percent of the area has burned annually.

From 1980 to 2000, 89 fires were reported at DTA (USARAK, 2007a). Of these, 78 were caused by humans and 11 were due to natural causes. Eighty-eight percent of all reported fires were caused by military training activities. Two more recent larger fires included the Carla Lake Fire which burned 53,000 acres in 1998 and the Donnelly Flats Fire which burned 18,700 acres in 1999. The average interval for recurrence of fire for any given area varies from 100 to 150 years (USARAK, 2007a). In 1999, the Donnelly Flats Fire burned approximately 18,000 acres of DTA East and Fort Greely. The western portion of DTA East along the Delta River is used by the Army for small arms and sub munitions. In 1994, approximately 55 percent of the Gerstle River Test Site burned. The last wildfire in the Black Rapids Training Center is believed to have been in 1954 (USARAK, 2007a).

3.9.2 Environmental Consequences

Direct impacts are further discussed by the No Action and Proposed Action alternatives in Sections 3.9.2.1 through 3.9.2.5. The following categories are used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant)** – The degree to which activities affect the likelihood or potential severity of wildfire starts, as well as impacts to response capabilities.
- **Severe (significant)** – Actions that are inconsistent with the goals and objectives of USAG Alaska's IWFMP or that pose risks exceeding response capability would represent a significant impact.

In addition, the following bullets provide general descriptions of the type of impacts used in the wildfire management impact analysis:

- *Increased fire start potential during construction* includes the potential for increased fire start due to the presence and operations of construction equipment during site grading and construction.
- *Fire start potential during operations (human causes)* includes either an increased potential for fire starts due to ignition sources present during operations or a beneficial reduction of fire start potential during operations from proposed activities which would restrict training operations to areas of impervious surface.
- *Wildfire spread* includes the beneficial reduction of wildfire spread through the placement of structures such as roadways or vegetative clearing which would act as firebreaks.
- *Increased fire management measures* include the need for increased fire management from activities which have the potential to increase wildfire start.
- *Increased fire equipment access* includes a beneficial increase of access for firefighting equipment into Army range and training lands.

3.9.2.1 No Action

Under the No Action Alternative, no new impacts would be anticipated for fire management as existing SOPs and BMPs would be maintained to manage wildland fires.

3.9.2.2 Proposed Action

3.9.2.3 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.9.2.3.1 Fort Richardson

Overall, none to minor adverse impacts could be anticipated from the proposed site-specific projects at FRA with some projects providing beneficial impacts to fire management (see Table 3.9-1a). Projects R2 (well installation), R9 (flagpole), and R10 (latrine) would be anticipated to have no impacts to fire management due to their very limited footprints, nature of activity and siting within already developed areas. The potential impact for all other projects (Projects R1, R3, R4, R5, R6, R7, R8, and R11) would be primarily due to unintentional fire starts and would be greatest during the construction stages from increased human activity and usage of heavy construction equipment. These impacts, however, would be minor and could be reduced to no impact from implementation of the following BMPs:

- Continuation of on-going actions to prepare the landscape for potential wildland fires (i.e., prescribed burns and thinning to restore ecosystem functions to fire and to reduce future fire severity).
- Continuation of the fire danger rating system to reduce the likelihood of a fire by limiting military activities when certain thresholds of wildfire risk are reached.
- Have available an Initial Attack Response Team during military training activities during high and extreme fire danger to provide a rapid initial response to potential wildfires in the area.
- Continue to implement INRMP and IWFMP as related to fire management.
- Preparation of a burn plan and detailed parameters for when burning can take place.

The potential for minor adverse impacts to wildfire management could result from operations of new construction projects or upgrades (Project R5) which involves outdoor human activity. These impacts, however, would likely be avoided through adherence to regulations and guidance documents discussed in Section 3.9.1 during operations and Soldier fire-safety training. In addition, construction of new building facilities (Projects R6, R8, and R11) would require additional fire management measures to coordinate within a fire response in the event of a building fire or protection/evacuation of the building in the event of a wildfire.

Beneficial impacts for fire management would result from those projects which would improve roads (R3, R4, and R7), allowing for reduction of off-road maneuvers, increased fire equipment access and response times, and reduction of wildfire spread through dueling as firebreaks. In addition, those projects which would provide hardened surfaces for Soldier training (R5) reduce the probability of unintentional fire starts during training. During range construction and range operations, USARAK garrisons would comply with all applicable requirements (see Sections 2.3 and 3.9.1).

Table 3.9-1a Summary of Wildfire Management Impacts from Site-specific FRA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased fire start potential during construction	Fire start potential during operation (human causes)	Wildfire spread	Increased fire management measures	Increased fire equipment access	***Overall Impact***
(R1) FRA UAC[1]	⊙	○	○	○	○	⊙
(R2) Dig a well at the ISBC Site	○	○	○	○	○	○
(R3) Raise the ISBC Road	⊙	✪	○	○	✪	⊙
(R4) Provide Turnaround IPBC	⊙	✪	○	○	✪	⊙
(R5) Create Bivouac Site ISBC	⊙	⊙/✪	✪	○	○	⊙
(R6) Range Operation Complex	⊙	○	○	⊙	○	⊙
(R7) FRA Roads	⊙	✪	✪	○	✪	✪
(R8) Vehicle Storage/ Maintenance Building[1]	⊙	○	○	⊙	○	⊙
(R9) Install Flagpole ER Gate	○	○	○	○	○	○
(R10) Waterless Arctic Latrine	○	○	○	○	○	○
(R11) Covered Bleachers[1]	⊙	○	○	⊙	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.9.2.3.2 Fort Wainwright

Overall, no to minor adverse impacts could be anticipated from the proposed site-specific projects at FWA with some projects providing beneficial impacts to fire management (see Table 3.9-1b). Projects W19, W22 (latrines), W28, and W38 (well installation) would be anticipated to have no impacts to fire management due to their very limited footprints, nature of activity and siting within already developed areas. The potential impact for all other projects (Projects W1, W2, W3, W4, W5, W6, W7, W8, W9, W10, W11, W12, W13, W14, W15, W16, W17, W18, W20, W21, W23, W24, W25, W26, W27, W29, W30, W31, W32, W33, W34, W35, W36, W37, W39, W40, and W42) would be primarily due to unintentional fire starts and would be greatest during the construction stages from increased human activity and usage of heavy construction equipment. These impacts, however, would be minor and could be reduced to no impact from implementation and adherence to existing BMPs (see Section 3.9.2.3.1).

The potential for minor adverse impacts to wildfire management could result from operations of new projects or upgrades (Projects W1, W5, W9, W11, W12, W13, W17, W18, W20, W23, W24, W25, W27, W29, W30, W33, W35, W36, and W42) involving outdoor human activity which could cause increased potential for unintentional wildfire starts. These impacts, however, would likely be avoided through adherence to regulations and guidance documents discussed in Section 3.9.1 during operations and Soldier fire-safety training. In addition, construction of new building facilities (Projects W2, W4, W6,

W7, W8, W10, and W37) would require additional fire management measures to coordinate fire response in the event of a building fire or protection/evacuation of the building in the event of a wildfire.

Beneficial impacts for fire management would result from those projects which would improve roads (W14, W31, W39, and W40), allowing for reduction of off-road maneuvers, increased fire equipment access and response times, and reduction of wildfire spread through also acting as firebreaks. Similar benefits of increased fire equipment access and response times, and reduction of wildfire spread through dueling as firebreaks could be provided by Projects W21 and W32. In addition, those projects which would provide hardened surfaces for Soldier training (W17, W18, W20, W23, W25, W27, W36, and W42) reduce the probability of unintentional fire starts during training. During range construction and range operations, USARAK garrisons would comply with all applicable requirements (see Sections 2.3 and 3.9.1).

Table 3.9-1b Summary of Wildfire Management Impacts from Site-specific FWA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased fire start potential during construction	Fire start potential during operation (human causes)	Wildfire spread	Increased fire management measures	Increased fire equipment access	***Overall Impact***
FWA						
(W2) Ammunition Breakdown Buildings[1]	⊙	○	○	⊙	○	⊙
(W3) Demo Pond Range[1]	⊙	○	○	○	○	⊙
(W4) General Instructional Building CACTF	⊙	○	○	⊙	○	⊙
(W6) Indoor Shooting Range[1]	⊙	○	○	⊙	○	⊙
(W8) Range Operation Complex [1]	⊙	○	○	⊙	○	⊙
(W9) FWA C130/17 Mock-up	⊙	⊙	○	○	○	⊙
(W10) Welding/Carpentry Shop[1]	⊙	○	○	⊙	○	⊙
(W11) Arctic Village[1]	⊙	⊙	○	○	✪	⊙
(W12) SAC East Expansion[1]	⊙	⊙	○	○	✪	⊙
(W13) KD Range Expansion[1]	⊙	⊙	○	○	○	⊙
(W14) Pave Range Road[1]	⊙	✪	○	○	✪	⊙
(W15) SAC Security Fence[1]	⊙	○	○	○	○	⊙
(W16) Rebuild MRF Firing Line[1]	⊙	○	○	○	○	⊙
(W17) Combined Arms Collective Training Facility Trail	⊙	⊙/✪	✪	○	✪	⊙
(W18) Drivers Training Course Phases 1-5	⊙	⊙/✪	✪	○	✪	⊙
(W19) Latrine – Birch Hill Biathlon Range	○	○	○	○	○	○
(W20) Warrior Forward Operations Base Phase 3	⊙	⊙/✪	○	○	✪	⊙
(W22) Latrines[1]	○	○	○	○	○	○

Table 3.9-1b Summary of Wildfire Management Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased fire start potential during construction	Fire start potential during operation (human causes)	Wildfire spread	Increased fire management measures	Increased fire equipment access	***Overall Impact***
TFTA						
(W21) Alpha Impact Area Survey Line	⊙	○	✪	○	✪	✪
YTA						
(W1) Digital Air Ground Integration Range	⊙	⊙	○	○	○	⊙
(W5) Stuart Creek Integrated Target Array	⊙	⊙	○	○	○	⊙
(W7) Firebird UAV Building	⊙	○	○	⊙	○	⊙
(W23) Charlie Battery FOB	⊙	⊙/✪	✪	○	○	⊙
(W24) YTA Convoy Live Fire Range Phase 1	⊙	⊙	✪	○	○	⊙
(W25) Winter Camp FOB[1]	⊙	⊙/✪	○	○	○	⊙
(W26) YTA Firing Point 13	⊙	⊙	✪	○	✪	⊙
(W27) Husky DZ FOB	⊙	⊙/✪	○	○	⊙	⊙
(W28) YTA Latrines	○	○	○	○	○	○
(W29) YTA Demolition Range	⊙	⊙	○	○	○	⊙
(W30) YTA Firing Point Direct Fire	⊙	⊙	○	○	✪	⊙
(W31) Stuart Creek Access Trails	⊙	✪	○	○	✪	✪
(W32) Stuart Creek Impact Area Survey Line	⊙	○	✪	○	○	✪
(W33) FP 9 Direct Firing Point	⊙	⊙	○	○	✪	⊙
(W34) Husky DZ Resurface	⊙	○	✪	○	✪	✪
(W35) Gravel Source YTA	⊙	⊙	○	○	○	⊙
(W36) Bravo Battery FOB	⊙	⊙/✪	✪	○	○	⊙
(W37) Maintenance Building[1]	⊙	○	○	⊙	○	⊙
(W38) High Capacity Well[1]	○	○	○	○	○	○
(W39) YTA Roads Upgrade	⊙	✪	✪	○	✪	✪
(W40) YTA Manchu Trail Bridge Upgrade	⊙	○	○	○	✪	✪
(W42) Harden Firebird FP and Bivouac Area	⊙	⊙/✪	○	○	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.9.2.3.3 Donnelly Training Area

Overall, none to minor adverse impacts could be anticipated from the proposed site-specific projects at DTA with some projects providing beneficial impacts to fire management (see Table 3.9-1c). Projects D16 (signing impact area) and D29 (latrines) would be anticipated to have no impacts to fire management due to their very limited footprints, nature of activity and siting within already developed areas. The potential impact for all other projects (Projects D1-D15, D17-D28, D30 and D31) would be primarily due to unintentional fire starts and would be greatest during the construction stages from increased human activity and usage of heavy construction equipment. These impacts, however, would be minor and could be reduced to no impact from implementation and adherence to existing BMPs (see Section 3.9.2.3.1).

The potential for minor adverse impacts to wildfire management could result from operations of new projects or upgrades (Projects D3, D4, D7, D11-D14, D21, D22, D25, D26, and D30) involving outdoor human activity which could cause increased potential for unintentional fire starts. These impacts, however, would likely be avoided through adherence to regulations and guidance documents discussed in Section 3.9.1 during operations and Soldier fire-safety training. In addition, construction of new building facilities (Projects D1, D6, D9, D10, D14, D20 and D30) would require additional fire management measures to coordinate fire response in the event of a building fire or protection/evacuation of the building in the event of a wildfire.

Beneficial impacts for fire management would result from those projects which would improve roads (D2, D23 and D24), allowing for reduction of off-road maneuvers, increased fire equipment access and response times, and reduction of wildfire spread through dueling as firebreaks. Similar benefits of increased fire equipment access and response times, and reduction of wildfire spread through dueling as firebreaks could be provided by projects involving new road construction (D21 and D22). During range construction and range operations, USARAK garrisons would follow existing SOPs and BMPs (Proposed Action 3) for wildfire management and would comply with all applicable requirements (see Sections 2.3 and 3.9.1).

Table 3.9-1c Summary of Wildfire Management Impacts from Site-specific DTA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased fire start potential during	Fire start potential during operation (human causes)	Wildfire spread	Increased fire management measures	Increased fire equipment access	***Overall Impact***
(D1) Range Operation Complex[1]	⊙	○	○	⊙	○	⊙
(D2) DTA Roads	⊙	✪	✪	○	✪	✪
(D3/D4) DTA Firing Points	⊙	⊙	○	○	○	⊙
(D5) New Load Ramps at Donnelly DZ	⊙	○	○	○	○	⊙
(D6) MATCH Shoot House at Colorado South[1]	⊙	○	○	⊙	○	⊙
(D7) Expand KD Range[1]	⊙	⊙	○	○	○	⊙
(D8) Target Emplacement	⊙	○	○	○	○	⊙
(D9) Construct additional support buildings at BAX/CACTF	⊙	○	○	⊙	○	⊙

Table 3.9-1c Summary of Wildfire Management Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased fire start potential during	Fire start potential during operation (human causes)	Wildfire spread	Increased fire management measures	Increased fire equipment access	***Overall Impact***
(D10) Maintenance Buildings for units training at DTA[1]	⊙	○	○	⊙	○	⊙
(D11) Beales Replacement[1]	⊙	⊙	○	○	○	⊙
(D12) Area of Responsibility Village	⊙	⊙	○	○	○	⊙
(D13) Theater Specific Village	⊙	⊙	○	○	○	⊙
(D14) Expand OP 26 for Range Control West Operations	⊙	○	○	⊙	○	⊙
(D15) Delineate DTA East Boundary	⊙	○	○	○	○	⊙
(D16) Sign the Impact Area	○	○	○	○	○	○
(D17) Improve Buffalo DZ	⊙	○	○	○	○	⊙
(D18) Expand Buffalo DZ	⊙	○	○	○	○	⊙
(D19) Extend the Donnelly FLS	⊙	○	○	○	○	⊙
(D20) Convert Fuel Break to Airstrip	⊙	⊙	○	○	○	⊙
(D21) New Road to bypass CTR	⊙	○	✪	○	✪	✪
(D22) BAX East Maneuver Corridor	⊙	⊙	✪	○	✪	⊙
(D23) BRTA Roads	⊙	✪	✪	○	✪	✪
(D24) GRTA Roads	⊙	✪	✪	○	✪	✪
(D25) Combat Outposts	⊙	⊙	○	○	○	⊙
(D26) Replace or Relocate Simpsonville Buildings	⊙	⊙	○	○	○	⊙
(D27) Construct UAV System tracking pad and access	⊙	○	○	○	○	⊙
(D28) Delta Creek Assault Strip	⊙	○	○	○	○	⊙
(D29) Install Waterless Latrines[1]	○	○	○	○	○	○
(D30) Construct FAARPs[1]	⊙	⊙	○	⊙	○	⊙
(D31) Add New OPs along the Winter Trail	⊙	○	○	○	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.9.2.4 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.9.2.4.1 Fort Richardson

Establishment of a FRA SAC Range adaptable use zone would have no direct adverse impacts to wildfire management. Indirect beneficial impacts would result as USARAK garrisons would be able to situate the SAC range adaptable use zone in an area that already has SAC ranges and road systems to access these areas would already be in place, allowing for more accessible and efficient fire response. Training would not increase as a result of the designation of these zones; therefore, no increased fire start potential would

occur from training. In addition, SOPs discussed in Section 3.9.2.3.1 would be considered for further avoidance and reduction of impacts during project design, construction and operations.

3.9.2.4.2 Fort Wainwright

Impacts to wildfire management would be similar to those discussed for FRA (3.9.2.4.1).

3.9.2.4.3 Donnelly Training Area

Impacts to wildfire management would be similar to those discussed for FRA (3.9.2.4.1).

3.9.2.5 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts to fire management through having the potential to be inconsistent with the IWFMP. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for wildfire management to reduce overall adverse impacts from routine range projects. Table 3.9-2 summarizes the potential type and intensity of wildfire management impacts as a result of routine range projects considering use of the proposed environmental stewardship range construction guidelines.

SOPs which avoid unintentional wildfire starts include:

- Compliance with training exercise regulations and wildfire prevention as stipulated by USARAK Range Regulation 350-2 and continued update and implementation of IWFMP developed by USARAK.

BMPs to avoid unintentional wildfire starts include:

- Continue on-going actions to prepare the landscape for potential wildland fires (i.e., prescribed burns and thinning to restore ecosystem functions to fire and to reduce future fire severity).
- Continue to utilize the fire danger rating system to reduce the likelihood of a fire by limiting military activities when certain thresholds of wildfire risk are reached.
- Have available an Initial Attack Response Team during military training activities during high and extreme fire danger to provide a rapid initial response to potential wildfires in the area.
- Continue to implement INRMP and IWFMP.
- Prepare a burn plan and detailed parameters for when burning can take place.

Table 3.9-2 Summary of Potential Wildfire Management Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Wildfire Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Fire start potential during operation (human causes)	Wildfire spread	Increased fire management measures	Increased fire equipment access	*Overall Impact*
Berm Creation & Maintenance	⊙	○	○	○	○	⊙
Bleacher Enclosure	⊙	○	○	○	○	⊙
Bridge Installation	⊙	○	○	○	○	⊙
Building Construction	⊙	⊙	○	⊙	○	⊙
Control Tower	⊙	○	○	○	○	⊙
Covered Hall	⊙	○	○	○	○	⊙
Culvert Installation	⊙	○	○	○	○	⊙
Fencing	⊙	○	○	○	○	⊙
Firing Lane Creation & Maintenance	⊙	○	○	○	○	⊙
Firing Line Creation & Maintenance	⊙	◎	○	⊙	○	◎
FOB Creation and Maintenance	⊙	○	○	○	○	⊙
Grading/Shaping	⊙	○	○	○	○	⊙
Gravel Pits	⊙	○	○	○	○	⊙
Hardened Target Creation & Maintenance	⊙	○	○	○	○	⊙
Hardstands Creation and Maintenance	⊙	○	○	○	○	⊙
Improvised Explosive Device Defeat	⊙	○	○	○	○	⊙
Land Clearing & Vegetation	⊙	○	○	○	○	⊙
Latrine	○	○	○	○	○	○
Mowing	○	○	○	○	○	○
Observation Points Creation & Maintenance	⊙	○	○	○	○	⊙
Pit Toilets Creation and Maintenance	○	○	○	○	○	○
Prescribed Fire	⊙	○	✪	✪	○	⊙
Road (Trail) Creation & Maintenance	⊙	○	○	✪	✪	⊙
Small Arms Siting	⊙	◎	○	⊙	○	◎
Boundary Line Clearings	⊙	○	○	○	○	⊙
Target Emplacement	○	○	○	○	○	○
Utility Line Creation & Maintenance	⊙	○	○	○	○	⊙
UXO Surveys	○	○	○	○	○	○
Wood Pile Burning	○	○	○	○	○	○
Urban Training Village	⊙	○	○	○	○	⊙

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. Overall, none to beneficial impacts would be anticipated from the construction, operations, and maintenance of routine range projects. Similar to Proposed Action 1, the primary concern would be during construction from increased human activity and usage of heavy construction equipment. Projects such as upgrades to roadways could have a beneficial impact by improving access and response time of fire equipment during wildfires. Clearing of vegetation and prescribed burns would reduce fuels and would have a beneficial impact on wildfire management. Implementation of existing SOPs and BMPs during design and construction and adherence to regulations and guidance documents discussed in Section 3.9.1 during operations would reduce the potential of adverse impacts to minor or no impact.

3.10 CULTURAL RESOURCES

3.10.1 Affected Environment

3.10.1.1 Cultural Contexts

This section provides a brief overview of the cultural contexts for FRA, FWA, and DTA from the prehistoric era through the mid-twentieth century. Because of the geographical and historic associations between FWA and DTA, cultural contexts for the two installations are discussed together. The contexts have been organized temporally as well as geographically. Whereas history encompasses the human story that has occurred in tandem with written documents, preserving and communicating knowledge of the event, prehistory refers to the period of human history that took place before the use of written systems. Proto-history refers to any temporal period shared by two or more cultural groups within a common geographic location during which not all groups employ a written system for the communication and preservation of cultural practices.

3.10.1.1.1 Fort Richardson

Prehistoric Context

FRA is located within the Cook Inlet region, which was suitable for human occupation only after the glacial retreat of the late Pleistocene era. Based on geological evidence, areas suitable for human occupation opened approximately 15,000 years ago, although Beluga Point, the earliest know site in the Cook Inlet region, dates to 8,000 years at most (McMahan and Holmes, 1996; USARAK, 2001). The regional prehistory of the Northern Cook Inlet can be divided into four eras, the Early, Middle, and Late Holocene, and the Late Prehistoric. The Early Holocene Era is affiliated with the Denali Complex of the Interior, the Middle Holocene Era is affiliated with the Ocean Bay Tradition, and the Late Holocene Era is affiliated with the Norton and the Kachemak traditions. The Late Prehistoric Era is associated with the Dena'ina Athabascan culture (USARAK, 2001). These four prehistoric eras are discussed in further detail below.

- **Early Holocene Era** (8,000 to 6,000 BP) – The Beluga Point site on the northern shore of the Turnagain Arm near Anchorage represents the most significant site in the region. The oldest components of this site are thought to date to the Early Holocene Era and are similar to those found at Long Lake in the upper Matanuska Valley and at sites in the interior of the Kenai Peninsula (McMahan and Holmes, 1996; USARAK, 2001). The association of the site with the Denali Complex indicates that the people occupying the region during this time likely came from the Interior and practiced terrestrial hunting and gathering; although, some archaeologists have conjectured that the early inhabitants of the Cook Inlet region arrived by sea from the south or by land from the southwest (USARAK, 2001).
- **Middle Holocene Era** (6,000 – 3,000 BP) – The Middle Holocene Era is poorly represented in the archaeological record of Alaska (McMahan and Holmes, 1996; USARAK, 2001). A second component of the Beluga Site constitutes the most important findings dating to the Holocene Era and is associated with the Ocean Bay Tradition. The Ocean Bay tradition flourished between

6,000 and 5,000 BP, and was a cultural tradition associated with the Alaskan Peninsula and Kodiak Island, in which coastal and marine subsistence was practiced. Researchers believe the Ocean Bay Tradition constitutes "a horizon of the Pacific Eskimo Region" (Dummond, 1983; USARAK, 2001).

- **Late Holocene Era** (3,000 – 1,000 BP) – Multiple sites dating to the Late Holocene Era are located within the Cook Inlet region. The Beluga Point site contains a third component, dated between 2,200 and 2,500 BP, which implies an association with the Norton Tradition, and may represent the southern terminus of this tradition (USARAK, 2001). The Norton Tradition burgeoned between 3,000 and 1,000 BP; a Pacific Eskimo tradition of the Bering Sea coast, it is indicated by the first appearance of pottery (from Asia) in Alaska, as well as the prominence of coastal subsistence (Dummond, 1983; USARAK, 2001). Evidence of the Kachemak Tradition is present in other sites in the Cook Inlet region dating between 3,500 and 1,000 BP. Concentrated around the Pacific Rim from the Alaska Peninsula and the Aleutians to what is now Washington State, the Kachemak Tradition is defined by the appearance of the transverse of ulu knife, and an emphasis on fishing and hunting of sea mammals (Dummond, 1983; USARAK, 2001). The Fish Creek site located near Knik and, the Cottonwood Creek Site and the Moose River site all contain Kachemak components (McMahan and Holmes, 1996; USARAK, 2001).
- **Late Prehistoric Era** (1,000 BP – 250 BP) – By 700 BP, the presence of peoples with an Athabascan material culture is apparent in the Cook Inlet region. The archaeological evidence of this presence includes rectangular house depressions, numerous cobble spall scrappers, and "concentrations of fire-cracked rock from cooking fires and sweat baths" (McMahan and Holmes, 1996; USARAK, 2001). These sites and artifacts are believed to be associated with the Tanaina (Dena'ina) Athabascans residing in the region during the time of Captain Cook's arrival (USARAK, 2001).

Proto-Historic and Historic Context

While searching for the Northwest Passage in 1778, British Royal Navy Captain, James Cook, encountered the Dena'ina people in what is now Cook Inlet. This was the first recorded encounter between the Dena'ina people of the Cook Inlet region and Europeans. Russian fur traders had likely come into contact with the Native people of the area following the turn of the eighteenth century. Individual Russian fur trading companies operating in the Alaskan Territory were consolidated into the Russian-American company in 1799, headquartered in Sitka, which governed the territory under the colonial authority of the Tsar of Russia for the next sixty-eight years (USARAK, 2001).

Fall caribou hunts and salmon fishing created the foundation for the Dena'ina subsistence economy. Pacific harbor seal, moose, mountain goat, Dall sheep, and squirrel supplemented this subsistence (Townsend, 1981; USARAK, 2001). It may be that the Dena'ina borrowed several cultural traits, such as the kayak, from neighboring Eskimo groups (USARAK, 2001). Although Russian influence on the Dena'ina lifestyle was limited, the introduction of Russian Orthodox Christianity by the Russian colonial government was significant. By 1794, Russian missionaries had established the first Russian Orthodox Church in Alaska at Kodiak. In the 1840s, a cathedral was established in Sitka. The influence of the Russian Orthodox Church was focused in the areas of the Aleutians, Kodiak Island, and the Pacific Rim (USARAK, 2001). By the 1930s, the Dena'ina culture had been fully enveloped by Euro-American culture, when Cornelius Osgood began conducting ethnographic fieldwork. Osgood's compilation of oral and life histories of the Dena'ina people is the most comprehensive account of the culture at the time of European contact, and is a decently cohesive depiction of Dena'ina culture during the eighteenth and nineteenth centuries (Osgood, 1937; USARAK, 2001). Other ethnographers, including Tenenbaum, Kalifornsky, Townsend, and Davis continued the work begun by Osgood (USARAK, 2001).

Several Dena'ina villages existed at one time in the Fort Richardson area, Knik being the most important. Knik was located at the mouth of the Knik and Matanuska rivers, and numerous fish camps were located at Ship Creek, Fire Island, Point Woronzoff, and the mouth of Eagle River (USARAK, 2001). Of the villages that originally existed in the area, only Eklutna is still in existence (USARAK, 2001).

The United States purchased the Alaska Territory from Russia in October 1867 for $7.2 million. Immediately following the purchase, the Alaska Commercial Company replaced the Russian-American Company as the governing entity of Alaska. By 1884, however, the rapid pace of exploration and commercial development in the territory necessitated the organization of a civil and judicial district (USARAK, 2001). The 1893 Circle City gold rush and the 1896 Klondike gold rush were both catalysts for the demographic shift that took place in the Cook Inlet region in the late 1800s, especially in the community of Knik, which served as a supply center for the Interior gold rushes (USARAK, 2001).

The territorial government of Alaska was established in 1912, in response to the continuing development of the fishing, mining, and timber industries. Anchorage grew with the development of the Alaska Railroad, originating as a construction camp and railroad headquarters in 1913, two years before construction of the railroad began. The town eventually acquired the name Anchorage from the Knik Anchorage located on the Knik Arm (Herb, 1993; USARAK, 2001). In 1923, the Alaska Railroad was completed, linking Seward, Anchorage, and Fairbanks. The Department of Agriculture created Mat-Su Farm Colony in the Matanuska Valley in the 1930s as relief project for farmers devastated by the Great Depression (USARAK, 2001). The colony was connected to Anchorage by a highway constructed in 1935 (USARAK, 2001).

3.10.1.1.2 Fort Wainwright and Donnelly Training Area

Prehistoric Context

The land currently encompassed by FWA and DTA can be interpreted through two differing prehistoric chronologies: one that has been present in Alaskan archaeology since the mid 1960s and another that was proposed by Charles Holmes in the mid-1990s. The traditional Alaskan chronology divided the prehistoric era into periods based on tool forms. Three traditions in Alaskan prehistory emerge in this classification: The American Paleoarctic Tradition, the Northern Archaic Tradition, and the Athapaskan Tradition. Robertson et al. describes the traditions as follows (Robertson et. al., 2005):

- **American Paleoarctic Tradition** (12,000 - 6,000 BP) – This tradition includes the Denali Complex, which Robertson et al. (2006) note was "originally defined by West (1967) "and which "included distinctive microblade cores, core tablets and their derivative microblades, large blades, biconvex bifacial knives, certain end scraper forms, and burins. West (1981) later stated the Denali Complex is a regional variant of the American Paleoarctic Tradition defined by Anderson (1970a, b). Also included with this tradition is the Chindadn Complex (Cook, 1969). The Chindadn Complex is also called the Nenana Complex. The defining characteristic of the Chindadn Complex is the presence of Chindadn points – bifacially flaked triangular or tear dropped shaped projectile points..." (Robertson et.al., 2005);
- **Northern Archaic Tradition** (6,000 - 2,000 BP) – This tradition is defined by the presence of side-notched projectile points (Anderson, 1968; Robertson et.al., 2005). Despite "generalized resemblances between this tradition and the Archaic cultures of the Great Plains of the lower 48 states… it is uncertain that any of the Northern Archaic traits, other than most likely the side-notched points, originated outside of the western subarctic region" (Clark, 1981; Robertson et.al., 2005). The correlation between the introduction of Northern Archaic technologies and the "full establishment of the taiga forest" makes these technologies comparable with the forest oriented Archaic cultures in lower latitudes (Anderson 1968; Robertson et.al., 2005);
- **Athapaskan Tradition** (2,000 BP – 1880 AD) – This tradition included a "reorganization of raw materials" with a de-emphasis in "stone tool making" and an "increased emphasis on the manufacture of items from native copper and organic materials" (Robertson et. al., 2006). Those cultures generally considered to be ancestors of the Athabascan tribes that currently inhabit Interior Alaska are included in this tradition (Robertson et.al, 2005).

Earlier scholars have suggested that an intermediary period known as the Late Denali Complex, in which microblades reappeared, took place after the Northern Archaic Tradition (Dixon, 1985; Robertson et.al.,

2005). Present convention accepts the occurrence of microblades within the Northern Archaic Tradition (Robertson et.al. 2005).

Holmes (1996, 2000) has proposed an alternative chronology for the Tanana Valley, in which artifact form is not the sole focus (Robertson et.al. 2005). Instead, Holmes proposes time periods "according to environmental and cultural criteria", and which allows for increased flexibility compared to more traditional chronologies (Holmes, 2000; Robertson et.al. 2005). The chronological periods that Holmes suggests include the Beringian Period, the Transitional Period, the Early Taiga Period, the Middle Taiga Period, the Late Taiga Period, and the Athapaskan Period. Characteristics of the Beringian Period, the Transitional Period, the Early Taiga Period, the Middle Taiga Period, and the Late Taiga Period are (Robertson et.al. 2005):

- **Beringian Period** (greater that 11,000 BP) – During this period, the land connection between Alaska and Siberia was still in existence, and the boreal forest had yet to form in Beringia. Artifact assemblages from this period vary with the presence of microblades. Site environment, function, and seasonality may all contribute to these differences. Holmes uses the term Eastern Beringian Complex to describe these early assemblages (Robertson et.al. 2005);
- **Transitional Period** (11,000 – 8,500 yr. BP) – Substantial climate changes occur during this period, causing the land connection between Alaska and Siberia to disappear, animals to become extinct, and forestation to begin. Spruce-birch forest replaced the shrub tundra was replaced by 9,000 BP (Robertson et.al. 2005);
- **Early Taiga Period** (8,500 – 5,000 BP) – The boreal forest becomes fully established and the American Paleo Tradition is replaced by the Northern Archaic Tradition (Robertson et.al, 2005).
- **Middle Taiga Period** (5,000 – ca. 2,500 yr BP) – The Northern Archaic Tradition artifact types continue, including microblades and burins (Robertson et.al., 2005);
- **Late Taiga Period** (ca. 2,500 yr BP - modern) – Microblade technology disappears from the archaeological record and the Athapaskan Tradition in Alaska begins, leading to the technology shift described above, as well as ethnically recognizable Athapaskan groups (Robertson et.al., 2005).

Proto-Historic and Historic Context

During Euro-American contact, the lands currently encompassed by FWA and DTA were inhabited by Lower-Middle Tanana Athabascans (Andrews, 1975; McKennan, 1981; Mishler, 1986). Traditional settlement patterns were based on seasonal patterns that followed the caribou hunt during winter subsistence preparations, and fish camp and berry and root collecting locations during the summer (McKennan, 1981; Robertson et.al., 2005). These activities were often communal in character, involving the participation of several local bands, connected through common interests, geography, and intermarriage. Although attempts have been made to identify boundaries of the tribal bands living in the lower Tanana River valley, natural landscape features appear to be the only discernable boundaries of settlement pattern (McKennan, 1981; Robertson et.al., 2005).

Settlement patterns and subsistence activities of traditional Athabascan groups were dramatically altered by the influx of Euro-American traders, miners, missionaries, and explorers into the Tanana River Valley. The development of the fur trade and access to trade goods also significantly affected the traditional material culture. Likewise, the introduction of mission schools and Euro-American religious doctrine contributed greatly to the dissemination of traditional settlement patterns and practices (Robertson et.al 2005:2.1). Russian fur traders found their way into the Alaskan Interior from the south and the west, establishing a post at Taral on the Copper River in the 1880s and another at Nulato on the Yukon River in the 1830s (Hanable, 1982; USARAK, 2000, 2006). In 1847, British fur traders had moved in from the east and built Fort Yukon where the Porcupine River meets the Yukon River (Dixon et. al., 1980; USARAK, 2000, 2006). Contact steadily increased between Tanana Athabascans and European traders during the 1860s. After the purchase of the Alaska Territory in 1867, control of the trading post transferred to the United States. American traders established posts along the Yukon and Tanana rivers

throughout the 1880s. As their dependence on trade goods increased, Natives adapted a more sedentary lifestyle, constructing permanent houses and abandoning their seasonal hunting grounds (USARAK 2000, 2006).

The discovery of gold in the Tanana uplands created a surge of Euro-American settlement in the late 1890s. Gold was discovered in 1886 at Franklin Creek and Chicken Creek on the Fortymile River, and in 1894 on Birch Creek and at Circle City, bringing influxes of European-American settlers into the area (USARAK, 2000). Along with the increased economic importance of the Tanana Valley, the importance of reliable transportation routes and communication systems also rose. Within the first few decades of the 1900s, existing trails, including the Valdez-Fairbanks Trail and the Bonnifield Trail, witnessed a substantial increase in use and development. The U.S. Army developed the Valdez-Fairbanks trail in 1899 to facilitate an overland route to Fairbanks (USARAK, 2006). The Washington-Alaska Military Cable Telegraph system was constructed between 1899 and 1906 (USARAK, 2006). The Bonnifield Trail was named for John E. Bonnifield, who discovered gold southwest of Fairbanks in 1903. This increase in trail use also spurred the development of several roadhouses and posts along the various trails. In 1906, Congressional appropriations were made to fund improvement projects along the Valdez-Fairbanks trail, crossing the Alaska Range south of Delta Junction and following the Tanana River to Fairbanks. The Alaskan Railroad was completed in 1923 and the Alaskan Highway in 1942, solidifying connections between the Alaskan Interior and the contiguous U.S. through Canada (Robertson et.al, 2005).

The advancement of World War II led to the increased military establishment in Alaska. Airfields were created near Delta Junction at Fort Greely, and in Fairbanks at Ladd Field (which later became Fort Wainwright). Each of these locations was established as a cold weather testing station, but soon expanded to encompass military support for World War II operations, and later for the Cold War (Robertson et.al, 2005). Ladd Field acted as the terminus of the Alaska-Siberia Lend Lease Program (ALSIB), where, between 1942 and 1945 Soviet pilots trained in U.S. aircraft before embarking to the Eastern Front (USARAK, 2000). Following World War II, the Strategic Air Command (SAC) began developing a system of Polar navigation at Ladd Field, and in 1947, electronic intelligence (ELINT) B-29s began flying electronic reconnaissance missions out of the installation (White, 1994; USARAK, 2000). Ladd Field was designated an Air Force Base in 1947, after the creation of the U.S. Air Force. Through the 1950s, the Army's mission at Ladd continued, including anti-aircraft and ground defense, cold weather training, and emergency preparation in the case of nuclear attack (USARAK, 2000). Evidence of Cold War operations at DTA include the Donnelly Flats MIDAS Ground Station site, as well as the existence of several Cold War Era buildings located within the Fort Greely cantonment area (USARAK, 2006; Price, 2006).

3.10.1.2 USARAK Cultural Resources

Cultural resources consist of historic properties (buildings, structures, districts, landscapes, and the like, as defined by AR 200-1 and the NHPA); archaeological sites (as defined and governed by the Archaeological Resources Protection Act [ARPA], AR 200-1, and the NHPA); Native American sacred sites (as identified in EO 13007 and the American Indian Religious Freedom Act [AIRFA]); Traditional Cultural Properties (TCP) (as defined in the NHPA and as described in National Register Bulletin 38); and sites and artifacts associated with Native American Graves (as defined and governed by the Native American Graves Protection and Repatriation Act [NAGPRA]).

Cultural resource types are defined by five major categories based on the original function or character of the property. These five categories include the following:

- **District** – A district is a geographically definable area that possesses a concentration or continuity of buildings, structures, sites, or objects used by past events, design, or physical development. A district may also contain individual elements separated geographically but linked by association or history. This classification is typically used when structures of an area do not all contribute to the significance of the property (DOI, 1997);
- **Site** – Sites are locations of significant events, prehistoric or historic occupations or activities, buildings or structures (standing, ruined, or vanished), where the location possesses prehistoric or historic value. A site may also hold significance related to traditional cultural values associated with a real property (DOI, 1997);
- **Building** – A building is a structure, such as a house, church, barn, or similar structure, erected to shelter any form of human activity. A building may also connote a historically related complex of buildings, such as a farmstead or an industrial complex, if all structures contribute to the significance of the property (DOI, 1997);
- **Structure** – A structure is an engineering project that aids human activities, including all standing structures other than those made for shelter (DOI, 1997);
- **Object** – An object is a thing of functional, aesthetic, cultural, historical, or scientific value that may be, by nature or design, moveable yet associated with a specific setting or environment (DOI, 1997).

Cultural resources located within the Area of Potential Effect (APE) for the Proposed Actions were evaluated for potential impacts resulting from the implementation of the Proposed Actions in Chapter 2. The APE is defined as the project area within which the Proposed Action (construction, military operations, etc.) would take place, in addition to the viewshed associated with the project area.

3.10.1.2.1 Fort Richardson

Cultural resources located within the boundaries of FRA include 36 archaeological sites, 520 buildings 50 years of age or older, 1 historic district, 1 historic cemetery, and 1 monument located on the grounds of FRA. There are no archaeological districts, historic landmarks, TCPs, or World Heritage properties located within the boundaries of FRA (USARAK, 2001, 2008).

Eighteen of the 36 archaeological sites located on FRA have been determined eligible for listing on the NRHP. The remaining 18 sites have yet to be evaluated for listing (Graham, 2009). FRA has a low potential to contain prehistoric sites, as the majority of sites located on FRA have been historic. Areas with high potential to contain archaeological sites include the mouth of the Eagle River, the shoreline of Knik Arm, upstream portions of Ship Creek, the Fossil Creek Drainage, and the Elmendorf Moraine (USARAK, 2001).

Of the 520 buildings 50 years of age or older located on FRA, 1 (Headquarters Building) has been determined individually eligible for listing on the NRHP, 28 have been determined not eligible for listing, 218 have not been evaluated for listing, and 274 are encompassed by the 2002 Wherry and Capehart Era Army Family Housing Program Comment issued by the Advisory Council on Historic Preservation (ACHP) (USARAK, 2008). The Wherry and Capehart program comment provides the Army with an alternate process to comply with its responsibilities under Section 106 of the NHPA in regard to the management of the Wherry and Capehart Era Army Family Housing as a whole, rather than submission of individual undertakings under such management to separate review (ACHP, 2002).

The Site Summit Historic District contains 27 historic buildings and structures. The district was listed on the NRHP in 1996 for its contextual significance associated with the Cold War, and as a property less than fifty years old that possesses exceptional historic importance. The Fort Richardson National Cemetery has been determined eligible for listing on the NRHP (USARAK, 2001). Monument Corner, erected in 1935 by the Daughters of the American Revolution in commemoration of the completion of the

Anchorage-Matanuska Highway, has been determined not eligible for listing on the NRHP; however, the Alaska SHPO has identified the monument as significant for regional history and recommended that it be preserved (USARAK, 2001).

A total of 9 cultural resources were identified within the potential APEs for the Proposed Actions on FRA, 7 of which are archaeological sites, 1 is the Site Summit Historic District, and 1 is the Fort Richardson National Cemetery. Of the 7 identified archaeological sites, none have been evaluated for listing on the NRHP.

3.10.1.2.2 Fort Wainwright

FWA contains a rich collection of cultural resources, encompassing a range of archaeological and historic resources. These resources include 112 archaeological sites, 3 NRHP eligible archaeological districts, 1 proposed archaeological district, 569 buildings fifty years of age or older, 1 NRHP eligible historic district, and 1 NRHP listed National Historic Landmark (NHL). There are no historic monuments, TCPs, or World Heritage Properties located on FWA (USARAK, 2000, 2008).

Within the main post of FWA there are 8 prehistoric archaeological sites which have been determined eligible for listing on the NRHP. Within the TFTA there are 80 archaeological sites; 40 have been determined eligible for listing on the NRHP, and 40 have not been evaluated for listing. Within the YTA there are 32 archaeological sites; 16 of which are listed, 12 have been determined eligible for listing on the NRHP, 2 have been determined not eligible for listing, and 2 have not been evaluated for listing (Graham, 2009). There are 2 NRHP eligible archaeological districts, the Blair Lakes Archaeological District and the Clear Creek Buttes Archaeological District, and 1 proposed archaeological district, the Wood River Buttes proposed archaeological district, located within the TFTA. The Blair Lakes Archaeological District contains 6 sites, 3 of which are associated with the Denali/Northern Archaic culture, 1 of which is associated with the Denali/Northern Archaic/late prehistoric Athabascan culture, and 2 associated with Euro-American culture. The Clear Creek Buttes Archaeological District contains 5 sites, all of which are associated with the Denali/Northern Archaic culture. The Wood River Buttes proposed archaeological district contains 27 sites, all of which are associated with the Denali/Northern Archaic culture (USARAK 2000, 2008). Generally, bluffs, terraces, and other high points tend to possess a high probability to contain archaeological sites, as these locations are likely to be the sites of camps and offer better vantage points for various activities. Low-lying areas tend to have a low probability for containing archaeological sites.

There are 569 buildings fifty years of age or older located on FWA. Of these 569 buildings, 83 have been determined to be eligible for listing on the NRHP, 131 have been determined to be not eligible for listing, 203 have not yet been evaluated for listing, and 152 are encompassed by the 2002 Wherry and Capehart Era Army Family Housing Program Comment issued by the ACHP (USARAK, 2008). The Wherry and Capehart program comment provides the Army with an alternate process to comply with its responsibilities under Section 106 of the NHPA in regard to the management of the Wherry and Capehart Era Army Family Housing as a whole, rather than submission of individual undertakings under such management to separate review (ACHP, 2002).

The Ladd Air Force Base Historic District contains 50 historic buildings and structures, and has been determined to be eligible for listing on the NRHP for its contextual significance associated with the Cold War. The Ladd Field NHL contains 28 historic buildings and structures, and was listed on the NRHP in 1985 for its contextual significance associated with World War II and the Cold War. The boundaries for both districts encompass the original Ladd airfields, barracks and support buildings, but the Ladd Air Force Base Historic District is slightly larger, surrounding the Ladd Field NHL, and includes several post-World War II buildings (USARAK, 2006).

A total of 7 cultural resources were identified within the potential APEs for the Proposed Actions on FWA, none were identified within the TFTA APEs, and 2 were identified within the YTA APEs. Of the 7 identified resources located within FWA, 5 are historic buildings or structures, 1 is the Ladd Air Force

Base Historic District, and 1 is the Ladd Field National Historic Landmark (NHL). One of the historic buildings, the Ladd Air Force Base Historic District and the Ladd Field NHL are all eligible for listing on the NRHP. The other 4 historic buildings are not eligible for listing.

No cultural resources were identified within TFTA. The 2 cultural resources identified within YTA are both archaeological sites, 1 of which is eligible for listing on the NRHP; the other has not been evaluated for listing.

3.10.1.2.3 Donnelly Training Area

Within the boundaries of DTA, 436 archaeological sites and 1 property fifty years of age or older have been identified. Currently, there are no sites, structures, buildings, or districts at DTA that are formally listed on the NRHP. There is 1 historic district, and no historic landmarks, historic monuments, or World Heritage properties located within the boundaries of DTA (USARAK, 2000; Robertson et. al., 2008). Although there are currently no TCPs within the boundaries of DTA, Donnelly Dome, located toward the southeast corner of DTA West (between Richardson Highway and the Delta River), is a very important cultural site for several Alaskan Native tribes (USARAK, 2007, 2009).

Of the total 436 archaeological sites, 103 have been determined to be eligible for listing on the NRHP, 75 have been determined to be not eligible for listing, and 258 have not been evaluated for listing (Graham, 2009). There is 1 archaeological district located on DTA, the Donnelly Ridge Archaeological District, which contains 12 sites associated with the Denali culture (USARAK, 2000; 2008). All of the archaeological sites identified within DTA have been found in three high probability areas: 1) high points; 2) bluffs or terraces overlooking a major river site or drainage; and 3) lake margins. Significant environmental factors that contribute to site placement most often consist of viewshed (the encompassing area visible from the site), elevation relative to the immediately surrounding terrain, and distance to water. Areas with the highest probability are generally lake edges and ridgelines. Because archaeological investigations generally focus on areas of high probability, these findings may be intrinsically biased; however, full coverage surveys on DTA lands with low probability, such as flat areas of spruce forest that lack water, wetlands areas, and slopes of more than 40 degrees, have failed to identify any archaeological sites (Robertson et. al., 2008).

There is 1 historic property located within the boundaries of DTA, the Donnelly Flats MIDAS Ground Station, of which only the Power Plant, the access road, and remnants (including concrete foundations, vault shells, and radome supports) of related structures remain (Price, 2006). The Donnelly Flats MIDAS Station has been determined to be not eligible for listing on the NRHP.

A total of 29 cultural resources were identified within the APE for the Proposed Actions on DTA, all of which are archaeological sites. Of these 29 identified archaeological sites, 6 are eligible for listing on the NRHP, 7 are not eligible, and 16 have yet to be evaluated for listing on the NRHP. The identified archaeological sites that have yet been evaluated for listing on the NRHP should be treated as eligible until such time that a full evaluation of these resources is conducted.

3.10.2 Environmental Consequences

The innate character of cultural resources makes any impact potentially irreversible and the potential loss of data irretrievable. The relative severity of impacts has been defined based on the probability of disturbance to sites considered eligible for listing on the NRHP and those sites identified but yet to be evaluated for eligibility for listing on the NRHP. Evaluated sites that were found ineligible for listing on the NRHP were not considered in the analysis, either because they did not provide any additional cultural resource information, or because all available data has been extracted or recorded from those sites. The following categories will be used in assessing potential impacts resulting from the Proposed Actions. Analysis of each proposed project area was based on similar activities that would be conducted within each area under implementation of the Proposed Actions.

The Army will continue implementation of the Integrated Cultural Resources Management Plan (ICRMP). The ICRMP contains specific guidelines for the inventory, nomination to the National Register of Historic Places (NRHP), and preservation of culturally significant properties on Army lands in Alaska. Implementation of these guidelines will ensure the Army's compliance with all applicable federal, state, and local laws. The Army will also conduct Section 106 consultation under the NHPA regarding the actions proposed under all Proposed Actions. Section 106 consultation is used to facilitate compliance procedures and ensure the protection of significant cultural resources in accordance with the NHPA. The Army is committed to participating in the Section 106 consultation process, including the implementation of any resulting mitigation measures.

The following categories are used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant)** – The degree to which activities affect known or unknown historic, archeological, or other cultural resources.
- **Severe (significant)** – Activities that result in the unmitigated loss of any cultural resources, or that result in an historic districts or National Landmark losing its National Register of Historic Places (NRHP) designation, would represent a significant impact.

In addition, the following bullets provide general descriptions of the type of impacts used in the cultural resources impact analysis:

- *Loss of archaeological site* includes direct or cumulative impacts that would physically diminish or destroy any NRHP eligible archaeological site, or information contained therein, by 50 percent or more.
- *Loss of historic structure* includes direct impacts that would result in the destruction or demolition of any NRHP eligible historic structure or building.
- *Degradation of archaeological site* includes direct or cumulative impacts that would physically diminish any NRHP eligible archaeological site or information contained therein, by 50 percent or less.
- *Alteration of cultural viewshed* includes direct or cumulative impacts that would alter the associated viewshed of a historic property by altering the feeling, setting, or association of that property by altering the visual landscape associated with that property.
- *Facility construction* includes direct impacts created by construction activities that would affect any historic properties, such as road excavation and grating, the creation of gravel pits, or the construction of latrines.
- *Impact to Sacred Site* includes direct and indirect impacts that would physically alter or diminish any Sacred Sites or the traditional use or religious activities associated with that site; or that would hinder the access of a particular group to an associated Sacred Site.

Due to stipulations in the military's Alaska Heritage Resource Survey (AHRS) User's Agreement with the SHPO, the locations of archaeological resources may not be disclosed; therefore, analysis of archaeological resources is based on sites present within an estimated buffer surrounding the Proposed Actions' sites. The definition of APE within this document refers to an estimated buffer that was established around each of the Proposed Actions' sites as part of Proposed Actions 1 and 2, from which a cultural resource baseline was established for analysis. These buffers may not reflect the actual APE for implementation of the proposed undertakings.

3.10.2.1 No Action

Under the No Action Alternative, none or some of the Proposed Actions would not be implemented. Consequences of the No Action Alternative may include decreased efficiency of project review and SAC Range project siting compatible with cultural resources; also, there would be no quick reference regarding SOPs and BMPs for cultural resources within the APEs of future range projects available to range planners. USAG FRA and USAG FWA would still be required to comply with NHPA regulations when

planning and implementing future range projects, creating an overall minor adverse impact to cultural resources.

3.10.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.10.2.2.1 Fort Richardson

Projects involving ground disturbing activities in areas containing eligible or potentially eligible NRHP resources, or involving ground disturbance in unsurveyed areas have the potential to cause a significant adverse impact to cultural resources by resulting in an unmitigated loss. Adverse impacts to cultural resources from these projects would be mitigated to insignificant (minor or adverse) impacts through use of the following BMPs during construction and training:

- During design and prior to construction, unsurveyed areas would be surveyed and potential cultural resources identified during the survey would be evaluated. All resources determined to be NRHP eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska state standards for archaeology. This would not apply in areas that have not been previously surveyed, except in those areas which fall under Army-wide exemptions for undertakings due to an imminent threat to human health and safety as presented in the Army Alternative Procedures (AAP; Section 4.1, Army Wide Exempted Undertakings), which include:
  - In-place disposal of unexploded ordinance.
  - Disposal of ordinance in existing open burning/open detonation units.
  - Emergency response to releases of hazardous substances, pollutants, and contaminants.
  - Military activities in existing designated SDZs.
- During design, cultural sites would be avoided utilizing information gathered from on-the-ground surveys.
- Prior to construction, consultations with Alaska Native tribes will be initiated, where relevant, to identify and evaluate TCPs that may be present on military managed lands in Interior Alaska.
- Curation of archaeological material recovered would be performed in accordance with the Memorandum of Agreement between USARAK and the University of Alaska Museum.
- All projects would conform to any mitigating measures agreed to at the completion of the Section 106 consultation process.

Table 3.10-1a shows the anticipated level of impacts for the FRA site-specific projects with the implementation of the BMPs. Projects R1, R2, R3, R4, and R5 are anticipated to create no impacts to cultural resources. The potential APEs and estimated buffers related to these projects have been 100 percent surveyed for cultural resources. No cultural resources were identified in the potential APEs or estimated buffers related to these undertakings.

Project R7 could create moderate impacts to cultural resources. Potential APEs and estimated buffers related to these projects have been 100 percent surveyed for cultural resources. Nine cultural resources (7 archaeological sites, the Site Summit Historic District, and the Fort Richardson National Cemetery) have been identified within the potential APEs and estimated buffers related to these projects. Five of these sites have been determined not eligible for listing on the NRHP, while the remaining 2 have not been evaluated for listing and should be treated as eligible resources. Depending on the relationship of these resources to construction activity related to project R7 (FRA Roads), the potential impacts could be moderate. Sites that have not been evaluated as eligible for listing on the NRHP would be treated as eligible sites until a full evaluation is conducted, reducing significance of impacts to minor or none. The Site Summit Historic District and the Fort Richardson National Cemetery are both eligible resources. Impacts to the Site Summit Historic District and the Fort Richardson National Cemetery are anticipated to be minor, as construction activities and use of FRA Roads will likely have little effect on the physical character and integrity of these resources.

Projects R6, R8, R9, R10, and R11 are anticipated to create none to minor impacts to cultural resources. Approximately 50 percent of the potential APEs and estimated buffers related to R10 and R11 have been surveyed. No cultural resources were identified within these surveyed areas; however, there is potential for cultural resources to be located within the unsurveyed areas related to these projects. Although no cultural resources have been identified within the potential APEs and estimated buffers related to R6, R8, and R9, the APEs and buffers fall entirely within unsurveyed lands, therefore, there is potential for cultural resources to be located in these areas. Prior to implementation of these proposed projects in unsurveyed areas, the USARAK Cultural Resource Manager (CRM) would be contacted to facilitate a cultural survey of the proposed project's APE to avoid significance of impacts. In addition, all projects would be conducted to maintain compliance with Section 106 of the NHPA.

Table 3.10-1a. Summary of Cultural Impacts from Site-specific FRA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Loss of Archaeological Site	Loss of Historic Structure	Degradation of Archaeological Site	Degradation of Historic Structure	Alteration of Cultural Viewshed	Facility Construction	Impact to Sacred Site	***Overall Impact***
(R1) FRA UAC[1]	○	○	○	○	○	○	○	○
(R2) Dig a well at the ISBC Site	○	○	○	○	○	○	○	○
(R3) Raise the ISBC Road	○	○	○	○	○	○	○	○
(R4) Provide Turnaround IPBC	○	○	○	○	○	○	○	○
(R5) Create Bivouac Site UAC	○	○	○	○	○	○	○	○
(R6) Range Operation Complex	⊙	○	⊙	○	⊙	⊙	⊙	⊙
(R7) FRA Roads	◎	○	◎	○	⊙	◎	○	◎
(R8) Vehicle Storage/ Maintenance Building[1]	⊙	○	⊙	○	⊙	⊙	⊙	⊙
(R9) Install Flagpole ER Gate	⊙	○	⊙	○	⊙	⊙	⊙	⊙
(R10) Waterless Arctic Latrine	⊙	○	⊙	○	○	○	○	⊙
(R11) Covered Bleachers[1]	⊙	○	⊙	○	○	○	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.10.2.2.2 Fort Wainwright

Fort Wainwright

Projects involving ground disturbing activities in areas containing eligible or potentially eligible NRHP resources, or involving ground disturbance in unsurveyed areas have the potential to cause a significant adverse impact to cultural resources by resulting in an unmitigated loss. Adverse impacts to cultural resources from these projects would be mitigated to insignificant (minor or adverse) impacts through the use of BMPs during construction and training (see Section 3.10.2.2.1).

Table 3.10-1b shows the anticipated level of impacts for the FWA site-specific projects with the implementation of the BMPs. Projects W3, W8, W16, and W20 are anticipated to create none to minor impacts to cultural resources. Each of the APEs and estimated buffers related to these projects has been partially surveyed for cultural resources: W3 – approximately 5 percent surveyed; W8 – approximately 8 percent surveyed; W16 – approximately 10 percent surveyed; W20 – approximately 70 percent surveyed. No cultural resources were identified within these surveyed areas; however, there is potential for cultural resources to be located within the unsurveyed areas related to these projects. Prior to implementation of these proposed projects in unsurveyed areas, the USARAK CRM would be contacted to facilitate a cultural survey of the proposed project's APE.

Projects W2, W4, W6, W10, W11, W12, W13, W14, W15, W17, W18, and W19 are also anticipated to create none to minor impacts to cultural resources. Although no cultural resources have been identified within the potential APEs and estimated buffers related to these projects, the APEs and buffers fall entirely within unsurveyed lands, thus there is potential for cultural resources to be located in these areas. Prior to implementation of these proposed projects, the USARAK CRM would be contacted to facilitate a cultural survey of the proposed project's APE.

Project W9 (FWA C130/17 Mock-up) is anticipated to create moderate impacts to cultural resources. No archaeological resources have been identified within the potential APEs and estimated buffers related to this project. One historic building, as well as the Ladd Air Force Base Historic District and the Ladd Field NHL, all of which are eligible for listing on the NRHP, have been identified within the potential APEs and estimated buffers related to this project. Although the proposed project will alter the historic viewshed associated with these historic resources, implementation of the proposed project will maintain historic use of the district, NHL, and associated buildings and structures as an operational military facility; therefore, impacts to cultural resources will be moderate.

Project W22 (Latrines) is anticipated to create no impacts to cultural resources. No archaeological resources have been identified within the potential APEs and estimated buffers related to this project. Four historic buildings (50 years of age or older) have been identified within the potential APEs and estimated buffers related to this project. All four building have been determined to be not eligible for listing on the NRHP; and therefore, will not impact cultural resources.

TFTA

Project W21 is anticipated to create none to minor impacts to cultural resources. Although no cultural resources have been identified within the potential APE and estimated buffer related to this proposed project, the APE and buffer fall entirely within an unsurveyed area; however, the APE and buffer also fall within an impact zone, exempting the area from cultural survey.

YTA

Projects W25, W35, and W40 are anticipated to create no impacts to cultural resources. The potential APEs and estimated buffers related to these projects have been 100 percent surveyed for cultural resources. No cultural resources were identified in the potential APEs or estimated buffers related to these undertakings.

Projects W23, W26, W27, and W36 are anticipated to create none to minor impacts to cultural resources. Each of the APEs and estimated buffers related to these projects has been partially surveyed for cultural resources: W23 – approximately 5 percent surveyed; W26 – approximately 90 percent surveyed; W27 – approximately 10 percent surveyed; W36 – approximately 60 percent surveyed. No cultural resources were identified within these surveyed areas; however, there is potential for cultural resources to be located within the unsurveyed areas related to these projects. Prior to implementation of these proposed projects in unsurveyed areas, the USARAK CRM would be contacted to facilitate a cultural survey of the proposed project's APE.

Projects W24 and W31 are anticipated to create minor impacts to cultural resources. The potential APEs and estimated buffers related to each project have been partially surveyed for cultural resources: W24 – approximately 90 percent surveyed: W31 – approximately 1 percent surveyed. Within the potential APE and buffer for each project, 1 archaeological site was identified. Neither of the identified sites has been evaluated for listing on the NRHP, but both would be treated as eligible resources until a full evaluation could be conducted.

Projects W5, W7, W28, W29, W30, W32, W33, W34, W37, W38, W39, and W42 are anticipated to create no to minor impacts to cultural resources. Although no cultural resources have been identified within the potential APEs and estimated buffers related to these projects, the APEs and buffers fall entirely within unsurveyed lands, thus there is potential for cultural resources to be located in these areas. Prior to implementation of these proposed projects, the USARAK CRM should be contacted to facilitate a cultural survey of the proposed projects' APE.

Project W1 is anticipated to create minor impacts to cultural resources. While the potential APE and estimated buffer related to this project does not appear to have been surveyed for cultural resources, 1 archaeological site has been identified within the APE and buffer. Although the site has not been evaluated for listing on the NRHP, it would be treated as an eligible resource until a full evaluation could be conducted.

Table 3.10-1b. Summary of Cultural Impacts from Site-specific FWA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Loss of Archaeological Site	Loss of Historic Structure	Degradation of Archaeological Site	Degradation of Historic Structure	Alteration of Cultural Viewshed	Facility Construction	Impact to Sacred Site	***Overall Impact***
FWA								
(W2) Ammunition Breakdown Buildings[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W3) Demo Pond Range[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W4) General Instructional Building CACTF	⊙	○	⊙	○	⊙	⊙	○	⊙
(W6) Indoor Shooting Range[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W8) Range Operation Complex [1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W9) FWA C130/17 Mock-up	○	◎	○	◎	◎	◎	○	◎
(W10) Welding/ Carpentry Shop[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W11) Arctic Village[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W12) SAC East Expansion[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W13) KD Range Expansion[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W14) Pave Range Road[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W15) SAC Security Fence[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W16) Rebuild MFR Firing Line[1]	⊙	○	⊙	○	⊙	⊙	○	⊙

Table 3.10-1b. Summary of Cultural Impacts from Site-specific FWA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Loss of Archaeological Site	Loss of Historic Structure	Degradation of Archaeological Site	Degradation of Historic Structure	Alteration of Cultural Viewshed	Facility Construction	Impact to Sacred Site	***Overall Impact***
(W17) Combined Arms Collective Training Facility	⊙	○	⊙	○	⊙	⊙	○	⊙
(W18) Drivers Training Course Phases 1-5	⊙	○	⊙	○	⊙	⊙	○	⊙
(W19) Latrine – Birch Hill Biathlon Range	⊙	○	⊙	○	⊙	⊙	○	⊙
(W20) Warrior Forward Operations Base Phase 3	⊙	○	⊙	○	⊙	⊙	○	⊙
(W22) Latrines[1]	○	○	○	○	○	○	○	○
TFTA								
(W21) Alpha Impact Area Survey Line	⊙	○	⊙	○	⊙	⊙	○	⊙
YTA								
(W1) Digital Air Ground Integration Range	◎	○	◎	○	○	◎	○	◎
(W5) Stuart Creek Integrated Target Array	⊙	○	⊙	○	⊙	⊙	○	⊙
(W7) Firebird UAV Building	⊙	○	⊙	○	⊙	⊙	○	⊙
(W23) Charlie Battery FOB	⊙	○	⊙	○	⊙	⊙	○	⊙
(W24) YTA Convoy Live Fire Range	◎	○	◎	○	○	◎	○	⊙
(W25) Winter Camp FOB[1]	○	○	○	○	○	○	○	○
(W26) YTA Firing Point 13	⊙	○	⊙	○	⊙	⊙	○	⊙
(W27) Husky DZ FOB	⊙	○	⊙	○	⊙	⊙	○	⊙
(W28) YTA Latrines	⊙	○	⊙	○	⊙	⊙	○	⊙
(W29) YTA Demolition Range	⊙	○	⊙	○	⊙	⊙	○	⊙
(W30) YTA Firing Point Direct Fire	⊙	○	⊙	○	⊙	⊙	○	⊙
(W31) Stuart Creek Access Trails	◎	○	◎	○	○	◎	○	⊙
(W32) Stuart Creek Impact Area Survey Line	⊙	○	⊙	○	⊙	⊙	○	⊙
(W33) FP 9 Direct Firing Point	⊙	○	⊙	○	⊙	⊙	○	⊙
(W34) Husky DZ Resurface	⊙	○	⊙	○	⊙	⊙	○	⊙
(W35) Gravel Source YTA	○	○	○	○	○	○	○	○
(W36) Bravo Battery FOB	⊙	○	⊙	○	⊙	⊙	○	⊙
(W37) Maintenance Building[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W38) High Capacity Well[1]	⊙	○	⊙	○	⊙	⊙	○	⊙
(W39) YTA Roads Upgrade	⊙	○	⊙	○	⊙	⊙	○	⊙
(W40) YTA Manchu Trail Bridge Upgrade	○	○	○	○	○	○	○	○
(W42) Harden Firebird FP and Bivouac Area	⊙	○	⊙	○	⊙	⊙	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.10.2.2.3 Donnelly Training Area

Projects involving ground disturbing activities in areas containing eligible or potentially eligible NRHP resources, or involving ground disturbance in unsurveyed areas have the potential to cause a significant adverse impact to cultural resources by resulting in an unmitigated loss. Adverse impacts to cultural resources from these projects would be mitigated to insignificant (minor or adverse) impacts through the use of BMPs during construction and training (see Section 3.10.2.2.1).

Table 3.10-1c shows the anticipated level of impacts for the DTA site-specific projects with the implementation of the BMPs. Projects D5, D6, D7, D9, D12, D17, D19, D20, and D27 are anticipated to create no impacts to cultural resources. The potential APEs and estimated buffers related to these projects have been 100 percent surveyed for cultural resources. No cultural resources were identified in the potential APEs or estimated buffers related to these undertakings. Project D4 is also anticipated to create no impacts to cultural resources. The potential APEs and estimated buffers related to this project has also been 100 percent surveyed for cultural resources. Although 2 archaeological sites were identified within the APE and buffer for D4, both are not eligible for listing on the NRHP.

Projects D1 and D18 are anticipated to create none to minor impacts to cultural resources. Each of the APEs and estimated buffers related to these projects has been partially surveyed for cultural resources; approximately 50 percent of D1 has been surveyed, and 30 percent of D18. No cultural resources were identified within these surveyed areas. There is, however, potential for cultural resources to be located within the unsurveyed areas related to these projects. Prior to implementation of these proposed projects in unsurveyed areas, the USARAK CRM would be contacted to facilitate a cultural survey of the proposed project's APE.

The APEs and estimated buffers for projects D3 and D11 have also been partially surveyed; approximately 5 percent of D3 has been surveyed, and 75 percent of D11. Two archaeological sites, both of which have not been evaluated for listing on the NRHP, have been identified within the APE and buffer for D3. Both sites would be treated as eligible resources until a full evaluation could be conducted. One archaeological site, which is not eligible for listing on the NRHP, has been identified within the APE and buffer for D11. Implementation of D3 along with cultural BMPs is anticipated to create minor impacts to cultural resources. Implementation of D11 is also anticipated to create no impacts to cultural resources, as the site is not eligible for listing on the NRHP.

Projects D10, D13, D15, D21 (Alternative 4), D22, D23, D24, D25, D26, D28, D29, and D30 are all anticipated to create none to minor impacts to cultural resources. Although no cultural resources have been identified within the potential APEs and estimated buffers related to these projects, the APEs and buffers fall entirely within unsurveyed lands, thus there is potential for cultural resources to be located in these areas. Prior to implementation of these proposed projects, the USARAK CRM should be contacted to facilitate a cultural survey of the proposed project's APE.

Projects D2, D14, D21 (Alternatives 2 and 3), and D31 are all anticipated to create minor impacts to cultural resources. The potential APEs and estimated buffers for these projects fall mainly within unsurveyed lands, thus there is potential for cultural resources to be located in these areas. Prior to implementation of these proposed projects, the USARAK CRM would be contacted to facilitate a cultural survey of the proposed project's APE. The following sites have been identified in previous surveys:

- Within the potential APE and estimated buffer for D2, 9 archaeological sites have been identified. Of these 9 sites, 2 are eligible for listing on the NRHP, 3 are not eligible, and 4 have yet to be evaluated. The 4 unevaluated resources would be treated as eligible until they have been fully evaluated for listing on the NRHP. Implementation of D2 is anticipated to create minor impacts to cultural resources.

- Within the potential APE and estimated buffer for D14, 1 archaeological site has been identified. The site is eligible for listing on the NRHP. Implementation of D14 is anticipated to create minor impacts to cultural resources.
- Within the potential APE and estimated buffer for D21 (Alternative 2), 1 archaeological site has been identified. The site is not eligible for listing on the NRHP. Implementation of D21 (Alternative 2) is anticipated to create no impacts to cultural resources, as the identified site is not eligible for listing on the NRHP.
- Within the potential APE and estimated buffer for D21 (Alternative 3), 2 archaeological sites have been identified. The sites are both eligible for listing on the NRHP. Implementation of D21 (Alternative 3) is anticipated to create minor impacts to cultural resources.
- Within the potential APE and estimated buffer for D31, 4 archaeological sites have been identified. One of the sites is eligible for listing on the NRHP; the other 3 have not been evaluated for listing. The 3 unevaluated resources would be treated as eligible until they have been fully evaluated for listing on the NRHP. Implementation of D31 is anticipated to create minor impacts to cultural resources as the four identified sites represent 1 percent of the total cultural resources identified within the boundaries of DTA.

Projects D8, target emplacement, would be conducted within DTA impact areas; and are therefore, unsurveyed. It is unlikely that D8 would impact cultural sites. In addition, D16 would not involve ground disturbance, therefore, no impacts on cultural resources would be anticipated.

Table 3.10-1c. Summary of Cultural Impacts from Site-specific DTA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Loss of Archaeological Site	Loss of Historic Structure	Degradation of Archaeological Site	Degradation of Historic Structure	Alteration of Cultural Viewshed	Facility Construction	Impact to Sacred Site	***Overall Impact***
(D1) Range Operation Complex[1]	⊙	○	⊙	○	○	⊙	○	⊙
(D2) Donnelly Training Area Roads	⊙	○	⊙	○	○	⊙	○	⊙
(D3/D4) Donnelly Training Area Firing Points	○	○	○	○	○	○	○	○
(D5) New Load Ramps at Donnelly DZ	○	○	○	○	○	○	○	○
(D6) MATCH Shoot House at Colorado South[1]	○	○	○	○	○	○	○	○
(D7) Expand KD Range[1]	○	○	○	○	○	○	○	○
(D8) Target Emplacement	○	○	○	○	○	○	○	○
(D9) Construct additional support buildings at BAX/CACTF	○	○	○	○	○	○	○	○
(D10) Maintenance Buildings for units training at Donnelly Training Area[1]	⊙	○	⊙	○	○	⊙	○	⊙
(D11) Beales Replacement[1]	○	○	○	○	○	○	○	○

Table 3.10-1c. Summary of Cultural Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Loss of Archaeological Site	Loss of Historic Structure	Degradation of Archaeological Site	Degradation of Historic Structure	Alteration of Cultural Viewshed	Facility Construction	Impact to Sacred Site	***Overall Impact***
(D12) Area of Responsibility Village	○	○	○	○	○	○	○	○
(D13) Theater Specific Village	⊙	○	⊙	○	○	⊙	○	⊙
(D14) Expand OP 26 for Range Control West Operations	⊙	○	⊙	○	○	⊙	○	⊙
(D15) Delineate Donnelly Training Area East Boundary	⊙	○	⊙	○	○	⊙	○	⊙
(D16) Sign the impact area	○	○	○	○	○	○	○	○
(D17) Improve Buffalo DZ	○	○	○	○	○	○	○	○
(D18) Expand Buffalo DZ	⊙	○	⊙	○	○	⊙	○	⊙
(D19) Extend the Donnelly FLS	○	○	○	○	○	○	○	○
(D20) Convert Fuel Break to Airstrip	○	○	○	○	○	○	○	○
(D21-2) New Road to bypass CTR	○	○	○	○	○	○	○	○
(D21-3) New Road to bypass CTR	⊙	○	⊙	○	○	⊙	○	⊙
(D21-4) New Road to bypass CTR	⊙	○	⊙	○	○	⊙	○	⊙
(D22) BAX East Maneuver Corridor	⊙	○	⊙	○	○	⊙	○	⊙
(D23) BRTA Roads	⊙	○	⊙	○	○	⊙	○	⊙
(D24) GRTA Roads	⊙	○	⊙	○	○	⊙	○	⊙
(D25) Combat Outposts	⊙	○	⊙	○	○	⊙	○	⊙
(D26) Replace or Relocate Simpsonville Buildings	⊙	○	⊙	○	○	⊙	○	⊙
(D27) Construct UAV System tracking pad and access	○	○	○	○	○	○	○	○
(D28) Delta Creek Assault Strip	⊙	○	⊙	○	○	⊙	○	⊙
(D29) Install Waterless Latrines[1]	⊙	○	⊙	○	○	⊙	○	⊙
(D30) Construct FAARPs1	⊙	○	⊙	○	○	⊙	○	⊙
(D31) Add New OPs along the Winter Trail	⊙	○	⊙	○	○	⊙	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.10.2.3 Proposed Action 2 - Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.10.2.3.1 Fort Richardson

The area within the proposed FRA SAC Range Adaptable Use Zone has been 95 percent surveyed for cultural resources, during which 7 archaeological sites were identified. Five of these sites have been

determined not eligible for listing on the NRHP, while the remaining 2 have not been evaluated for listing. Based on the surveyed area, potential for unknown or undiscovered cultural resources within the proposed FRA SAC Range Adaptable Use Zone is low. Depending on the type and location of undertakings within the FRA SAC Range Adaptable Use Zone, impacts created by implementation of Proposed Action 2 to these resources may be significant. The USARAK CRM would be consulted before implementation of undertakings within the area to reduce or avoid impacts to cultural resources to minor or no impact. Adverse impacts to cultural resources from these projects would be mitigated to insignificant (minor or adverse) impacts through the use of BMPs during construction and training (see Section 3.10.2.2.1).

3.10.2.3.2 Fort Wainwright

The area within the proposed FWA SAC Range Adaptable Use Zone has been 99 percent surveyed for cultural resources, during which no cultural resources were identified. Based on the surveyed area, potential for unknown or undiscovered cultural resources within the proposed FWA SAC Range Adaptable Use Zone is low. Implementation of Proposed Action 2 at FWA is not anticipated to create any impacts to cultural resources. Should any unknown cultural resources be denitrified during the implementation of Proposed Action 2, the USARAK CRM should be notified to facilitate evaluation, documentation, and mitigation of the resource.

The area within the proposed YTA SAC Range Adaptable Use Zone has been 13 percent surveyed for cultural resources, during which 2 archaeological sites were identified. One of these sites is eligible for listing on the NRHP; the other has not been evaluated for listing and should be treated as an eligible resource. Based on the surveyed area, potential for unknown or undiscovered cultural resources within the proposed YTA SAC Range Adaptable Use Zone is high. Depending on the type and location of undertakings within the proposed YTA SAC Range Adaptable Use Zone, impacts created by implementation of Proposed Action 2 to these resources may be significant. The USARAK CRM would be consulted before implementation of undertakings within the area to reduce or avoid impacts to cultural resources. Adverse impacts to cultural resources from these projects would be mitigated to insignificant (minor or adverse) impacts through the use of BMPs during construction and training (see Section 3.10.2.2.1).

3.10.2.3.3 Donnelly Training Area

The area within the proposed DTA SAC Range Adaptable Use Zone has been 72 percent surveyed for cultural resources, during which 6 archaeological sites were identified. One of these sites is eligible for listing on the NRHP; the other 5 have not been evaluated for listing and would be treated as an eligible resource. Based on the surveyed area, potential for unknown or undiscovered cultural resources within the proposed DTA SAC Range Adaptable Use Zone is low to moderate. Depending on the type and location of undertakings within the proposed DTA SAC Range Adaptable Use Zone, impacts created by implementation of Proposed Action 2 to these resources may be significant. The USARAK CRM would be consulted before implementation of undertakings within the area to reduce or avoid impacts to cultural resources. Adverse impacts to cultural resources from these projects would be mitigated to insignificant (minor or adverse) impacts through the use of BMPs during construction and training (see Section 3.10.2.2.1).

3.10.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts to cultural resources through unmitigated loss of cultural resources. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following cultural resource management guidelines (SOPs and BMPs) that have been developed to reduce overall adverse impacts to cultural resources from routine range projects. Table 3.10-2 summarizes potential type and

intensity of impacts to cultural resources from routine range projects considering the use of cultural resource management guidelines.

SOPs to be used which avoid impacts to cultural resources include:

- Continued implementation of ICRMPs which help maintain cultural resource sustainability and provides guidance on the best methods for compliance with cultural resources management responsibilities.
- Further development of Army Alternate Procedures to further identify methods of maintaining cultural resource sustainability into the future.
- Exempted Undertakings and Categorical Exclusions – Undertakings involving cultural resources that fall under the following Programmatic Agreements or Program Alternatives are considered exempt or categorical exclusions, requiring no further review from USARAK CRM or SHPO and include:
  - Program Comment for Capehart Wherry Era (1949-1962) Army Family Housing.
  - Program Comment for Army Cold War Era Unaccompanied Personnel Housing (1946-1974).
  - Program Comment for World War II and Cold War Era Ammunition Storage Facilities (1939-1974).
  - Program Comment for World War II and Cold War Era (1939*1974) Army Ammunition and Production Facilities and Plants.
  - Nationwide Programmatic Agreement for World War II Temporary Buildings.
- Continue to curate discovered artifacts with Federally-certified museums in accordance with the NHPA.

Project Design

- Continued coordination with the USAG FRA and USAG FWA Cultural Resources Program during site planning.
- USARAK CRM continued coordination and consultation with the Alaska SHPO to identify any adverse impacts and mitigation requirements.

Construction

- Continue notifications to the USAG FRA and USAG FWA Cultural staff in the event of inadvertent discovery of cultural resources (artifacts, etc.) during range construction.

Operations

- Continued coordination with the USAG FRA and USAG FWA Cultural Resources Program during changes of range operations.
- Continue notifications to the USAG FRA and USAG FWA Cultural staff in the event of inadvertent discovery of cultural resources (artifacts, etc.) during range operations.
- Conduct systematic monitoring of archaeological sites that are eligible for listing on the NRHP.
- USARAK CRM staff would review all repairs and other projects planned for historic structures and buildings.

BMPs to be used to avoid impacts to cultural resources during project design, construction and operation include:

- Initiate and continue consultations with Alaska Native tribes to identify and evaluate Traditional Cultural Properties (TCPs) that may be present on military managed lands in Interior Alaska.
- Survey unsurveyed areas and evaluate resources identified during survey. Those resources determined to be NRHP eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska state standards for archaeology. This would not apply in areas that have not been previously surveyed, except in those areas which fall under Army-wide exemptions for

undertakings due to an imminent threat to human health and safety as presented in the Army Alternative Procedures (AAP; Section 4.1, Army Wide Exempted Undertakings) which include:
  - In-place disposal of unexploded ordinance.
  - Disposal of ordinance in existing open burning/open detonation units.
  - Emergency response to releases of hazardous substances, pollutants, and contaminants.
  - Military activities in existing designated SDZs.
- Sites that are currently identified, but have not been evaluated for NRHP eligibility will be treated as NRHP eligible sites; until such time that they are evaluated for NRHP eligibility. Once evaluated, sites determined to be NRHP eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as Alaska state standards for archaeology.
- Avoid cultural sites during design utilizing information gathered from on-the-ground surveys.
- Curation of archaeological material recovered per Memorandum of Agreement between USARAK and the University of Alaska Museum.
- Continued development and implementation of an information and education program for personnel using USARAK lands and the public. This would enhance the conservation of cultural resources on USARAK lands.
- Continued evaluation of NRHP eligibility of archaeological sites potentially impacted by placing ranges in use.

Table 3.10-2. Summary of Cultural Resource Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Loss of Archaeological Site	Loss of Historic Structure	Degradation of Archaeological Site	Degradation of Historic Structure	Alteration of Cultural Viewshed	Facility Construction	Impact to Sacred Site	*Overall Impact*
Berm Creation & Maintenance	◎	○	◎	○	⊙	⊙	○	◎
Bleacher Enclosure	⊙	○	⊙	⊙	⊙	⊙	○	⊙
Bridge Installation	◎	○	◎	○	⊙	⊙	○	⊙
Building Construction	◎	○	◎	⊙	◎	◎	○	◎
Control Tower	⊙	○	⊙	○	◎	⊙	○	⊙
Covered Hall	⊙	○	⊙	○	◎	⊙	○	⊙
Culvert Installation	◎	○	◎	⊙	⊙	⊙	○	⊙
Fencing	⊙	○	⊙	○	⊙	○	○	○
Firing Lane Creation & Maintenance	⊙	○	⊙	⊙	⊙	⊙	○	⊙
Firing Line Creation & Maintenance	⊙	○	⊙	⊙	⊙	⊙	○	⊙
FOB Creation and Maintenance	◎	○	◎	○	◎	◎	○	◎
Grading/Shaping	◎	○	◎	○	⊙	⊙	○	◎
Gravel Pits	◎	○	◎	○	⊙	⊙	○	◎

Table 3.10-2. Summary of Cultural Resource Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial							
	Loss of Archaeological Site	Loss of Historic Structure	Degradation of Archaeological Site	Degradation of Historic Structure	Alteration of Cultural Viewshed	Facility Construction	Impact to Sacred Site	*Overall Impact*
Hardened Target Creation & Maintenance	○	○	○	○	○	○	○	○
Hardstands Creation and Maintenance	⊙	○	⊙	○	⊙	⊙	○	⊙
Improvised Explosive Device Defeat	◎	○	◎	○	⊙	⊙	○	◎
Land Clearing & Vegetation	◎	○	◎	○	⊙	⊙	○	◎
Latrine	⊙	○	⊙	○	⊙	⊙	○	⊙
Mowing	⊙	○	⊙	⊙	○	○	○	⊙
Observation Points Creation & Maintenance	⊙	○	⊙	○	⊙	⊙	○	⊙
Pit Toilets Creation and Maintenance	⊙	○	⊙	○	⊙	⊙	○	⊙
Prescribed Fire	○	○	○	○	○	○	○	○
Road (Trail) Creation & Maintenance	◎	○	◎	○	⊙	⊙	○	◎
Small Arms Siting	⊙	○	⊙	⊙	○	○	○	⊙
Boundary Line Clearings	◎	○	◎	○	⊙	⊙	○	◎
Target Emplacement	○	○	○	○	○	○	○	○
Utility Line Creation & Maintenance	◎	○	◎	○	⊙	⊙	○	◎
UXO Surveys	◎	○	◎	○	⊙	⊙	○	◎
Wood Pile Burning	○	○	○	○	○	○	○	○
Urban Training Village	⊙	○	⊙	⊙	○	○	○	⊙

Overall, cultural resources may experience minor to moderate adverse impacts from routine range projects. Moderate impacts may occur from implementation of those projects that involving construction of buildings for planning or gathering purposes, road construction, routine earth moving, and routine vegetation removal and disturbance. Minor impacts may occur from implementation of those projects that involve active combat training, firing points and lanes, soldier training preparation (FOB set-up), bivouac operations, linear facilities such as boundaries and fencing, latrine constriction and maintenance, and water crossing and drainage control. Project involving target placement and routine fire management are not anticipated to create any impacts to cultural resources. Implementation of SOPs and BMPs would be beneficial, shaping project designs to reduce or avoid impacts to cultural resources. All routine range maintenance, upgrade and construction projects would conform to any mitigating measures agreed to at the completion of the Section 106 consultation process.

3.11 NOISE

3.11.1 Installation Overview

Noise, simply defined as unwanted sound, can have an adverse effect on humans and their activities, as well as on the natural environment. The impact of noise is highly dependent upon the characteristics of the noise (e.g., loudness, pitch, time of day, and duration) and the sensitivity (or perception) of the noise receptor. The standard unit of sound amplitude measurement is the decibel; however, since the human ear is not equally sensitive to sound at all frequencies, the decibel A-weighted scale (dBA) is typically used to measure noise as it relates to human sensitivity. This section discusses noise impacts as it relates to noise-sensitive land uses (e.g., residential and recreational areas); noise can also affect wildlife, which is discussed in Section 3.6.

To assist in land use planning, the Army implements an Environmental Noise Management Program (described in AR 200-1), which follows Federal law concerning noise generated by Army activities, including aircraft operations, range firing, and weapons testing. The goals of the program are to protect the health and welfare of people on and off installations affected by Army-produced noise and to reduce community annoyance from environmental noise to the extent feasible, in a manner consistent with an installation's military mission.

The Environmental Noise Management Program requires installations to implement environmental noise policies to identify and control the effects of noise. Among these policies is the requirement to predict noise levels for long-range planning, including preparation of noise contour maps. The maps delineate up to three different noise zones, which are based on the expected percentage of the population that would be highly annoyed by environmental noise. These noise zones are determined through mathematical modeling and computer simulations and include the following:

- Noise Zone I is typically compatible with most noise-sensitive land uses.
- Noise Zone II is normally incompatible with noise-sensitive land uses. Exposure to noise within these areas is considered significant and land uses should normally be limited to activities such as industrial, manufacturing, transportation and resource production. However, if the community determines that lands must be used for residential purposes, then noise level reduction features should be incorporated into the design and construction of buildings.
- Noise Zone III is incompatible with most land uses. The noise levels in this zone are considered so severe that noise-sensitive land uses should not be considered in this area.

In addition to the Environmental Noise Management Program, the following management programs are implemented by USARAK that take into account noise during land use planning: the SRP; the ITAM; and the Range and Training Land Management Program. Also, the following mitigation measures are currently in place at the USARAK garrisons and are continually revised and reviewed to respond to new or increasing impacts:

- Continued implementation of existing USARAK Range Regulation 350-2 (*Training*); and
- Continued public notification of nighttime firing.

Noise quality at the USARAK garrisons is typical of military training facilities due to the training and equipment usage on site. Noise sources from the garrisons primarily consist of: transportation noise from aircraft and vehicles; impulsive noise from armor and artillery firing and demolition operations; and noise from firing at SAC ranges. As required by the Environmental Noise Management Program, USARAK developed an Installation Noise Management Plan for each installation in 2001, which assessed the existing noise conditions and is discussed in the following sections.

3.11.1.1 Fort Richardson

Noise sources on FRA are primarily associated with artillery from the firing ranges (small and large caliber weapons) and from aircraft at Bryant Army Air Field (AAF) and Elmendorf AFB (USARAK, 2004b). Sensitive noise receptors within FRA include housing on the cantonment area. These neighborhoods are bound on the south and east by hills and a large forested area, blocking potential noise from the nearby Glenn Highway (USARAK, 2008b). Other noise receptors include recreational users within the installation and visitors at the Chugach State Park, which lies along the installation's eastern and southern border, and Anchorage's Far North Bicentennial Park, which is located in the western portion of the installation.

The noise analysis conducted for the installation's Environmental Noise Management Plan concluded that no significant noise problems were associated with existing operations at FRA. Noise contours for both small arms and larger caliber weapons were shown to be contained within military lands (FRA or Elmendorf AFB), but some Zone II and Zone III contours overlapped a small portion of the ocean near Eagle River Flats and Otter Lake Wildlife and Recreation Area (USARAK, 2004a). Although some noise generated from live-fire activity in the FRA Small Arms Range Complex can be heard at adjacent Glenn Highway, there are no noise-sensitive land uses in this area (USARAK, 2008b).

The FRA receives few complaints each year from the surrounding community regarding environmental noise (USARAK, 2004a). Most calls are from people with questions or requests for information. The few complaints logged most recently are due to noise form rotary-wing flights and fixed-wing aircraft, typically from other installations in or approaching FRA airspace. To lessen noise-related problems, FRA has: 1) adopted newer, quieter equipment, and (2) changed timing and location of training activities to reduce noise impact on the public.

3.11.1.2 Fort Wainwright

Noise sources on FWA are primarily associated with artillery from the firing ranges and aircraft from Wainwright AAF and Eielson AFB (USARAK, 2004b). Sensitive noise receptors in the FWA area include portions of the cantonment area of FWA Main Post, City of Fairbanks adjacent to the western border of the FWA cantonment area. Residential developments have grown eastward, abutting the installation boundary along the North Post, the main cantonment area, and the western side of the SAC range. Other sensitive receptors include recreational users within the installation.

The noise analysis conducted for the installation's Environmental Noise Management Plan concluded that no significant noise problems were associated with existing operations at FWA (USARAK, 2004). The Zone II noise contour for large caliber weapons extends slightly off the installation along the eastern boundary (adjacent the Richardson Highway), but there are no noise-sensitive land uses within this overlap area. The Zone III contours are contained within the installation. Also, according to a 2006 Joint Land Use Study covering operations at FWA and Eielson AFB, noise zones for small arms fire at FWA's SAC Range are largely contained within FWA boundaries. Although small arms fire may be heard at adjacent Richardson Highway, no noise sensitive land uses exist along that stretch of the highway corridor. In addition, the Fairbanks North Star Borough has incorporated military noise contours into their regional comprehensive plan and development codes, effectively limiting future development in areas that may conflict with existing noise contours (USARAK, 2008b).

The Chena River State Recreation Area lies adjacent to YTA's northern boundary and is managed for public recreation. Both TFTA and YTA are relatively isolated and reasonably protected from boundary encroachment, except for remote homesteads. Existing operations that generate noise at TFTA are primarily maneuver training with occasional large caliber weapons firing and demolition activity. The noise contours for TFTA are contained well within the installation boundary. Existing YTA noise sources include demolition activity and artillery firing. The YTA noise contours are located towards the center of the training area, well within the installation's boundary (USARAK, 2004a).

FWA receives relatively few noise complaints each year from the surrounding community (USARAK, 2004a). Most of the complaints that have been logged are questions about the source of the noise and when the noise is expected to cease. The FWA staff has found that advance notice to the public on training schedules decreases the number of calls to the Public Affairs Office, the department responsible for managing noise complaints.

3.11.1.3 Donnelly Training Area

Noise sources at DTA are primarily associated with artillery from the firing ranges, aircraft from Allen AAF and Eielson AFB, and bomb detonation (USARAK, 2004a; USARAK, 2004b). Some of the noise reported on and off the Army installation is due to Air Force aircraft flying over DTA airspace. Noise contours from ground training all fall within installation boundary.

DTA receives relatively few noise complaints each year from the surrounding community (USARAK, 2004a). Most calls are from people with questions or requests for information. To lessen noise-related problems, DTA has: 1) changed to newer, quieter equipment, and 2) changed timing and location of training activities to reduce noise impact on the public (Transformation). Also, DTA provides three-day notice to the public for noise generated by unusual flight patterns or training operations, atypical use of munitions, and atypical or new use of areas.

3.11.2 Environmental Consequences

The extent of the noise impacts would depend on the size and nature of the project and proximity to noise-sensitive land uses, such as residential and recreational areas. Direct impacts are further discussed by the No Action and Proposed Action alternatives below.

The following categories are used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant)** – The degree to which activities would produce additional noise detectable to inhabitants and users of an installation and surrounding areas.
- **Severe (significant)** – Activities that exceed a 65 A-weighted decibel day night average would represent a significant impact.

In general, the following factors were considered to determine level of noise impacts:

- ***Nature and size of a construction project*** – During construction, incremental noise increases would occur from the usage of heavy equipment, ground-leveling activities, and trucks transporting materials and supplies to/from the construction site. Projects with larger footprints and involving intensive earthwork were assumed to have greater potential noise impacts.
- ***Proximity of construction projects to noise-sensitive land uses*** – The potential for construction-related noise increases to propagate into noise-sensitive land uses was largely determined by a construction site's distance to such areas. Within an installation, noise-sensitive areas considered for purposes of this analysis included areas open to recreational users and the cantonment area. Outside an installation, local communities bordering the installations were considered noise-sensitive areas.
- ***Proximity of a new facility to noise-sensitive land uses*** – Similar to construction-related noise, the potential for operational-related noise increases to propagate into noise-sensitive land uses was largely determined by a new facility's distance to such areas.

3.11.2.1 No Action

Under the No Action Alternative, no impacts are anticipated for noise as USARAK would continue to implement its Environmental Noise Management Program to ensure that new projects do not result in impacts to neighboring communities.

3.11.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.11.2.2.1 Fort Richardson

As shown in Table 3.11-1, the overall levels of noise impact from site-specific projects at FRA would range from none to minor. All of the noise impacts would be attributable to construction activities. During construction, incremental noise increases would occur from the usage of heavy equipment, ground-leveling activities, and trucks transporting materials and supplies to/from the construction site. The majority of site-specific projects are located well within the installation and significant noise level increases are not expected to extend beyond the boundary of the installation and into noise-sensitive areas (e.g., residential). Projects R1, R5, R6, and R8 involve construction of new buildings that require more intensive ground disturbance activities, equipment handling, and vehicles that would contribute to temporary increases in noise levels. Some minor noise increases may be detected to off-post and recreational areas near the western boundary (from Projects R1 and R5) depending on weather conditions (e.g., high winds, little vegetation). Construction would be limited to daytime hours and incremental noise increases would be intermittent and temporary. On-site construction noise would primarily be limited to the immediate vicinity of the project site and mainly affect the health of the construction workers. Adherence to appropriate Occupational Safety & Health Act (OSHA) standards and AR 200-1 would protect the workforce from excessive noise. Some noise increases could occur in portions of the cantonment along Project R7, which involves upgrades of the roads in the training area, but these would be minor audible increases and short-term.

No changes in baseline noise conditions are expected to occur during operations of the site-specific projects. Some additional traffic-related noise would occur on roads near the new facilities (e.g., Projects R6 and R8); however, these noise intermittent increases would not occur near noise-sensitive land uses and would be well within the boundaries of the installation.

Table 3.11-1a Summary of Noise Impacts from Site-specific FRA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Increased noise during construction to receptors within installation boundary	Increased noise during construction to receptors outside of installation	Increased noise during operations to receptors within installation boundary	Increased noise during operations to receptors outside of installation	***Overall Impact***
(R1) FRA UAC[1]	⊙	⊙	○	○	⊙
(R2) Dig a well at the ISBC Site	○	○	○	○	○
(R3) Raise the ISBC Road	⊙	○	○	○	⊙
(R4) Provide Turnaround IPBC	⊙	○	○	○	⊙

Table 3.11-1a Summary of Noise Impacts from Site-specific FRA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Increased noise during construction to receptors within installation boundary	Increased noise during construction to receptors outside of installation	Increased noise during operations to receptors within installation boundary	Increased noise during operations to receptors outside of installation	***Overall Impact***
(R5) Create Bivouac Site UAC	⊙	⊙	○	○	⊙
(R6) Range Operation Complex	⊙	⊙	○	○	⊙
(R7) FRA Roads	⊙	○	○	○	○
(R8) Vehicle Storage/ Maintenance Building[1]	⊙	⊙	○	○	⊙
(R9) Install Flagpole ER Gate	○	○	○	○	○
(R10) Waterless Arctic Latrine	○	○	○	○	○
(R11) Covered Bleachers[1]	⊙	○	○	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.11.2.2.2 Fort Wainwright

As shown in Table 3.11-1b, the overall levels of noise impact from site-specific projects at FWA would range from none to minor. The majority of projects are well within the installation boundary and would not contribute to long-term significant levels of noise increases outside of the installation (W2, W3, W4, W10, W11, W12, W13, W14, W15, W16, W19, W20, W28, W29, W30, W31, W33, W37, W38, and W42). Similar to the impacts description for FRA, most of the impacts would occur from construction activities (W1, W5, W6, W7, W8, W9, W17, W18, W21, W23, W24, W25, W26, W27, W32, W34, W35, W36, W39, W40, W42). During construction, additional noise increases would range from none to moderate impacts to noise receptors depending on the size and nature of the construction project and proximity to noise-sensitive land uses. Projects involving more intensive construction work would contribute to increased noise levels that may impact the cantonment area and/or recreational users, but are considered minor as these increases would be highly-localized, intermittent, and short-term. The construction of Projects W6, W21, W25, W34, and W35 may contribute to some increased noise levels off-post as these projects are located closer to the installation boundary; however, these increases are not expected to propagate into any noise-sensitive areas outside of the installation.

During operations, Projects W7 and W35, which are located in the western portion of the YTA, would be the only site-specific projects that could result in noise impacts to recreational users inside the installation. Project W7 involves a new building to support UAV operations that would cause minor, intermittent, localized noise that could be experienced by recreational users. This additional noise source is considered negligible beyond the installation boundary. Project W35 involves gravel blasting which could be

experienced by recreational users and may be audible in areas adjacent the installation; however, impacts from this source are considered moderate for recreational users as these would be localized, occurring infrequently, and considered negligible for areas outside the installation due to its remoteness from any local communities (USARAK, 2005).

Table 3.11-1b Summary of Noise Impacts from Site-specific FWA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Increased noise during construction to receptors within installation boundary	Increased noise during construction to receptors outside of installation	Increased noise during operations to receptors within installation boundary	Increased noise during operations to receptors outside of installation	***Overall Impact***
FWA					
(W2) Ammunition Breakdown Buildings[1]	⊙	○	○	○	⊙
(W3) Demo Pond Range[1]	⊙	○	○	○	⊙
(W4) General Instructional Building CACTF	⊙	○	○	○	⊙
(W6) Indoor Shooting Range[1]	⊙	⊙	○	○	⊙
(W8) Range Operation Complex [1]	⊙	○	○	○	⊙
(W9) FWA C130/17 Mock-up	⊙	○	○	○	⊙
(W10) Welding/ Carpentry Shop[1]	⊙	○	○	○	⊙
(W11) Arctic Village[1]	⊙	○	○	○	⊙
(W12) SAC East Expansion[1]	⊙	○	○	○	⊙
(W13) KD Range Expansion[1]	⊙	○	○	○	⊙
(W14) Pave Range Road[1]	⊙	○	○	○	⊙
(W15) SAC Security Fence[1]	⊙	○	○	○	⊙
(W16) Rebuild MRF Firing Line[1]	⊙	○	○	○	⊙
(W17) Combined Arms Collective Training Facility	⊙	○	○	○	⊙
(W18) Drivers Training Course Phases 1-5	◎	○	○	○	◎
(W19) Latrine – Birch Hill Biathlon Range	○	○	○	○	○
(W20) Warrior Forward Operations Base Phase 3	⊙	○	○	○	⊙
(W22) Latrines[1]	○	○	○	○	○
TFTA					
(W21) Alpha Impact Area Survey Line	⊙	○	○	○	⊙
YTA					
(W1) Digital Air Ground Integration Range	⊙	○	○	○	⊙

Table 3.11-1b Summary of Noise Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Increased noise during construction to receptors within installation boundary	Increased noise during construction to receptors outside of installation	Increased noise during operations to receptors within installation boundary	Increased noise during operations to receptors outside of installation	***Overall Impact***
(W5) Stuart Creek Integrated Target Array	⊙	○	○	○	⊙
(W7) Firebird UAV Building	⊙	○	⊙	○	⊙
(W23) Charlie Battery FOB	⊙	○	○	○	⊙
(W24) YTA Convoy Live Fire Range Phase 1	⊙	○	○	○	⊙
(W25) Winter Camp FOB[1]	⊙	⊙	○	○	⊙
(W26) YTA Firing Point 13	⊙	○	○	○	⊙
(W27) Husky DZ FOB	⊙	○	⊙	○	⊙
(W28) YTA Latrines	○	○	○	○	○
(W29) YTA Demolition Range	⊙	○	○	○	⊙
(W30) YTA Firing Point Direct Fire	⊙	○	○	○	⊙
(W31) Stuart Creek Access Trails	⊙	○	○	○	⊙
(W32) Stuart Creek Impact Area Survey Line	⊙	○	○	○	⊙
(W33) FP 9 Direct Firing Point	○	○	○	○	○
(W34) Husky DZ Resurface	◎	⊙	○	○	◎
(W35) Gravel Source YTA	◎	○	◎	○	◎
(W36) Bravo Battery FOB	⊙	○	○	○	⊙
(W37) Maintenance Building[1]	⊙	○	○	○	⊙
(W38) High Capacity Well[1]	○	○	○	○	○
(W39) YTA Roads Upgrade	◎	○	○	○	⊙
(W40) YTA Manchu Trail Bridge Upgrade	⊙	○	○	○	⊙
(W42) Harden Firebird FP and Bivouac Area	⊙	○	○	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.11.2.2.3 Donnelly Training Area

As shown in Table 3.11-1c, the overall levels of noise impact from site-specific projects at DTA would range from none to minor. The majority of projects are well within the installation boundary and would not contribute to long-term significant levels of noise impacts outside of the installation (D5-D8, D11, D12, D15-D17, D19, D20, D29, and D30). Similar to the impacts description for FWA, most of the impacts would occur from construction activities and would mainly impact recreational users (D1-D4, D9, D10, D13, D14, D18, D21-D26, D28 and D31). D18 may contribute to some increased noise levels off-post as this project involves intensive earthwork over 180 acres of land and is located approximately a mile from the boundary; however, these noise levels would be short-term and are not expected to propagate into any noise-sensitive areas beyond the installation.

During operations, D13, D20, D21, and D22 could affect recreational users. D13 involves new training areas that could involve helicopter-facilitated maneuvers. These noise impacts are considered minor as these increases would be intermittent and localized. D20 involves creation of an air landing strip which would cause moderate increases of noise within DTA. D21 and D22 involve new transportation corridors that would add traffic-related noise.

Table 3.11-1c Summary of Noise Impacts from Site-specific DTA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Increased noise during construction to receptors within installation boundary	Increased noise during construction to receptors outside of installation	Increased noise during operations to receptors within installation boundary	Increased noise during operations to receptors outside of installation	*Overall Impact*
(D1) Range Operation Complex[1]	⊙	○	○	○	⊙
(D2) DTA Roads	⊙	○	○	○	⊙
(D3/D4) DTA Firing Points	⊙	○	○	○	⊙
(D5) New Load Ramps at Donnelly DZ	⊙	○	○	○	⊙
(D6) MATCH Shoot House at Colorado South[1]	⊙	○	○	○	⊙
(D7) Expand KD Range[1]	⊙	○	○	○	⊙
(D8) Target Emplacement	○	○	○	○	○
(D9) Construct additional support buildings at BAX/CACTF	⊙	○	○	○	⊙
(D10) Maintenance Buildings for units training at DTA[1]	⊙	○	○	○	⊙
(D11) Beales Replacement[1]	⊙	○	○	○	⊙
(D12) Area of Responsibility Village	⊙	○	○	○	⊙
(D13) Theater Specific Village	⊙	○	⊙	○	⊙

Table 3.11-1c Summary of Noise Impacts from Site-specific DTA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Increased noise during construction to receptors within installation boundary	Increased noise during construction to receptors outside of installation	Increased noise during operations to receptors within installation boundary	Increased noise during operations to receptors outside of installation	*Overall Impact*
(D14) Expand OP 26 for Range Control West Operations	⊙	⊙	○	○	⊙
(D15) Delineate DTA East Boundary	○	○	○	○	○
(D16) Sign the Impact Area	○	○	○	○	○
(D17) Improve Buffalo DZ	⊙	○	○	○	⊙
(D18) Expand Buffalo DZ	⊙	⊙	○	○	⊙
(D19) Extend the Donnelly FLS	⊙	○	○	○	⊙
(D20) Convert Fuel Break to Airstrip	⊙	○	◎	○	◎
(D21) New Road to bypass CTR	◎	○	⊙	○	⊙
(D22) BAX East Maneuver Corridor	⊙	○	⊙	○	⊙
(D23) BRTA Roads	⊙	○	○	○	⊙
(D24) GRTA Roads	⊙	○	○	○	⊙
(D25) Combat Outposts	◎	○	○	○	⊙
(D26) Replace or Relocate Simpsonville Buildings	⊙	○	○	○	⊙
(D27) Construct UAV System tracking pad and access	⊙	○	○	○	⊙
(D28) Delta Creek Assault Strip	⊙	○	○	○	⊙
(D29) Install Waterless Latrines[1]	○	○	○	○	○
(D30) Construct FAARPs[1]	○	○	○	○	○
(D31) Add New OPs along the Winter Trail	⊙	○	○	○	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.11.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.11.2.3.1 Fort Richardson

Establishment of an FRA SAC Range Adaptable Use Zone could potentially result in some noise from training exercises to propagate outside the installation into bordering communities (e.g., Eagle River) and recreational areas (Chugach State Park to the east and Far North Bicentennial Park to the west) as the zone extends toward the east and west. Any project within the proposed adaptable use zone determined to

create a potential change in noise contours during operations and training, extending off installation boundaries, would require noise modeling by the Center for Health Promotion and Preventative Medicine (CHPPM). To avoid significant adverse impacts, the Army would review proposed projects and activities from the standpoint of noise impacts and implement other noise mitigation procedures as discussed later under Proposed Action 3, causing overall minor to moderate noise impacts. Concentrating small arms training areas into one designated zone would provide a beneficial impact by limiting the potential of small arms noise from migrating outside the installation boundaries through focusing upgrades and development of small arms ranges into one area. This compatible planning approach would reduce the potential for additional noise propagation into other areas of the installation or outside of the installation that could occur from construction of small arms ranges elsewhere.

3.11.2.3.2 Fort Wainwright

Establishment of an FWA SAC Range Adaptable Use Zone would have no adverse impacts to existing noise conditions as the zone would be within the existing SAC range. The proposed YTA SAC Range Adaptable Use Zone extends to the west near Eielson AFB and is not located near any noise-sensitive land uses, other than the recreational use inside the installation. The zone would concentrate increased noise from training into one designated area and limit the potential of such noise source from dispersing into open-use areas throughout installation and near the north near the Chena River State Recreation Area. Beneficial impacts of limiting the potential for small arms noise migration would be similar to those discussed for FRA.

3.11.2.3.3 Donnelly Training Area

Establishment of a DTA SAC Range Adaptable Use Zone would have no adverse impacts to existing noise conditions. Beneficial impacts of limiting the potential for small arms noise migration would be similar to FRA and FWA.

3.11.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts to noise through exceeding a 65 A-weighted decibel day night average in areas not already affected by training noise. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for noise to reduce overall adverse impacts from routine range projects. Table 3.11-2 summarizes the potential type and intensity of noise impacts as a result of routine range projects considering use of the proposed environmental stewardship range construction guidelines.

SOPs to be used which avoid impacts from noise during project design and planning include:

- Noise generation of the planned use of any given project would consider siting based on the Installation Noise Management Plan noise contours and compatible noise zones.
- Any activity generating a new type of noise source (i.e., new equipment or technologies) which could change existing noise contours or be in conflict with Installation Noise Management Plans would undergo CHPPM noise modeling to detect any potential changes to existing noise conditions.
- Continue to maintain an active noise management program to protect present and future operational capabilities of range land training. This includes continual evaluation of noise impacts that may be produced by ongoing and proposed Army actions/activities, maintenance of a noise complaint management program and minimization of noise impacts and annoyance to the greatest extent practicable.

BMPs to be used to avoid impacts from noise during construction include:

- Adjust construction schedules or limit construction activities to daytime hours within areas of sensitive noise receptors to reduce impacts.
- Ensure construction equipment with internal combustion engines have mufflers which are well maintained.
- Operate construction equipment at lower speeds and increase spaces between equipment.
- Set-up noise barriers or enclosures such as plywood or lead-vinyl curtains for particularly noisy operations near very sensitive receptors.

Table 3.11-2 Summary of Potential Noise Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Noise Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Increased noise during construction to receptors within installation boundary	Increased noise during construction to receptors outside of installation	Increased noise during operations to receptors within installation boundary	Increased noise during operations to receptors outside of installation	*Overall Impact*
Berm Creation & Maintenance	⊙	○	○	○	⊙
Bleacher Enclosure	⊙	○	○	○	⊙
Bridge Installation	⊙	○	○	○	⊙
Building Construction	⊙	⊙	○	○	⊙
Control Tower	⊙	○	○	○	⊙
Covered Hall	⊙	○	○	○	⊙
Culvert Installation	⊙	○	○	○	⊙
Fencing	⊙	○	○	○	⊙
Firing Lane Creation & Maintenance	⊙	○	◎	⊙	◎
Firing Line Creation & Maintenance	⊙	○	◎	⊙	◎
FOB Creation and Maintenance	⊙	⊙	⊙	○	⊙
Grading/Shaping	◎	⊙	○	○	⊙
Gravel Pits	◎	⊙	◎	◎	◎
Hardened Target Creation & Maintenance	○	○	○	○	○
Hardstands Creation and Maintenance	⊙	⊙	○	○	⊙
Improvised Explosive Device Defeat	⊙	⊙	⊙	○	⊙
Land Clearing & Vegetation	◎	⊙	○	⊙	◎
Latrine	○	○	○	○	○
Mowing	○	○	⊙	⊙	⊙
Observation Points Creation & Maintenance	⊙	○	○	○	⊙
Pit Toilets Creation and Maintenance	○	○	○	○	○
Prescribed Fire	○	○	○	○	○

Table 3.11-2 Summary of Potential Noise Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Noise Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial				
	Increased noise during construction to receptors within installation boundary	Increased noise during construction to receptors outside of installation	Increased noise during operations to receptors within installation boundary	Increased noise during operations to receptors outside of installation	*Overall Impact*
Road (Trail) Creation & Maintenance	⊙	⊙	⊙	⊙	⊙
Small Arms Siting	⊙	⊙	◎	◎	◎
Boundary Line Clearings	⊙	⊙	○	○	⊙
Target Emplacement	○	○	○	○	○
Utility Line Creation & Maintenance	⊙	⊙	○	○	⊙
UXO Surveys	○	○	○	○	○
Wood Pile Burning	○	○	○	○	○
Urban Training Village	⊙	○	⊙	○	○

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. In general, the overall level of potential adverse noise impacts from the construction, operations, and maintenance of routine range projects would range from none to moderate. Similar to Proposed Action 1, the majority of noise impacts would result from construction activities, which can generally be mitigated from minor to none or moderate to minor impacts through implementation of construction BMPs. During operations, the Small Arms Siting could result in moderate noise impacts to noise-sensitive land uses depending on final placement, but can be mitigated to none through implementation of SOPs during project design and planning.

3.12 HUMAN HEALTH AND SAFETY

3.12.1 Affected Environment

Human health and safety includes those facets of military 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 training associated with Army training ranges that can present risk to human health and safety include live-fire training, tactical vehicle convoys, vehicular accidents, occupational safety hazards, UXO, with a more minor component of hazardous materials and hazardous wastes. Typical hazardous materials in routine use on USARAK Garrisons include petroleum products (fuel and oil), batteries, light ballasts, mercury-containing light bulbs, paint and paint thinners, industrial solvents and degreasers, and pesticides. These materials, however, are mostly associated with activities that occur within the cantonment areas of FRA and FWA (USARAK, 2004a). Older buildings may also contain asbestos, lead-based paint, and Polychlorinated Biphenyls (PCBs). Additional risks can be presented by local wildlife that reside in and around military installations and can potentially come into routine contact with military and civilian personnel. Of particular concern are bears, moose, wolves, and

other large mammals that can potentially harm, intentionally or unintentionally, humans, pets, and property.

USAG FRA and USAG FWA has implemented a comprehensive program to eliminate, avoid or reduce the associated risks to its workers and the public. This program includes the following basic components:

- Compliance with all applicable Federal, state, DoD, and Army laws and regulations addressing health, safety, and risk management.
- Development of local regulations and detailed SOPs which further implement these laws and regulations, and focus on unique risk factors and mission requirements within USAG FRA and USAG FWA lands. This includes required preparation of the Environmental Concerns for Construction and Renovation Projects packet (see Appendix F).
- Establishing a local installation safety office with the proper resources and authority to effectively implement USAG Alaska's health and safety program, and that is properly integrated with other USAG FRA and USAG FWA and local civilian safety and emergency response organizations.
- Providing effective, mission-focused training and guidance to all USAG FRA and USAG FWA personnel.
- Encouraging proactive employee participation in safety and health programs, and charging leaders at all levels with the responsibility for planning and conducting mission activities in a safe manner.

USAG Alaska's health and safety program operates in compliance with a number of regulations and guidance documents, including:

- Occupational Safety and Health Act of 1970 (29 USC 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*;
- AR 210–21. *Army Ranges and Training Land 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 SOPs which all installation users are required to follow. Section 2.3 Environmental and Safety Precautions discusses these SOPs relevant for range construction projects to ensure Human Health and Safety is maintained. In addition, USARAK administers an Installation Restoration Program (IRP) to identify, investigate, and remediate contamination from regulated hazardous substances. All 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 both FRA and FWA (USARAK, 2004a). These agreements outline Institutional Controls, which are administrative measures to control property access and usage and are applicable to all known or suspected contaminated sites within USAG FRA and USAG FWA. 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.

3.12.2 Environmental Consequences

Direct impacts are further discussed by the No Action and Proposed Action alternatives in Sections 3.12.2.1 through 3.12.2.2. The following categories are used in assessing potential impacts resulting from the Proposed Actions.

- **Minor to Moderate (insignificant)** – The degree to which activities affect, or pose the potential to affect, the health and safety of persons on and off-post.
- **Severe (significant)** – Activities that violate established Federal, State, and local health and safety laws and regulations would represent a significant impact.

3.12.2.1 No Action

Under the No Action Alternative, no impacts would be anticipated for human health and safety conditions as existing SOPs, occupational health and safety standards, and BMPs would be maintained to safeguard human health.

3.12.2.2 Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training

3.12.2.2.1 Fort Richardson

Significant adverse impacts to human health and safety could occur during construction through the potential to violate established health and safety laws. The potential and level of impact would be greatest during the construction stages from ground disturbing activities having the potential of impacting UXO or sites of known or unknown contamination; impacts would be limited to individuals performing the construction activities. Adverse impacts to human health and safety, however, would be mitigated to insignificant (minor) through use of the following SOPs and BMPs:

- If unidentified contaminated soils, drums, or unusual debris (i.e., unexploded ordnance, discarded military munitions, or munitions debris) are encountered at any time on or around the work site, the agency or contractor shall stop work immediately and notify the Public Works Environmental Office. Contaminated soils or groundwater shall be segregated, sampled, analyzed, and containerized for transportation, and taken off-site for disposal within 90 days of final lab results being received. If soil or groundwater is scheduled for remediation off-post, it shall be returned to the installation after treatment and certified laboratory analyses, conducted by the treatment facility, to confirm the material does not exceed a regulatory cleanup level.
- All military units using the sites will be required to possess and have available appropriate spill response materials for the types and quantities of hazardous materials they may transport and use within proximity to this work area. All spills / releases will be reported to Fort Wainwright's or Fort Richardson's Fire Department and DPW- Environmental, Spill Prevention and Response (SPAR). All appropriate remediation measures will be accomplished.
- HAZWOPER certified workers may be needed if clean-up and disposal of hazardous materials is necessary. All materials should be handled, stored and disposed of in accordance with applicable laws and regulations, including USAG FWA or FRA Department of Public Works Environmental Institutional Controls. The potential for encountering hazardous materials/substances exists, including but not limited to petroleum, oils, and lubricants (POL), POL degradation by-products, asbestos, lead based paint, PCBs and mercury. Contaminated groundwater, soils, and debris shall be segregated, sampled, analyzed, and containerized for proper disposal according to the type of contamination identified.

- Project proponents will utilize the installation's Institutional Control map to avoid known contamination when siting facilities. If known contamination cannot be avoided, established BMPs/SOPs will be followed. Project proponents will coordinate with installation Environmental Clean Up personnel in a timely fashion prior to project contract award and construction start in order to gain proper regulatory approval of work in a contaminated site, if applicable.
- As necessary, at the earliest time after the project planning charrette, USARAK garrisons would perform a UXO site survey to determine the extent of the ordnance contamination to aid in the design of the range and minimize intrusive work in portions of the range which are highly contaminated with ordnance and to determine the correct ordnance response actions.
- During predesign site studies and investigations, if ordnance contamination is suspected, UXO safety support for UXO avoidance becomes mandatory during topographic surveying, geotechnical investigation, and other onsite operations that require gathering design data.
- If UXO contamination is encountered during construction, work within the immediate area would cease and Range Control will notify the Installation's Explosive Ordnance Disposal (EOD) team.
- Any hazardous material spills during construction would be reported to the DPW Environmental Office as well as the COE or DPW project manager using the DPW Oil and Hazardous Substances Spill Notification form.
- All hazardous materials (e.g., paint, solvents, fuel, etc.) would be stored in such a manner as to prevent spills and releases. Storage areas are subject to inspection by DPW Environmental Office.
- Noise generation of the planned use of any given project would consider siting based on The Installation Noise Management Plan noise contours and compatible noise zones.

Overall, the potential for minor to moderate adverse impacts could be anticipated from the proposed site-specific projects at FRA and the above BMPs with some projects providing beneficial or no impacts to human health and safety (see Table 3.12-1a). Projects with very limited footprints of disturbance (R2, R9, and R10) would not likely cause an adverse impact to human health and safety.

During range construction and range operations, USARAK garrisons would follow BMPs for the handling and transfer of hazardous materials and UXO, would comply with occupational health and safety standards (see Sections 2.3 and 3.12.1), and administer the IRP.

The upgrade of Army training areas and facilities would improve human health and safety conditions through maintaining Army training doctrine standards for Soldier training and preparedness and through providing shelter for Soldiers during inclement weather. No public adverse health and safety impacts would be anticipated as SAC ranges would remain closed to the public and temporary area closures, as necessary, would continue during training activities to prevent inadvertent injury (see Section 3.8 regarding public access with FRA lands). The potential for minor adverse human health and safety impacts could result from operations of projects (R1, R5, and R8); however, these impacts would likely be avoided through adherence to regulations and guidance documents discussed in Section 3.12.1 during operations and Soldier training to safeguard Soldier health and safety. In addition, some projects could cause a minor increase threat of human health and safety impacts from increasing the potential for Soldier-wildlife encounters (R1, R3, R4, R5, and R7); however, the overall impact to human health and safety from this increased potential would be minor.

Table 3.12-1a Summary of Human Health and Safety Impacts from Site-specific FRA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Increased concern during operation (military)	Increased concern during operation (public access)	Increased risk of wildlife encounter/ injury	Improvement to health and safety conditions	*Overall Impact*
(R1) FRA UAC[1]	◎	⊙	○	⊙	✪	◎
(R2) Dig a well at the ISBC Site	○	○	○	○	✪	✪
(R3) Raise the ISBC Road	◎	○	○	⊙	✪	⊙
(R4) Provide Turnaround IPBC	◎	○	○	⊙	✪	⊙
(R5) Create Bivouac Site UAC	◎	⊙	○	⊙	✪	⊙
(R6) Range Operation Complex	◎	○	○	○	✪	⊙
(R7) FRA Roads	◎	○	○	⊙	✪	⊙
(R8) Vehicle Storage/ Maintenance Building[1]	◎	⊙	○	○	✪	⊙
(R9) Install Flagpole ER Gate	○	○	○	○	○	○
(R10) Waterless Arctic Latrine	○	○	○	○	✪	✪
(R11) Covered Bleachers[1]	◎	○	○	○	✪	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.12.2.2.2 Fort Wainwright

Significant adverse impacts to human health and safety could occur during construction through the potential to violate established health and safety laws. The potential and level of impact would be greatest during the construction stages from ground disturbing activities having the potential of impacting UXO or sites of known or unknown contamination; impacts would be limited to individuals performing the construction activities. Adverse impacts to human health and safety, however, would be mitigated to insignificant (minor) through the use of BMPs (see Section 3.12.2.2.1). Also similar to FRA, the upgrade of Army training areas and facilities would improve Soldier human health and safety conditions and no public adverse health and safety impacts would be anticipated as SAC ranges would remain closed to the public and temporary area closures, as necessary, would continue during training activities to prevent and inadvertent injury (see Section 3.8 regarding public access with FWA lands).

Overall, the potential for minor to moderate adverse impacts could be anticipated from the proposed site-specific projects at FWA and the above BMPs with some projects providing beneficial or no impacts to human health and safety (see Table 3.12-1b). A minor increase risk to human health and safety would be

anticipated from operations of projects (W1, W3, W5, W6, W7, W9, W10, W11, W12, W13, W16, W17, W18, W20, W23, W24, W25, W26, W27, W30, W33, W35, W36, W37, and W42); however, these impacts would likely be avoided through adherence to regulations and guidance documents discussed in Section 3.12.1 during operations and Soldier training to safeguard Soldier health and safety. In addition, some projects could cause a minor increase threat of human health and safety impact from increasing the potential for Soldier-wildlife encounters (Projects W1, W3, W5, W9, W12, W13, W14, W16, W17, W18, W20, W23, W24, W25, W27, W29, W31, W34, W36, W39, W40, and W42); however, the overall impact to human health and safety from this increased potential would be minor. In addition projects demarcating boundaries of impact areas and ranges (W15, W21 and W32) would benefit health and safety conditions through preventing unintentional trespass.

Table 3.12-1b Summary of Human Health and Safety Impacts from Site-specific FWA Projects

Project Name	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Increased concern during operation (military)	Increased concern during operation (public access)	Increased risk of wildlife encounter/ injury	Improvement to health and safety conditions	***Overall Impact***
FWA						
(W2) Ammunition Breakdown Buildings[1]	◎	○	○	○	✪	⊙
(W3) Demo Pond Range[1]	◎	⊙	○	⊙	✪	◎
(W4) General Instructional Building CACTF	◎	○	○	○	✪	⊙
(W6) Indoor Shooting Range[1]	◎	⊙	○	○	✪	◎
(W8) Range Operation Complex [1]	◎	○	○	○	✪	⊙
(W9) FWA C130/17 Mock-up	◎	⊙	○	⊙	✪	◎
(W10) Welding/ Carpentry Shop[1]	◎	⊙	○	○	✪	⊙
(W11) Arctic Village[1]	◎	⊙	○	○	✪	⊙
(W12) SAC East Expansion[1]	◎	⊙	○	⊙	✪	◎
(W13) KD Range Expansion[1]	◎	⊙	○	⊙	✪	◎
(W14) Pave Range Road[1]	◎	○	○	⊙	✪	⊙
(W15) SAC Security Fence[1]	◎	✪	✪	✪	✪	✪
(W16) Rebuild MRF Firing Line[1]	◎	⊙	○	⊙	✪	◎
(W17) Combined Arms Collective Training Facility	◎	⊙	○	⊙	✪	◎
(W18) Drivers Training Course Phases 1-5	◎	⊙	○	⊙	✪	◎

Table 3.12-1b Summary of Human Health and Safety Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Increased concern during operation (military)	Increased concern during operation (public access)	Increased risk of wildlife encounter/ injury	Improvement to health and safety conditions	***Overall Impact***
(W19) Latrine – Birch Hill Biathlon Range	○	○	○	○	✪	✪
(W20) Warrior Forward Operations Base Phase 3	◎	⊙	○	⊙	✪	◎
(W22) Latrines[1]	○	○	○	○	✪	✪
TFTA						
(W21) Alpha Impact Area Survey Line	⊙	✪	✪	○	✪	⊙
YTA						
(W1) Digital Air Ground Integration Range	◎	⊙	○	⊙	✪	◎
(W5) Stuart Creek Integrated Target Array	◎	⊙	○	⊙	✪	◎
(W7) Firebird UAV Building	◎	⊙	○	○	✪	⊙
(W23) Charlie Battery FOB	◎	⊙	○	⊙	✪	◎
(W24) YTA Convoy Live Fire Range Phase 1	◎	⊙	○	⊙	✪	◎
(W25) Winter Camp FOB[1]	◎	⊙	○	⊙	✪	◎
(W26) YTA Firing Point 13	⊙	⊙	○	○	✪	○
(W27) Husky DZ FOB	◎	⊙	○	⊙	✪	◎
(W28) YTA Latrines	○	○	○	○	✪	✪
(W29) YTA Demolition Range	◎	⊙	○	⊙	✪	◎
(W30) YTA Firing Point Direct Fire	⊙	⊙	○	○	✪	○
(W31) Stuart Creek Access Trails	◎	○	○	⊙	✪	⊙
(W32) Stuart Creek Impact Area Survey Line	⊙	✪	✪	○	✪	⊙
(W33) FP 9 Direct Firing Point	⊙	⊙	○	○	✪	○
(W34) Husky DZ Resurface	◎	✪	○	⊙	✪	⊙
(W35) Gravel Source YTA	◎	⊙	○	○	✪	⊙
(W36) Bravo Battery FOB	◎	⊙	○	⊙	✪	◎
(W37) Maintenance Building[1]	◎	⊙	○	○	✪	⊙
(W38) High Capacity Well[1]	○	○	○	○	✪	✪

Table 3.12-1b Summary of Human Health and Safety Impacts from Site-specific FWA Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Increased concern during operation (military)	Increased concern during operation (public access)	Increased risk of wildlife encounter/ injury	Improvement to health and safety conditions	***Overall Impact***
(W39) YTA Roads Upgrade	◎	○	○	⊙	✪	⊙
(W40) YTA Manchu Trail Bridge Upgrade	◎	○	○	⊙	✪	⊙
(W42) Harden Firebird FP and Bivouac Area	◎	⊙	○	⊙	✪	⊙

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.12.2.2.3 Donnelly Training Area

Significant adverse impacts to human health and safety could occur during construction through the potential to violate established health and safety laws. The potential and level of impact would be greatest during the construction stages from ground disturbing activities having the potential of impacting UXO or sites of known or unknown contamination; impacts would be limited to individuals performing the construction activities. Adverse impacts to human health and safety, however, would be mitigated to insignificant (minor) through the use of BMPs (see Section 3.12.2.2.1). Also similar to FRA and FWA, the upgrade of Army training areas and facilities would improve Soldier human health and safety conditions and no public adverse health and safety impacts would be anticipated as SAC ranges would remain closed to the public and temporary area closures, as necessary, would continue during training activities to prevent and inadvertent injury (see Section 3.8 regarding public access with DTA lands).

Overall, the potential for minor to moderate adverse impacts could be anticipated from the proposed site-specific projects at DTA and the use of BMPs with some projects providing beneficial or no impacts to human health and safety (see Table 3.12-1c). A minor increase risk to human health and safety would be anticipated from operations of projects (D3, D4, D6, D7, D9-D13, D22, D25, D26, D30 and D31); however, these impacts would likely be avoided through adherence to regulations and guidance documents discussed in Section 3.12.1 during operations and Soldier training to safeguard Soldier health and safety. In addition, some projects could cause a minor increase threat of human health and safety impact from increasing the potential for Soldier-wildlife encounters (D2, D7, D12, D13, D18-D26, D28 and D31); however, the overall impact to human health and safety from this increased potential would be minor. Projects D15 and D16 would provide additional benefits to health and safety by demarcating installation boundaries and impact areas.

Table 3.12-1c Summary of Human Health and Safety Impacts from DTA Site-specific Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Increased concern during operation (military)	Increased concern during operation (public access)	Increased risk of wildlife encounter/ injury	Improvement to health and safety conditions	*Overall Impact*
(D1) Range Operation Complex[1]	◎	○	○	○	✪	⊙
(D2) DTA Roads	◎	○	○	⊙	✪	⊙
(D3/D4) DTA Firing Points	⊙	⊙	○	○	✪	○
(D5) New Load Ramps at Donnelly DZ	⊙	○	○	○	✪	○
(D6) MATCH Shoot House at Colorado South[1]	◎	⊙	○	○	✪	◎
(D7) Expand KD Range[1]	◎	⊙	○	⊙	✪	◎
(D8) Target Emplacement	⊙	○	○	○	✪	⊙
(D9) Construct additional support buildings at BAX/CACTF	◎	⊙	○	○	✪	⊙
(D10) Maintenance Buildings for units training at DTA[1]	◎	⊙	○	○	✪	⊙
(D11) Beales Replacement[1]	◎	⊙	○	○	✪	⊙
(D12) Area of Responsibility Village	◎	⊙	○	⊙	✪	◎
(D13) Theater Specific Village	◎	⊙	○	⊙	✪	◎
(D14) Expand OP 26 for Range Control West Operations	⊙	○	○	○	✪	⊙
(D15) Delineate DTA East Boundary	⊙	✪	✪	○	✪	⊙
(D16) Sign the Impact Area	⊙	✪	✪	○	✪	⊙
(D17) Improve Buffalo DZ	⊙	✪	○	○	✪	✪
(D18) Expand Buffalo DZ	◎	○	○	⊙	✪	◎
(D19) Extend the Donnelly FLS	◎	○	○	⊙	✪	◎
(D20) Convert Fuel Break to Airstrip	⊙	○	○	⊙	✪	⊙
(D21) New Road to bypass CTR	◎	○	○	⊙	✪	⊙
(D22) BAX East Maneuver Corridor	◎	⊙	○	⊙	✪	◎
(D23) BRTA Roads	◎	○	○	⊙	✪	⊙

Table 3.12-1c Summary of Human Health and Safety Impacts from DTA Site-specific Projects

Project Name	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Increased concern during operation (military)	Increased concern during operation (public access)	Increased risk of wildlife encounter/ injury	Improvement to health and safety conditions	*Overall Impact*
(D24) GRTA Roads	◎	○	○	⊙	✪	⊙
(D25) Combat Outposts	◎	⊙	○	⊙	✪	◎
(D26) Replace or Relocate Simpsonville Buildings	◎	⊙	○	⊙	✪	◎
(D27) Construct UAV System tracking pad and access	◎	○	○	○	✪	◎
(D28) Delta Creek Assault Strip	◎	○	○	⊙	✪	◎
(D29) Install Waterless Latrines[1]	○	○	○	○	✪	✪
(D30) Construct FAARPs[1]	◎	⊙	○	○	✪	◎
(D31) Add New OPs along the Winter Trail	◎	⊙	○	⊙	✪	◎

[1]Note: These projects are located within the proposed SAC range adaptable use zone (see Proposed Action 2).

3.12.2.3 Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complexes Using Adaptable Use Zones

3.12.2.3.1 Fort Richardson

Although Proposed Action 2 considers the potential impacts associated with a 100 percent disturbance within the designated adaptable use zones, this "worst-case scenario" provides USARAK garrisons with the most flexible planning tool for future development of its SAC ranges. However, as a practical matter, complete development within the adaptable use zone would be detrimental to training and unlikely. Activities occurring within the adaptable use zone would undergo streamlined NEPA review requiring the completion of a checklist (see Appendix C) in order to verify each project's consistency with what has been analyzed in this PEA. Based on this checklist and any other details regarding the scope and location of the project, garrison Environmental Staff would independently analyze whether each proposed project falls within the scope of this Proposed Action, and would determine the appropriate level of NEPA analysis to tier off this PEA. After PEA tiered analysis approval by the garrison's Environmental Branch Chief and Director of Public Works, NEPA analysis of the project would be complete. This flexibility will increase USARAK's ability to meet training objectives, particularly when changing circumstances require an immediate response that current environmental review procedures cannot accommodate.

All projects within these adaptable use zones would conform to all environmental laws, regulations, and associated permitting requirements. Standard application of existing SOPs and BMPs would help reduce the intensity of impacts to the natural, cultural and human environment contained within these adaptable use zones (see Appendix D).

Establishment of a FRA SAC Range Adaptable Use Zone would have no direct adverse impacts to human health and safety. Indirect beneficial impacts would result as USARAK garrisons would be able to expedite implementation of range maintenance, upgrade and development projects within the proposed SAC Range adaptable use zone to help maintain state of the art training facilities and Soldier preparedness for real-time combat.

3.12.2.3.2 Fort Wainwright

Establishment of a FWA and YTA SAC Range Adaptable Use Zones would have no direct adverse impacts to human health and safety, similar to those described for FRA (Section 3.12.2.3.1). Adverse human health and safety impacts to recreational users within the stretch of the Tanana River which traverses the proposed FWA SAC Range Adaptable Use Zone would be avoided through adherence to existing lookout/cease-fire procedures implemented by FWA Range Control. During training activities in which the firing fan extends into the Tanana River, Range Control monitors river activity from a series of existing lookout towers. If recreational users are observed within the vicinity, a cease fire is implemented until that portion of the river is cleared. This existing procedure reduces the potential from stray bullets striking recreational users within the Tanana River.

Indirect beneficial impacts would be similar to those described for FRA (Section 3.12.2.3.1).

3.12.2.3.3 Donnelly Training Area

Establishment of a DTA SAC Range adaptable use zone would have no direct adverse impacts to human health and safety, similar to those described for FRA (Section 3.12.2.3.1). Similar to procedures described at FWA, adherence to existing lookout/cease-fire procedures would reduce the potential for adverse impacts to recreational users within the Delta River.

Indirect beneficial impacts would be similar to those described for FRA (Section 3.12.2.3.1).

3.12.2.4 Proposed Action 3 – Environmental Stewardship Range Construction Guidelines

Routine range upgrade, maintenance and construction projects have the potential to cause significant adverse impacts to human health and safety through violating established human health and safety laws. In order to avoid the potential for significant adverse impacts, USARAK garrisons are proposing, the following environmental stewardship range construction guidelines (SOPs and BMPs) that have been developed for human health and safety to reduce overall adverse impacts from routine range projects. Table 3.12-2 summarizes the potential type and intensity of human health and safety impacts as a result of routine range projects and contains a comparative analysis of overall impacts considering use of the proposed environmental stewardship range construction guidelines.

SOPs for activities human health and safety include:

- As necessary, at the earliest time after the project planning charrette, USARAK garrisons perform a UXO site survey to determine the extent of the ordnance contamination to aid in the design of the range and minimize intrusive work in portions of the range which are highly contaminated with ordnance and to determine the correct ordnance response actions.
- During predesign site studies and investigations, if ordnance contamination is suspected, UXO safety support for UXO avoidance becomes mandatory during topographic surveying, geotechnical investigation, and other onsite operations that require gathering design data.
- If there is a probability of UXO contamination, only UXO-qualified personnel can conduct any type of ordnance handling or disturbance work.

- During the range construction contract, ordnance may be found in the area. Inert practice ordnance may also be encountered. If UXO contamination is encountered work within the immediate area will cease and Range Control will notify the Installation's Explosive Ordnance Disposal (EOD) team.
- Hazardous waste generation associated with building demolition should be identified in advance, and proper abatement planned as part of the project. These hazards include, but are not necessarily limited to asbestos, lead (primarily in paint), PCBs and glycol.
- All hazardous material spills would be reported to the DPW Environmental Office as well as the COE or DPW project manager using the DPW Oil and Hazardous Substances Spill Notification form.
- Any project that involves excavation or movement of soils must include field screening for petroleum (plus any other identified contaminants). Soils registering less than field screening levels indicated in Army policy are considered clean and may be reused on site or transported to the Post landfill for cover. Soils screening levels higher than amounts indicated in Army policy must follow USARAK contaminated soil policies.
- Each project would be evaluated to determine whether an Air Quality Control Permit (AQCP) is required prior to commencing construction. An AQCP is typically required for projects that involve the addition of new air emission sources (e.g., boilers, generators, fire pumps, painting & degreasing operations, fuel storage & loading) and for projects that involve the modification of existing air emission sources (e.g., landfill expansion and non-routine maintenance at the power plant). The evaluation includes determining if the project conforms to the requirements and emission caps established by USARAK garrisons' current Title V operating permits and assesses the need to obtain a permit modification.
- Due to the nature and type of training conducted in the past (especially prior to 1986), unidentified contamination could be found on Army lands. All work involving the modification of facilities or excavation of any kind shall be coordinated via the USAG FWA or FRA "Work Clearance Permit" a minimum of five working days prior to mobilization to the site. Coordination requirements are outlined on the permit. Any potentially contaminated soil or groundwater encountered during this action shall be segregated, sampled, analyzed, and containerized in approved containers (specified in 49 CFR 178.500). Soil and groundwater shall not be removed from any part of the installation or transported off the installation, regardless of whether it is clean or contaminated, without written authorization from an appointed USAG FWA or FRA representative.
- If unidentified contaminated soils, drums, or unusual debris (i.e., unexploded ordnance, discarded military munitions, or munitions debris) are encountered at any time on or around the work site, the agency or contractor shall stop work immediately and notify the Public Works Environmental Office. Contaminated soils or groundwater shall be segregated, sampled, analyzed, and containerized for transportation, and taken off-site for disposal within 90 days of final lab results being received. If soil or groundwater is scheduled for remediation off-post, it shall be returned to the installation after treatment and certified laboratory analyses, conducted by the treatment facility, to confirm the material does not exceed a regulatory cleanup level.
- All military units using the sites will be required to possess and have available appropriate spill response materials for the types and quantities of hazardous materials they may transport and use within proximity to this work area. All spills / releases will be reported to Fort Wainwright's or Fort Richardson's Fire Department and DPW- Environmental, Spill Prevention and Response (SPAR). All appropriate remediation measures will be accomplished.
- HAZWOPER certified workers may be needed if clean-up and disposal of hazardous materials is necessary. All materials should be handled, stored and disposed of in accordance with applicable laws and regulations, including USAG FWA or FRA Department of Public Works Environmental Institutional Controls. The potential for encountering hazardous materials/substances exists, including but not limited to petroleum, oils, and lubricants (POL), POL degradation by-products,

asbestos, lead based paint, PCBs and mercury. Contaminated groundwater, soils, and debris shall be segregated, sampled, analyzed, and containerized for proper disposal according to the type of contamination identified.

- Project proponents will utilize the installation's Institutional Control map to avoid known contamination when siting facilities. If known contamination cannot be avoided, established BMPs/SOPs will be followed. Project proponents will coordinate with installation Environmental Clean Up personnel in a timely fashion prior to project contract award and construction start in order to gain proper regulatory approval of work in a contaminated site, if applicable.

BMPs for human health and safety include:

- Store and use all hazardous materials (e.g., paint, solvents, fuel, etc.) in such a manner as to prevent spills and releases. Storage areas are subject to inspection by DPW Environmental Office.
- All underground storage tanks (USTs) installed within USARAK garrisons will conform to 40CFR280, 18AAC78 and applicable Army guidance. USTs will be double wall steel with cathodic protection (anodic, not impressed), provided with spill and overfill protection, and interstitial leak detection. Fuel lines will be double wall Enviroflex, or equal.
- All aboveground storage tanks (ASTs) installed on Army property will conform to 40CFR112, as well as applicable ADEC and Army guidance. In general, all ASTs will be either double wall or vaulted tanks, with containment on all four sides. All tanks will be tapped on the top only, and be provided with spill and overfill prevention and leak detection.
- Noise generation of the planned use of any given project would consider siting based on The Installation Noise Management Plan noise contours and compatible noise zones.

Table 3.12-2 Summary of Potential Human Health and Safety Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	**Type and Intensity of Impact** ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Increased concern during operation (military)	Increased concern during operation (public access)	Increased risk of wildlife encounter/ injury	Improvement to health and safety conditions	*Overall Impact*
Berm Creation & Maintenance	◎	○	○	○	○	◎
Bleacher Enclosure	◎	○	○	○	✪	⊙
Bridge Installation	⊙	○	○	○	✪	⊙
Building Construction	◎	⊙	○	○	✪	⊙
Control Tower	◎	○	○	○	✪	⊙
Covered Hall	◎	○	○	○	✪	⊙
Culvert Installation	⊙	○	○	○	○	⊙
Fencing	◎	○	○	⊙	✪	⊙
Firing Lane Creation & Maintenance	◎	◎	○	○	○	◎

Table 3.12-2 Summary of Potential Human Health and Safety Impacts resulting from Routine Range Projects and Implementation of SOPs and BMPs

Routine Action	Type and Intensity of Impact ○ = none ⊙ = minor ◎ = moderate ● severe ✪ = beneficial					
	Increased concern during construction	Increased concern during operation (military)	Increased concern during operation (public access)	Increased risk of wildlife encounter/ injury	Improvement to health and safety conditions	*Overall Impact*
Firing Line Creation & Maintenance	◎	◎	○	○	○	◎
FOB Creation and Maintenance	◎	◎	○	⊙	○	◎
Grading/Shaping	◎	○	○	○	○	◎
Gravel Pits	◎	⊙	○	○	○	◎
Hardened Target Creation & Maintenance	◎	◎	○	○	○	◎
Hardstands Creation and Maintenance	◎	◎	○	⊙	○	◎
Improvised Explosive Device Defeat	◎	◎	○	⊙	○	◎
Land Clearing & Vegetation	◎	○	○	○	○	◎
Latrine	○	○	○	○	✪	✪
Mowing	⊙	⊙	○	○	○	⊙
Observation Points Creation & Maintenance	◎	○	○	○	✪	⊙
Pit Toilets Creation and Maintenance	⊙	○	○	○	✪	✪
Prescribed Fire	◎	◎	⊙	○	✪	◎
Road (Trail) Creation & Maintenance	◎	⊙	○	⊙	✪	⊙
Small Arms Siting	◎	◎	○	○	○	◎
Boundary Line Clearings	◎	⊙	○	○	✪	✪
Target Emplacement	◎	◎	○	○	○	◎
Utility Line Creation & Maintenance	◎	⊙	○	○	○	◎
UXO Surveys	●	○	○	○	✪	◎
Wood Pile Burning	◎	◎	⊙	○	○	◎
Urban Training Village	◎	◎	○	○	○	◎

Following site selection of these routine projects, the NEPA Checklist would be completed to evaluate the potential for impacts. Overall, the potential for moderate to minor adverse impacts would be anticipated from the construction, operations, and maintenance of routine range projects. Similar to Proposed Action 1, the primary concern would be during construction and the potential for known or unknown UXOs or contaminated sites. Additionally routine range projects which involve expansion of existing range training areas would cause the increased potential for human injury. However, implementation of existing SOPs and BMPs during design and construction and adherence to regulations and guidance documents discussed in Section 3.12.1 during operations would reduce the potential of adverse impacts to minor or no impact. Projects involving the construction of facilities such as covered halls, general instruction/warm-up buildings, control facilities and provision of latrines would improve safety conditions for Soldiers training, especially during inclement weather. In addition, projects involving the delineation and demarcation of boundaries through surveys and fencing would improve human health and safety conditions through preventing unintentional trespass.

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4.0 CUMULATIVE EFFECTS ANALYSIS

Though certain direct and indirect impacts related to the Proposed Actions have been determined insignificant, they require further evaluation for potential contributions to cumulative impacts on the resource. CEQ regulations that implement NEPA procedural provisions define cumulative effects 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." (40 CFR 1508.7) USAG FRA and USAG FWA evaluated the potential cumulative impacts of the Proposed Actions in accordance with NEPA (42 USC 4321-4347), CEQ regulation (40 CFR Parts 1500-1508), Army Regulation (32 CFR part 651), and CEQ guidelines for conducting cumulative impact analysis (Considering Cumulative Effects under NEPA, Executive Office of the President, January, 1997).

Three levels of cumulative effects analyses were considered to evaluate the resources or issues covered in this EA (Quick Look, Analysis and Discussion, and Detailed Analysis). The level of analysis taken was based on Quick Look questions developed in the USAEC *NEPA Guidance Manual* (USAEC, 2007). Quick Look questions are used to determine if detailed cumulative effects analyses are needed for each resource or issue. If the answers to the Quick Look questions are not adverse (resulting in a brief "no," or a "yes" indicating beneficial programs such as the ITAM are in place to offset adverse impacts) the likelihood of significant cumulative impacts is small and no further analysis is necessary. If the answer to a Quick Look question is less certain, more detailed attention would be required to address potential effects using a second level of analysis (Analysis and Discussion). Issues that have definite, potentially significant, incremental impacts require more rigorous analysis (Detailed Analysis).

This cumulative effects analysis (CEA) considers direct and indirect impacts determined from the alternatives analysis presented in Chapter 3.0; SOPs and BMPs considered in Proposed Action 3 (see summary in Appendix D); the answers to the Quick Look questions; and the past, present, and future projects in Tables 4.0-1 through 4.0-3 to ascertain the need for further CEA. The geographic scope and time frame are discussed for each resource within the CEA. In general, the geographic scope for this CEA is limited to the installation boundaries and adjacent communities and lands.

Past and present actions are accounted for in the description of the affected environment for each resource. Past, present, and reasonably foreseeable future actions that occur as part of USARAK or other Federal, state, and local projects outside of Army actions were identified as contributors to cumulative effects in south central Alaska (FRA [Table 4.0-1]) and Interior Alaska (FWA, TFTA, YTA [Table 4.0-2], and DTA [Table 4.0-3]). In addition, this analysis takes into consideration the current and projected levels of military activity in Alaska analyzed in previous NEPA documentation (see Section 1.5.1). The No Action Alternative represents the existing baseline after all planned and previously analyzed actions have been implemented. The No Action Alternative assumes that future construction activities within USARAK ranges and use of SOPs and BMPs would continue, however, none of these actions would be implemented under a streamlined programmatic approach. This PEA provides a comprehensive programmatic analysis of likely foreseeable range actions (Proposed Action 1), focuses likely future development activities within SAC adaptable use zones (Proposed Action 2), and considers the environmental impacts from implementing environmental stewardship and range construction guidelines from routine range projects (Proposed Action 3). The likelihood, therefore, of additional and future foreseeable USAG FRA and USAG FWA projects beyond those considered within this PEA to contribute to adverse cumulative effects beyond those projects presented in Tables 4.0-1 through 4.0-3 is low.

Table 4.0-1. FRA Past, Present, and Future Actions

Major Project or Activity	Time Frame	Spatial Extent (if known)
Past Military Actions		
Development of range lands	1950s to present	FRA range lands
Military Training	1950s to present	FRA range lands
Development of the cantonment area	1950s to present	FRA cantonment
Recent and Future Military Actions		
INRMP Projects and Management	1998 and beyond	FRA
ICRMP Management	2000 and beyond	FRA
ITAM Projects	2000 and beyond	FRA
Stationing of the Stryker Brigade Combat Team (SBCT) to FRA	2004 to 2006	USARAK
Mission Operations on Urbanized Terrain (MOUT) Upgrade – Infantry Squad Battle Course	2002	FRA SAC
MOUT Range – Infantry Platoon Battle Course	2002	FRA range lands
Multi-purpose Training Range	2003	FRA range lands
Sniper Range	2003	FRA SAC
Whole Barracks Renewal	2003 – 2004	FRA cantonment
Rapid Deployment Facility	2004	FRA
Ammunition Supply Point Upgrade	2004	FRA range lands
Installation Boundary Fence	2004	FRA
Convert the Airborne Task Force to an Airborne Brigade Combat Team	2005	FRA
Grow The Army projects	Present	6 new facility (building) construction within FRA cantonment; 4 training range facilities upgrades within FRA SAC
Training at Eagle River Flats Impact Area	1950s to present	Eagle River Flats Impact Area
Joint Base Elmendorf-Richardson	2011 to future	FRA and Elmendorf AFB
Joint Base Elmendorf-Richardson Master Plan	2010	FRA and Elmendorf AFB
Various MILCON projects	present to 2017	FRA Main Post
Past – Other Activities and Projects		
Construction and operation of the railroad	1917 to present	Rail line extends from Seward to Fairbanks.
Passing of the Sikes Act, 1960, opening portions of military land to recreational access	1960 to present	FRA; surrounding Anchorage area
Subsistence	Pre-history to present	Throughout region
Recreation	Early 1900s to present	Throughout region

Table 4.0-1. FRA Past, Present, and Future Actions

Major Project or Activity	Time Frame	Spatial Extent (if known)
Recent and Future – Other Activities and Projects		
Municipality of Anchorage, Eagle River and surrounding communities (none identified in the immediate project area project area)	Region has experienced steady growth between 1960 to present.	Throughout region
Knik Arm Bridge Crossing Proposal	Unknown	Throughout region (Municipality of Anchorage and the Mat-Su Borough)
Subsistence	Present to future	Throughout region
Recreation	Present to future	Throughout region

Table 4.0-2. FWA Past, Present, and Future Actions

Major Project or Activity	Time Frame	Spatial Extent (if known)
Past Military Actions		
Development of range lands	1950s to present	Throughout the FWA Main Post, TFTA and YTA
Military Training	1950s to present	Throughout the FWA Main Post, TFTA and YTA
Development of the cantonment area	1950s to present	Development on FWA Main Post concentrated south of the Chena River and north of the Richardson highway
Recent and Future Military Actions		
INRMP Projects and Management	1998 and beyond	FWA
ICRMP Management	2000 and beyond	FWA
ITAM projects	2000 and beyond	Throughout the FWA Main Post, TFTA and YTA
MOUT Range Upgrade	2003	FWA Main Post
Ammunition Supply Point Upgrade	2003	FWA Main Post
Whole Barracks Renewal	2003	FWA Main Post
Modified Record Range	2003	FWA SAC
Sniper Field Range	2003	FWA SAC
Mission Support Training Facility	2003	FWA SAC
Multi Purpose Training Range	2003	YTA
Infantry Squad Battle Course	2003	YTA
Infantry Platoon Battle Course	2003	YTA
Demolition Area	2003	YTA
Stryker Brigade, Airborne Brigade and other Army training and related MILCON projects	2004 and beyond	FWA Main Post and Range and Training Lands
FWA Fencing	2004	FWA Main Post

Table 4.0-2. FWA Past, Present, and Future Actions

Major Project or Activity	Time Frame	Spatial Extent (if known)
Railhead Facility and Truck Loading Complex	2008	FWA Main Post
Army Family Housing Privatization	2008 to 2058	FWA Main Post
Utilities Privatization	2008 to 2028	FWA Main Post
Grow The Army projects	Present	6 new facility (building) construction within FWA cantonment; 4 training range facilities upgrades within FWA SAC
Augmentation of Existing Aviation Assets and related MILCON projects and training	Present and beyond	FWA Main Post and Training Lands
Various MILCON projects	Present to 2017	FWA Main Post and Training Lands
U.S. Air Force Lantirn Village and Camera I Site Upgrades; 0.63 acres of disturbance	Present	YTA
U.S. Air Force Construction of Power and Fiber Optic Lines to Facilities in YTA - Phase 1 and 2 - 25.7 miles of line; Phase 3 - 9 miles; and Phase 4 - 2.84 miles	Present	YTA
Past – Other Activities and Projects		
Construction and operation of the railroad	1917 to present	Rail line extends from Seward to Fairbanks
Passing of the Sikes Act, 1960, opening portions of military land to recreational access	1960 to present	TFTA and YTA and surrounding area.
Subsistence	Pre-history to present	Throughout region
Recreation	Early 1900s to present	Throughout region
Construction and operation of Trans Alaska Pipeline System (TAPS)	1970s to present	Crosses YTA and DTA
Recent and Future – Other Activities and Projects		
ARRC Fairbanks Area Realignment Project	Preset–to future	19 miles of track around Fairbanks; would connect to the FWA Realignment
ARRC Northern Rail Extension Project	Medium potential to begin construction within the next 10 years.	Approximately 80 miles of new track between North Pole, Alaska, and Delta Junction, Alaska
Natural Gas Pipeline	Medium potential to begin construction within next 10 years	Follows TAPS right of way
Tanana River Bridge	Medium potential to begin construction within next 10 years	Salcha area to TFTA
Multiple use land management	2005 and beyond	Tanana Valley Management Plan

Table 4.0-2. FWA Past, Present, and Future Actions

Major Project or Activity	Time Frame	Spatial Extent (if known)
Bureau of Land Management (BLM) Alaska Fire Service Expansion. Plans to renovate, expand, or construct new facilities to support Alaska Fire Service Operations on FWA	Present	Proposed plans would occur within the BLM Exclusive Use Area northeast of Ladd Air Field
City of Fairbanks and Fairbanks North Star Borough (FNSB) Development (none identified in the immediate project area project area)	FNSB has experienced steady growth between 1960 and 2000. This is expected to continue	Throughout region
Subsistence	Present to future	Throughout region
Recreation	Present to future	Throughout region

Table 4.0-3. DTA Past, Present, and Future Actions

Project or Activity	Time Frame	Spatial Extent (if known)
Past Military Actions		
Training Including artillery firing into impact areas and tank maneuvers	1950s to present	Throughout DTA
Development of cantonment area, ranges, and infrastructure	1950s to present	Fort Greely; DTA
Passing of the Sikes Act, 1960, opening portions of military land to recreational access	1960 to present	DTA
Buildings and Facilities	1970s to present	Fort Greely cantonment
U.S. Air Force	1940s to present and beyond	Airspace
Recent and Future Military Actions		
Space Missile Defense Command and Infrastructure	2003 to present	DTA East
Cold Regions Test Center Vehicle Test Track and Facility construction and use	2003 to present	DTA East
Jarvis North Fire Mitigation Program	2003 to present	DTA East
BAX/CACTF Training Facility Construction/Use	2006 to 2035	DTA East
33-Mile Loop Road Upgrade	2005 to 2006	DTA East
DTA East Mobility and Maneuver Upgrades	2008 to present	DTA East

Table 4.0-3. DTA Past, Present, and Future Actions

Project or Activity	Time Frame	Spatial Extent (if known)
INRMP Projects and Management	1998 and beyond	DTA
ICRMP Management	2000 and beyond	DTA
ITAM Projects	2000 and beyond	DTA
Stryker Brigade, Airborne Brigade and other Army training	2004 and beyond	DTA
U.S. Air Force Training	2006 and beyond	Airspace
U.S Air Force Joint Advanced Weapons Scoring System Installation at Oklahoma Range - 0.4 acres of disturbance.	Present	DTA
Past – Other Activities and Projects		
Development of Delta Junction and Big Delta Communities (including agricultural lands)	Early 1900s to present	Private land
Richardson and Alaska Highways Construction/Use	1920s to 1948/ 1920s to present	Throughout region
Trans-Alaska Pipeline Construction/Operations and Maintenance	1973 to 1976/ 1973 to present	Throughout region
Multiple use land management	Pre 1950s to present	Throughout region
Subsistence	Pre-history to present	Throughout region
Recreation	Early 1900s to present	Throughout region
Recent and Future – Other Activities and Projects		
Development of Delta Junction and Big Delta Communities	2005 and beyond	Throughout private lands
ARRC Northern Rail Extension Project 2	Medium potential to begin construction within the next 10 years.	Approximately 80 miles of new track between North Pole, Alaska, and Delta Junction, Alaska.
Tanana River Bridge	Unknown	Unknown
Natural Gas Pipeline	Unknown	Along Trans-Alaska Pipeline right-of-way
Richardson Highway Upgrade	2005 to 2006	Throughout region
Richardson and Alaska Highways future maintenance and upgrades	unknown	Delta Junction Region
Delta Agricultural Use Project	2005 and beyond	Delta Junction Region

Table 4.0-3. DTA Past, Present, and Future Actions

Project or Activity	Time Frame	Spatial Extent (if known)
Multiple use land management	Pre 1950s to present	Throughout region
Subsistence	Pre-history to present	Throughout region
Recreation	Early 1900s to present	Throughout region

4.1 "QUICK LOOK" CUMULATIVE EFFECTS ANALYSIS

The Quick Look CEA is appropriate for resources or issues in which answers to the Quick Look questions indicate that the chance of cumulative impacts is low. The Quick Look questions were developed for each resource or issue using the *NEPA Guidance Manual* (USAEC, 2007) to determine the potential for cumulative impacts from the Proposed Actions and No Action Alternative. The Quick Look questions analysis for each resource/issue topic is presented as follows.

4.1.1 Soils

Section 3.2.2 outlines the significance threshold for soils; accordingly a severe adverse cumulative impact to soils would result from uncontrolled and irreparable erosion that would preclude the restoration of native plant communities in an area in excess of 5,000 square feet or would result in the uncontrolled or unmanaged melting of more than 5,000 square feet of permafrost. The geographic scope for soils is limited to the installation boundaries. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to soil resources. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative soil impacts by each installation follows the table.

Soils Quick Look Table	
Answer	**Question**
No[1]	Would the Proposed Action result in a significant impact to soil resources?
Yes[1]	Does the Proposed Action fall within an area covered by an existing soil survey?
No[1]	Would the implementation of the Proposed Action jeopardize soil stability and increase erosion potential beyond the construction and stabilization period?
Yes[1]	Are the proposed sites effectively managed as part of an installation ITAM/LRAM Program?
No **NA** **PA-2**	Does the Proposed Action increase the level of intensity of military activity on military lands? *None of the Proposed Actions directly involve increasing the levels of Soldier training or military activity with USARAK range lands above levels recognized in pervious NEPA documentation (see*

Soils Quick Look Table	
Answer	**Question**
PA-3 Yes **PA-1**	*Section 1.5.1).* *Proposed Action 1 involves a few additional facilities or expansion of facilities which would increase the coverage of military training activities.*
No[1]	Are there other potential impacts to soil resources that individually or collectively could result in significant cumulative effects?
No[1]	Is the site highly eroded and characterized by gullies and/or poor vegetative cover?
No[1]	Are there sensitive soils within the proposed project that would require additional stabilization measures from the Proposed Action beyond standard BMPs?
No[1]	Will permafrost be significantly impacted?
No[1]	***Is additional cumulative effects analysis needed?***
CEA Level: (1) Quick Look	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.1.1.1 FRA

USAG FRA determined that the No Action Alternative, and the three Proposed Actions would cause minor adverse impacts to soils at FRA (see Section 3.2.2). Past activities within FRA have adversely affected soil resources and present and future activities will likely continue to affect FRA soil resources. As indicated in Table 4.0-1 development of range lands and military training have occurred within FRA since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the cantonment and training infrastructure within FRA range lands. According to GIS data, approximately 2 percent of the lands within FRA's approximate 54,903 acres (including cantonment) have been impacted from military activity, with a small amount of degradation due to recreational activities.

Development and use of Army lands for training will likely continue into the future, however, no foreseen growth is anticipated at this time. Future foreseeable military activities, including SBCT and ABCT training, joint-basing of Elmendorf AFB and FRA and continued recreational use of FRA lands would continue to cause disruption to soils. Continued regional development of the surrounding communities of Anchorage and Eagle River is likely to occur into the future. Continued Army sustainable range management within FRA's 62,000 acres, including continued implementation of SRP initiatives and ITAM activities, would continue to repair and restore disturbed areas and would likely keep regional cumulative adverse soil impact to less than significant levels. Based on answers to the Quick Look

questions above, no further analysis and discussion is required; the No Action and Proposed Actions would not result in a significant adverse cumulative impact to soils at FRA.

4.1.1.2 FWA

USAG FWA determined that the No Action Alternative, and the three Proposed Actions would cause minor adverse impacts to soils at FWA (see Section 3.2.2). Similar to FRA, past activities within FWA have adversely affected soil resources and present and future activities will likely continue to affect FWA soil resources (Table 4.0-2). According to GIS data the following percentages of FWA lands have been impacted by military activity:

- Approximately 11 percent of the lands within the approximate 5,561 acres of range land on FWA's Main Post;
- Approximately 0.2 percent of the lands within TFTA's approximate 655,000 acres; and
- Approximately 2 percent of the lands within YTA's approximate 247,952 acres.

4.1.1.3 DTA

USAG FWA determined that the No Action Alternative, and the three Proposed Actions alternatives would cause minor adverse impacts to soils at DTA (see Section 3.2.2). Similar to FRA and FWA, past activities within DTA have adversely affected soil resources and present and future activities will likely continue to affect DTA soil resources (Table 4.0-3). According to GIS data, approximately 3 percent of the lands within DTA's approximate 635,600 acres have been impacted from military, with a small amount of degradation due to recreational activities. Similar to FRA and FWA, past degradation and adverse impacts of future Army actions would likely continue to be less than significant through continued implementation of the SRP and ITAM initiatives. In addition, other regional initiatives including the Delta Agricultural Use Project and multiple use land management (see Table 4.0-3) would aid in the long-term sustainability of regional soil resources, further reducing the potential for adverse cumulative effects to soil resources.

4.1.2 Land Use, Energy and Utilities

Section 3.1 outlines the significance threshold for land use, energy and utilities; accordingly a severe adverse cumulative impact would create energy, water, or sewer demand in excess of existing supply or would require substantial change to regional development planning. The geographic scope for land use, energy and utilities is limited to the installation boundaries and adjacent communities. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to land use, energy, and utilities. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative impacts by each installation follows the table.

Land Use, Energy and Utilities Quick Look Table	
No[1]	Is the Range and Training Lands Program Development Plan for the installation more than 5 to 10 years old and, if so, is the Real Property Master Plan (RPMP) subject to current updating/modification efforts?
Yes[1]	Are land use controls utilized within the RPMP?

Land Use, Energy and Utilities Quick Look Table	
Yes[1]	Is there extensive usage of on-post lands for recreational purposes? *Section 4.1.3 discussed cumulative impacts on recreation.*
Yes[1]	Is there continuing cooperation and collaboration regarding land usage between the installation and local and regional governmental agencies and other stakeholder groups?
No[1]	Are there any historical or current conflicts between the installation and various governmental agencies, and/or stakeholder groups relative to on-post or off-post land usage?
No **YTA** **TFTA** **DTA** Yes FRA FWA	Is there any evidence of current or anticipated encroachment or urban sprawl that might have implications relative to on-post land usage? *Both FRA and FWA Main Post are within proximity to population centers which have the potential for growth. New development and re-development has been occurring along Muldoon Road which abuts the southeastern boundary of FRA's training lands. The potential for development adjacent to FWA Main Post also exists in the Secluded Acres, east of the runway and the area south of the Richardson Highway to the west of the FWA SAC Range. USARAK garrisons have identified these areas are currently analyzing the potential of future land use conflicts through Army Compatible Use Buffer (ACUB) Program project development.*
No[1]	Will the Proposed Action require on-post land use classification changes that exceeds plus or minus 5 percent?
Yes[1]	Is there an existing sustainability program for the installation, and does it address sustainability considerations in site selections?
No[1]	Does the installation currently have contiguous buffer zones or conservation easements? *All buffers are contained within existing range lands.*
Yes[1]	Have energy prices in the region been rising?
No[1]	Does the Proposed Action expand installation demands for regional energy?
No[1]	**Is additional cumulative effects analysis needed?**
CEA Level: (1) Quick Look	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.1.2.1 FRA

USAG FRA determined that the No Action Alternative and the three Proposed Actions alternatives would cause minor adverse impacts to land use, energy and utilities at FRA (see Section 3.7.2). As indicated in

Table 4.0-1 Army acquisition of lands encompassing FRA changed the land use within the installation boundaries to military land uses (cantonment area and range training lands). Development and growth within FRA have occurred within existing installation boundaries and range planning has incorporated SDZ buffers and vegetation screens to avoid conflict and reduce visual impacts to surrounding land uses. This development has also required the use of energy and the addition and extension of utilities, primarily within the cantonment area and SAC range.

Future development and use of Army lands for training will likely continue into the future, however, no foreseen growth is anticipated at this time, and no changes to existing land uses or conflicts with adjacent land uses are anticipated. Continued regional development of the surrounding communities of Anchorage and Eagle River is likely to occur into the future, however, no major developments adjacent to FRA lands are known for the foreseeable future. The Joint Base Elmendorf-Richardson is currently preparing a Joint Base Master Plan to address future development within cantonment areas, this plan excludes planning efforts within FRA range lands, and would therefore, not cumulatively affect range land uses. FRA Master Planning, however, has been involved in preparation and review of this PEA. In addition, the Proposed Action, in combination with existing and foreseeable future projects would not cause a significant cumulative impact on energy demand or utilities. Based on answers to the Quick Look questions above, no further analysis and discussion is required; the No Action and Proposed Actions would not result in a significant adverse cumulative impact to land use, energy and utilities.

4.1.2.2 FWA

Minor cumulative impacts would be anticipated, similar to those as discussed for FRA.

4.1.2.3 DTA

Minor cumulative impacts would be anticipated, similar to those as discussed for FWA.

4.1.3 Public Access, Recreation and Subsistence

Section 3.1 outlines the significance threshold for public access, recreation and subsistence; accordingly a severe adverse cumulative impact would eliminate the regional availability of a particular recreation or subsistence opportunity, or would result in long-term closure of an important public access point. The geographic public access, recreation and subsistence includes the installation boundaries and adjacent state and Federal lands. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to public access, recreation and subsistence. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative impacts by each installation follows the table.

Public Access, Recreation and Subsistence Quick Look Table	
Answer	**Question**
No[1]	Would the Proposed Action result in a significant impact to public access, recreation or subsistence (availability of any subsistence resources)?
No[1]	Are any areas within the project's footprint considered to be critical or very important for access and

Public Access, Recreation and Subsistence Quick Look Table	
Answer	**Question**
	recreation within the region of influence or subsistence access or resource sustainability?
No **NA** **PA-3** **Yes** **PA-1** **PA-2**	Does the Proposed Action reduce public access, the amount of land available, or the amount/timing of lands available for recreational activities or land available or change the timing of availability for subsistence activities? *New construction projects under Proposed Action 1 would potentially reduce available lands for the public and subsistence activities, however, these projects would result in both a minor loss of recreational lands and a minor impact to subsistence resources (wildlife and fisheries). Road improvement projects would improve access conditions. Areas within the proposed SAC range adaptable use zones under Proposed Action 2 would be off limits to the public, including subsistence activities, however, this loss would be minor as each zone incorporates the footprints of existing SAC ranges which are currently off-limits and would avoid the need for establishing SAC ranges elsewhere on the installations.*
No[1]	Have past activities in the area resulted in negative impacts to public access and recreation or subsistence resources?
No[1]	Could the Proposed Action lead to further projects in the area that could negatively impact public access and recreation or subsistence resources?
No[1]	***Is detailed cumulative effects analysis needed?***
CEA Level: (1) Quick Look	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.1.3.1 FRA

USAG FRA determined that the No Action Alternative and the three Proposed Actions would cause minor adverse impacts to public access; recreation and subsistence at FRA (see Section 3.8.2). As indicated in Table 4.0-1, Army acquisition of lands encompassing FRA and past and current training activities have either caused portions of the range lands to either be restricted to public access (i.e., SAC range) or periodic closures during training exercises (i.e., ground operations, air drops, etc.). The passage of the Sikes Act in 1960, however, opened portions of FRA to recreation access. Passage of this Act, in combination with the USARTRAK system has allowed for public access, recreation, and subsistence activities to continue within FRA lands.

Current and future training activities at FRA would result in temporary closures of training areas to public access, recreation, and subsistence activities and proposed SAC range adaptable use zones would also be permanently closed. Overall public access, recreation, and subsistence activities would be maintained; therefore, only minor adverse cumulative impacts would be anticipated. In addition, continued and future implementation of the INRMP Program and monitoring of military training effects on wildlife and fisheries would help maintain sustainable resources at FRA. Based on answers to the Quick Look

questions above, no further analysis and discussion is required; No Action and Proposed Actions would not result in a significant adverse cumulative impact to public access, recreation and subsistence.

4.1.3.2 FWA

Minor cumulative public access, recreation, and subsistence impacts would be anticipated, similar to those as discussed for FRA.

4.1.3.3 DTA

Minor cumulative public access, recreation, and subsistence impacts would be anticipated, similar to those as discussed for FRA.

4.1.4 Fire Management

Section 3.1 outlines the significance threshold for fire management; accordingly a severe adverse cumulative impact would be inconsistent with goals and objectives contained within the IWFMP or would pose a risk exceeding response capacity. The geographic scope for fire management includes the installation boundaries, adjacent state and Federal lands, and adjacent communities. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to fire management. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions and in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative impacts by each installation follows the table.

Fire Management Quick Look Table

Answer	Question
No[1]	Would the Proposed Action result in a significant adverse impact to fire management?
No[1]	Does the Proposed Action involve development of new facilities or firing ranges that could pose a fire risk?
No[1]	Is the proposed site managed as Full or Critical fire management zones?
No **NA** **PA-2** **PA-3** Yes **PA-1**	Does the Proposed Action increase the level of intensity of military activity on military lands? *None of the Proposed Actions directly involve increasing the levels of Soldier training or military activity with USARAK range lands above levels recognized in pervious NEPA documentation (see Section 1.5.1).* *Proposed Action 1 involves a few additional facilities or expansion of facilities which would increase the coverage of military training activities.*
Yes[1]	Does the area contain high levels of flammable vegetative "fuels"? *All Proposed Actions have the potential to affect areas within or adjacent to vegetated areas.*

Fire Management Quick Look Table	
Answer	**Question**
Yes[1]	Has fire management been an issue in the past in the area? *The threat of wildfires has been prominent throughout Alaskan history. Natural wildfires have been recognized as essential to a healthy functional ecosystem. However, as human occupation increases, wildfires threaten human health and property. Human-induced fires, including those of the military, exacerbate this threat.*
No[1]	Will fire risk be significantly impacted?
Yes[1]	Has past activity in this area increased fire risk? *Beyond natural causes of fire (lightning), military training activities have increased the risk of fire.*
Unknown[1]	Would future development and other activity occur in the area as a result of the Proposed Action that would increase the risk of wildland fire? *Each Proposed Action involves a programmatic approach to streamline NEPA review for existing and future routine range projects.*
No	***Is additional cumulative effects analysis needed?***
CEA Level: (1) Quick Look	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.1.4.1 FRA

USAG FRA determined that the No Action Alternative and the three Proposed Actions would cause minor adverse impacts to fire management FRA. As discussed in Section 3.9.1 and in the Quick Look questions, past military training activities have caused unintentional fire starts. Historical sources of wildfire starts in FRA include human causes, military training and lightning. Current and future training activities at FRA would result in the potential for fire starts. The potential for wildfire starts, however, have been reduced through development of the IWFMP and agreements with BLM. This includes restriction of training activities during high fire potential and establishment of firebreaks to avoid the spread of unintentional wildfires. Based on answers to the Quick Look Questions above, no further analysis and discussion is required; the No Action and Proposed Actions would not result in a significant adverse cumulative impact to fire management.

4.1.4.2 FWA

Minor cumulative fire management impacts would be anticipated, similar to those as discussed for FRA.

4.1.4.3 DTA

Minor cumulative fire management impacts would be anticipated, similar to those as discussed for FRA.

4.1.5 Noise

Section 3.1 outlines the significance threshold for noise; accordingly a severe adverse cumulative impact would result in exceedance of the 65 A-weighted decibel day night average. The geographic scope for fire management includes the installation boundaries and adjacent communities. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to noise. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative impacts by each installation follows the table.

Noise Quick Look Table	
No[1]	Will the Proposed Action create noise zones (Zones 1, 2 and 3) that will extend off the installation?
No **NA** **PA-3** Yes **PA-2** **PA-1**	Does the Proposed Action increase the level of intensity of military activity on military lands? *None of the Proposed Actions directly involve increasing the levels of Soldier training or military activity with USARAK range lands above levels recognized in pervious NEPA documentation (see Section 1.5.1).* *Proposed Action 1 involves a few additional facilities or expansion of facilities which would increase the coverage of military training activities. Proposed Action 2 would direct future development (intensity of military training activities) within the proposed SAC range adaptable use zones.*
No[1]	Does the Proposed Action include the use of noisier equipment (or munitions) than that historically used?
No[1]	Are there any (1) human populations or (2) populations of sensitive animal species within the noise zones? *Existing noise conditions would not change as part of the Proposed Actions, any noise would be compatible with existing range training lands. Any future project considered under this programmatic analysis which has a potential change to noise contours, extending off installation boundaries would require noise modeling by the Center for Health Promotion and Preventative Medicine.*
No[1]	Has the adjacent civilian community (nearest the location of the Proposed Action) complained about noise associated with past or on-going activities?
No[1]	Are there local or regional controversies over noise levels at the installation that would indicate the need for cumulative effects analysis?
No[1]	***Is additional cumulative effects analysis needed?***
CEA Level: (1) Quick Look	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.1.5.1 FRA

USAG FRA determined that the No Action Alternative and the three Proposed Actions would cause no to minor adverse impacts to noise. As discussed in Section 3.11.1 and in the Quick Look questions, past military training activities have created elevated noise levels with FRA range lands. Increased private

development of land within adjacent communities including Anchorage and Eagle River have increased the potential for military activities within FRA range lands to cause adverse noise conditions to adjacent communities. These impacts, however, have been avoided through siting of projects and Soldier training away from these communities. In addition, future projects resulting for a potential change in noise contours extending off installation boundaries would require noise modeling by the Center for Health Promotion and Preventative Medicine. Based on answers to the Quick Look questions above, no further analysis and discussion is required; the No Action and Proposed Actions would not result in a significant adverse cumulative impact to noise.

4.1.5.2 FWA

Minor cumulative noise impacts would be anticipated, similar to those as discussed for FRA.

4.1.5.3 DTA

Minor cumulative noise impacts would be anticipated, similar to those as discussed for FRA.

4.1.6 Human Health & Safety

Section 3.1 outlines the significance threshold for human health and safety; accordingly a severe adverse cumulative impact would violate established health and safety laws. The geographic scope for human health and safety is limited to the installation boundaries. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to human health and safety. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative impacts by each installation follows the table.

Human Health and Safety Quick Look Table	
No[1]	Would the Proposed Action result in a significant impact to human health or safety?
Likely[1]	Would the Proposed Action be in compliance with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*?
No[1]	***Is additional cumulative effects analysis needed?***
CEA Level: (1) Quick Look	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.1.6.1 FRA

USAG FRA determined that the No Action Alternative and the three Proposed Actions would cause minor adverse impacts to human health and safety. As discussed in Section 3.12.1 and in the Quick Look

questions, the potential exists for adverse impacts to human health and safety due to training activities within FRA range lands. Increased private development of land within adjacent communities including Anchorage and Eagle River and recreation and subsistence activities within FRA range lands all increase the human health and safety concerns during training exercises, encountering contamination or UXO. Both contamination and UXO remain a primary human health and safety concern as well during construction of the Proposed Actions in range lands due to the history of Army activity and potential for contaminated soils and UXO. These increased risks, however, are reduced through adherence to regulations and guidance documents discussed in Section 3.12.1 during existing and future construction activities, operations and during Soldier training to safeguard civilian and Soldier health and safety. In addition, the continuation of restricted access to high risk human health and safety areas (impact areas and SAC ranges) to recreational and subsistence users, continued implementation of the USARTRAK recreation system, and well demarcated impact and SAC range training area boundaries would help safeguard human health and safety for these users. Based on answers to the Quick Look questions above, no further analysis and discussion is required; the No Action and Proposed Actions would not result in a significant adverse cumulative impact.

4.1.6.2 FWA

The potential for minor cumulative human health and safety impacts would be similar to those as discussed for FRA.

4.1.6.3 DTA

The potential for minor cumulative human health and safety impacts would be similar to those as discussed for FRA.

4.2 ANALYSIS AND DISCUSSION

4.2.1 Surface Water and Floodplains

Section 3.1 outlines the significance threshold for surface water and floodplains; accordingly a severe adverse cumulative impact would result in the introduction of pollutants that cumulative degrade water quality standards of a surface water body or alter patterns/increase intensity of flood water movement. The geographic scope for surface water and floodplains includes the installation boundaries and immediate downstream users of these resources. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to surface water and floodplains. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions 1 and 3 with potential moderate cumulative impacts from implementation of Proposed Action 2 in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative surface water and floodplain impacts by each installation follows the table.

Surface Water and Floodplains Quick Look Table	
Answer	**Question**
No	Would the Proposed Action result in a significant impact to surface water?
No **NA**	Does the Proposed Action involve development within a floodplain?
Yes **PA-1** **PA-2**	*Proposed Actions 1 and 2 have the potential to involve development within floodplain areas (also see Section 3.3.2 and Appendix G).*
Unknown **PA-3**	*Routine range projects reviewed under Proposed Action 3 have the potential to occur within floodplain areas, however, this Proposed Action does not involve site-specific project siting, Actual impact to floodplain resources would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.*
No **NA**	Are there seasonally flooded areas within the footprint?
Yes **PA-1** **PA-2**	*Proposed Actions 1 and 2 have the potential to involve development within seasonally flooded areas (also see Section 3.3.2 and Appendix G).*
Unknown **PA-3**	*Routine range projects reviewed under Proposed Action 3 have the potential to occur within seasonally-flooded areas, however, this Proposed Action does not involve site-specific project siting, Actual impacts would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.*
No **NA**	Are streams, lakes, or ponds present within the footprint?
Yes **PA-1** **PA-2**	*A few of the linear projects associated with Proposed Action 1 would involve crossing stream resources. In addition, the adaptable use zones associated with Proposed Action 2 include water resources within their proposed boundaries (see Section 3.3.2).*
Unknown **PA-3**	*Routine range projects reviewed under Proposed Action 3 have the potential to occur within proximity to these resources, however, this Proposed Action does not involve site-specific project siting, Actual impacts would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.*
No **NA** **PA-2** **PA-3**	Does the Proposed Action increase the level of intensity of military activity on military lands? *None of the Proposed Actions directly involve increasing the levels of Soldier training or military activity with USARAK range lands above levels recognized in pervious NEPA documentation (see Section 1.5.1).*
Yes **PA-1**	*Proposed Action 1 involves a few additional facilities or expansion of facilities which would increase the coverage of military training activities.*
No[1]	Are there other potential impacts to surface water that individually or collectively could result in significant cumulative effects?

Surface Water and Floodplains Quick Look Table	
Answer	**Question**
No[1]	Could the Proposed Action lead to future projects or activity in the area that could negatively affect surface water?
No **NA** Yes **PA-1** **PA-2** **Unknown** **PA-3**	Does the Proposed Action involve clearing vegetation within 75 feet of open water? *The Proposed Actions 1 and 2 involve the potential for disturbance within a 75-foot buffer, however a minimal 75-foot buffer would be maintained from all open waters.* *Routine range projects reviewed under Proposed Action 3 have the potential to occur within proximity to these resources, however, this Proposed Action does not involve site-specific project siting, Actual impacts would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.*
No[1]	Have negative impacts to surface water been an issue in the past?
No[1]	***Is additional cumulative effects analysis needed?***
CEA Level: (1) Quick Look	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.2.1.1 FRA

No Action Alternative

USAG FRA determined that the No Action Alternative, and the three Proposed Actions would cause minor adverse impacts to surface water and floodplains at FRA (see Section 3.3.2). Past activities within FRA have adversely impacted surface water and floodplain resources and present and future activities will likely have the potential to affect FRA surface water and floodplain resources. As indicated in Table 4.0-1 development of range lands and military training have occurred within FRA since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the cantonment and training infrastructure within FRA range lands which have involved placement of roads which have required the placement of bridges across steams and use of culverts to direct surface water flows. Past disturbance of soils from training and development of infrastructure with impervious surfaces, both within FRA and adjacent communities has also resulted in sedimentation into surface waters from stormwater runoff and increased surface water flows during storm events, which when combined with regional development, have also contribute to stream quality degradation. As stated in Section 3.3.1, Ship Creek is currently on the ADEC's 303(d) list for petroleum hydrocarbons, oil and grease due to urban runoff. In addition, Ship Creek is also impaired from fecal coliform bacteria due to urban runoff, however, is not currently on the state's 303(d) list for this impairment (ADEC, 2009). Eagle River is also recognized as impaired for ammonia and metals within the vicinity of Eagle River due

to a wastewater treatment facility, however, is not listed on the state's 303(d) list (ADEC, 2009). To a lesser degree, development has occurred within floodplain areas due to regulations contained under 44 CFR, Section 60.3 *Flood plain Management Criteria for Flood-prone Areas* and EO 11988, *Floodplain Management* directing development activities away from flood-prone areas.

Future foreseeable military use of FRA would have the potential to cause adverse impacts to surface waters. Training would increase the potential for soil disturbance and the potential for sedimentation into adjacent surface waters. In addition, increased development and impervious surfaces would increase the potential for increased stormwater runoff and the potential for contribution of pollutants (petroleum hydrocarbons, oil and grease) into existing impaired waters of Ship Creek and Eagle River. Active monitoring of range and training lands and restoration of degraded areas, however, would continue to reduce overall adverse impacts from military activity of range lands. In addition, existing and future compliance with NPDES including stormwater management and pollution prevention would offset cumulative adverse impacts associated with stormwater volume and pollutant runoff associated with military activities. NPDES requirements would also apply to private development within adjacent communities which share watersheds with FRA, which would also counteract the likelihood of cumulative adverse impacts to surface waters. Based on answers to the Quick Look Questions above, no further analysis and discussion by Proposed Action is required; overall cumulative impact from the No Action and Proposed Actions would not result in significant adverse cumulative impact.

Proposed Action 1

As stated in Section 3.3.2, up to moderate adverse impacts could be anticipated under Proposed Action 1, however, implementation of SOPs and BMPs would reduce these impacts to none or minor. This level of disturbance, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to surface waters. In addition, long-term beneficial impacts could be anticipated for surface waters within FRA as road improvements would restrict vehicles maneuvering off-road and hardened surfaces for Soldier training would reduce erosion and the potential for sedimentation and turbidity into adjacent streams.

Proposed Action 2

As stated in Section 3.4.2, moderate to severe adverse impacts could occur from full development of the proposed adaptable use zone. Significance of impact, however, would be reduced through mitigation measures adopted by USAG FRA (see Section 3.3.2.3.2). These measures to reduce impacts and the low likelihood of full development within the proposed adaptable use zone combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute, overall minor to moderate adverse cumulative impacts to surface waters within FRA. In addition, continued implementation of the ITAM Program would help monitor the military's effects of training on the environment, including future development and training activities affects on surface water quality within and downstream of the proposed adaptable use boundaries. The potential for adverse impacts on water quality from training would be closely monitored by the Army.

Proposed Action 3

As stated in Section 3.3.2, no to minor adverse impacts would be anticipated from routine range projects discussed under Proposed Action 3 with implementation of environmental stewardship range construction guidelines. This level of disturbance, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to surface waters. A cumulative beneficial reduction of sediments would be likely for those projects that provide road improvements or hardened surfaces for Soldier training that would further reduce potential for sedimentation and stream turbidity.

Overall Impact Summary

Overall cumulative adverse impacts from implementation of all three Proposed Actions would be minor to moderate. Adverse cumulative impacts from Army actions would be avoided or reduced through use of SOPs and BMPs including specific mitigative measures including the restriction of ground disturbing activities adjacent to stream or surrounding waterbodies (see Chapter 5).

4.2.1.2 FWA

No Action Alternative

USAG FWA determined that the No Action Alternative, and the three Proposed Actions alternatives would cause minor adverse impacts to surface water and floodplains at FWA (see Section 3.3.2). Past activities within FWA have adversely impacted surface water and floodplain resources similar to causes discussed for FRA by actions outlined in Table 4.0-2. In addition, As stated in Section 3.3.1, the Chena River is currently on the ADEC's 303(d) list for petroleum products and sediment due to urban runoff.

Future foreseeable military use of FWA would have the potential to cause adverse impacts to surface waters. Training would increase the potential for soil disturbance and the potential for sedimentation into adjacent surface waters. In addition, increased development and impervious surfaces would increase the potential for increased stormwater runoff and the potential for contribution of pollutants (petroleum products and sediment) into 303(d) listed waters of the Chena River. Similar to FRA, active monitoring of range and training lands and restoration of degraded areas and NPDES compliance would also counteract the likelihood of cumulative adverse impacts to surface waters. Based on answers to the Quick Look Questions above, no further analysis and discussion by Proposed Action is required; overall cumulative impact from the No Action and Proposed Actions would not result in significant adverse cumulative impact.

Proposed Action 1

As stated in Section 3.3.2, up to moderate adverse impacts could be anticipated under Proposed Action 1, however, implementation of SOPs and BMPs would reduce these impacts to none or minor. This level of disturbance, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to surface waters. In addition, long-term beneficial impacts could be anticipated for surface waters within FWA as road improvements would restrict vehicles maneuvering off-road and hardened surfaces for Soldier training would reduce erosion and the potential for sedimentation and turbidity into adjacent streams.

Proposed Action 2

As stated in Section 3.4.2, moderate to severe adverse impacts could occur from full development of the proposed adaptable use zones within FWA and YTA. Significance of impact, however, would be reduced through mitigation measures adopted by USAG FWA (see Section 3.3.2.3.2). These measures to reduce impacts and the low likelihood of full development within the proposed adaptable use zone combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute, overall minor to moderate adverse cumulative impacts to surface waters within FWA and YTA. In addition, continued implementation of the ITAM Program would help monitor the military's effects of training on the environment, including future development and training activities affects on surface water quality within and downstream of the proposed adaptable use boundaries. The potential for adverse impacts on water quality from training would be closely monitored by the Army.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative surface water and floodplain effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall cumulative adverse impacts from implementation of all three Proposed Actions would be minor to moderate. Measures to avoid and reduce impacts would be similar to those discussed for FRA.

4.2.1.3 DTA

No Action Alternative

USAG FWA determined that the No Action Alternative, and the three Proposed Actions alternatives would cause minor adverse impacts to surface water and floodplains at DTA (see Section 3.3.2). Past activities within DTA have adversely impacted surface water and floodplain resources similar to causes discussed for FRA by actions outlined in Table 4.0-3. As stated in Section 3.3.1, however, no 303(d) listed waters or impaired waters occur within the DTA region.

Future foreseeable military use of DTA would have the potential to cause adverse impacts to surface waters. Training would increase the potential for soil disturbance and the potential for sedimentation into adjacent surface waters. As discussed in Section 3.2.1, however, Delta Creek and Delta River waters typically carry a high load of sediments due to glacial source waters; therefore, any cumulative load of regional sediment would not likely result in noticeable cumulative impacts provided NPDES and stormwater measurement measures continue to be implemented. In addition, increased development and impervious surfaces would increase the potential for increased stormwater runoff into adjacent surface waters. Similar to FRA, active monitoring of range and training lands and restoration of degraded areas and NPDES compliance would also counteract the likelihood of cumulative adverse impacts to surface waters. Based on answers to the Quick Look Questions above, no further analysis and discussion by Proposed Action is required; overall cumulative impact from the No Action and Proposed Actions would not result in significant adverse cumulative impact.

Proposed Action 1

As stated in Section 3.3.2, up to moderate adverse impacts could be anticipated under Proposed Action 1, however, implementation of SOPs and BMPs would reduce these impacts to none or minor. This level of disturbance, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to surface waters. In addition, long-term beneficial impacts could be anticipated for surface waters within DTA as road improvements would restrict vehicles maneuvering off-road and hardened surfaces for Soldier training would reduce erosion and the potential for sedimentation and turbidity into adjacent streams.

Proposed Action 2

As stated in Section 3.4.2, moderate to severe adverse impacts could occur from full development of the proposed adaptable use zone. Significance of impact, however, would be reduced through mitigation measures adopted by USAG FWA (see Section 3.3.2.3.2). These measures to reduce impacts and the low likelihood of full development within the proposed adaptable use zone combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute, overall minor to moderate adverse cumulative impacts to surface waters within DTA. In addition, continued implementation of the ITAM Program would help monitor the military's effects of training on the environment, including future development and training activities affects on surface water quality within

and downstream of the proposed adaptable use boundaries. The potential for adverse impacts on water quality from training would be closely monitored by the Army.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative surface water and floodplain effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall, cumulative adverse impacts from implementation of all three Proposed Actions would be minor to moderate. Measures to avoid and reduce impacts would be similar to those discussed for FRA and FWA.

4.2.2 Wetlands

Section 3.4.2 outlines the significance threshold for wetlands; accordingly a severe adverse cumulative impact would result in a loss of more than 10 percent or greater impact to wetland resources. The geographic scope for wetlands includes the installation boundaries and adjacent undeveloped private, state, and Federal lands. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to wetland resources. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions 1, 3 and Proposed Action 2 (FRA, YTA) with potential moderate cumulative impacts from implementation of Proposed Action 2 (FWA) in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative wetland impacts by each installation follows the table.

Wetlands Quick Look Table

Answer	Question
No **NA** **PA-1** **PA-3** Yes **PA-2** **(FWA)**	Would the Proposed Action result in a significant loss of wetlands (consider fill in wetlands, conversion of wetlands to uplands by other than filling, and disturbance to wetlands)? *Unmitigated, implementation of the worst-case scenario under Proposed Action 2 for the proposed FWA SAC Range Adaptable Use Zone would cause a significant loss of wetlands.*
No **NA** **PA-1** **PA-3** Yes **PA-2** **(FWA)**	Are USAG Alaska wetlands subject to a significant decrease in overall size due to the Proposed Action and other military actions? *Unmitigated, implementation of the worst-case scenario under Proposed Action 2 for the proposed FWA SAC Range Adaptable Use Zone would cause a significant loss of wetlands.*
No[1]	Does a wetland delineation for the Proposed Action footprint exist?

Wetlands Quick Look Table	
Answer	**Question**
Unknown[1]	Are any wetlands in the vicinity of the Proposed Action considered to be particularly ecologically important? *As part of the Section 404 permitting process, a functional assessment would be required for projects which have unavoidable adverse impacts to wetlands. As stated in Section 3.4.1, typically higher function wetlands (ecologically important) include riverine areas (including floodplains), permanent emergent areas, semi-permanent emergent areas, riparian areas, and other sensitive wildlife habitats that lie within any wetland areas.*
Yes[1]	Have past actions caused negative potential impacts to wetlands resources in the area? *USARAK impacts are moderate to wetlands.*
Unknown[1]	Are future actions by non-military and other military entities expected and would they cause impacts on wetland resources?
Yes[1]	***Is additional cumulative effects analysis needed?***
CEA Level: (2) Analysis and Discussion	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.2.2.1 FRA

No Action Alternative

Past activities within FRA have adversely impacted wetland and future activities will likely have the potential to affect FRA wetland resources. As indicated in Table 4.0-1 development of range lands and military training have occurred within FRA since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the cantonment and training infrastructure within FRA range lands, and combined with regional development, have led to historic regional loss of wetlands. Although the extent of wetland loss within the region cannot be quantified, it can be assumed that regionally, a moderate loss of wetlands have occurred over time, with the greatest losses within Anchorage, Eagle River, Elmendorf AFB, and the cantonment area of FRA.

Future foreseeable military use of FRA would have the potential to cause adverse impacts to wetlands. Training would increase the potential for wetland degradation through soil disturbance and vegetation crushing. In addition, increased development within FRA and future development within the Joint Base Elmendorf-Richardson and adjacent communities would continue to pose the potential for wetland loss and degradation. Active monitoring of range and training lands and restoration of degraded areas, however, would continue to reduce overall adverse impacts from military activity of range lands. In addition, existing and future compliance with Section 404 of the Clean Water Act including wetland permitting and mitigation requirements for Army and private development within adjacent communities which would also counteract the likelihood of cumulative adverse impacts to remaining wetland resources.

Proposed Action 1

As stated in Section 3.4.2, less than 1 percent of existing wetlands within FRA could be impacted under Proposed Action 1. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to wetlands. In addition, long-term beneficial impacts could be anticipated for wetlands within FRA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments.

Proposed Action 2

As stated in Section 3.4.2, up to 2 percent of FRA wetlands could be disturbed under Proposed Action 2. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to wetlands. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher function wetlands elsewhere within FRA range lands.

Proposed Action 3

As Proposed Action 3 evaluates the adoption and standardized streamline use of SOPs and BMPs for routine range projects, the extent of wetland impacts could not be quantified, however, Section 3.4.2 concluded that overall adverse impacts to wetland resources using a standardized and streamlined SOP and BMP approach would result in no to minor adverse wetland impacts. Beneficial cumulative impacts could occur for future USARAK construction projects as range planners would have a standardized and streamlined SOP and BMP approach which could be transferred to future projects outside of the scope of routine range projects considered as a part of Proposed Action 3 within this PEA. This would likely result in the avoidance and minimization of wetland resources within FRA range lands during the planning process and also take into consideration preservation of higher functioning wetlands.

Overall Impact Summary

Overall up to 122 acres of wetlands, or 3 percent of the 4,990 acres of wetland within FRA could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a minor adverse impact. Future, additional impacts to FRA wetland resources including those from projects identified within Table 4.0-1 would be reduced to overall minor adverse cumulative impacts through using standardized and streamlined SOP and BMP developed as part of Proposed Action 3. In addition, specific mitigative measures including implementation of a SAMP within the proposed FWA SAC Range Adaptable Use Zone would further reduce adversity of cumulative impacts (see Chapter 5).

4.2.2.2 FWA

No Action Alternative

Past activities within FWA have adversely impacted wetland and future activities will likely have the potential to affect FWA wetland resources. As indicated in Table 4.0-2, these activities are similar in nature to those described for FRA. Although the extent of wetland loss within the region cannot be quantified, it can be assumed that regionally, a moderate loss of wetlands has occurred over time, with the greatest losses within Fairbanks, Eielson AFB, and the Main Post of FWA.

Future foreseeable military use of FWA Main Post and training lands would have the potential to cause adverse impacts to wetlands and existing and future monitoring, permitting and mitigation measures would continue to reduce significance of impacts; similar to those described for FRA.

Proposed Action 1

As stated in Section 3.4.2, up to 2 percent of existing wetlands within FWA Main Post, and less than 1 percent of existing wetlands within TFTA and YTA could be impacted under Proposed Action 1. These percentages, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to wetlands. In addition, long-term beneficial impacts could be anticipated for wetlands within YTA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments.

Proposed Action 2

As stated in Section 3.4.2, up to 52 percent of FWA Main Post wetlands could be disturbed under Proposed Action 2 and up to5 percent of YTA wetlands could be disturbed. Significance of impact, however, would be reduced through mitigation measures adopted by USAG FWA (see Section 3.4.2.3.2). These percentages combined with mitigation for FWA Main post wetlands and the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute, overall moderate adverse impacts to wetlands within FWA and YTA. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher function wetlands elsewhere within FWA range lands.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative wetland effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall up to 3,408 acres of wetlands, or 52 percent of the 6,500 acres of wetland within FWA Main Post and 2,579 acres of wetlands, or 6 percent of the 42,600 acres of wetland within YTA could be impacted from implementation of Proposed Actions 1 and 2 combined. As stated for Proposed Action 2, significance of impact would be reduced through mitigation measures adopted by USAG FWA (see Section 3.4.2.3.2), resulting in a moderate adverse impacts. Measures to avoid and reduce impacts would be similar to those discussed for FRA; however, due to the extent of adverse impacts resulting from Proposed Action 2, moderate adverse cumulative impacts to wetland resources would be likely at both FWA Main Post and YTA.

4.2.2.3 DTA

No Action Alternative

Past activities within DTA have adversely impacted wetlands and future activities will likely have the potential to affect DTA wetland resources. As indicated in Table 4.0-3, these activities are similar in nature to those described for FRA. Although the extent of wetland loss within the region cannot be quantified, it can be assumed that regionally, a minor loss of wetlands has occurred over time, with the greatest losses within Delta Junction, Fort Greely, and DTA East.

Future foreseeable military use of DTA training lands would have the potential to cause adverse impacts to wetlands and existing and future monitoring, permitting and mitigation measures would continue to reduce significance of impacts; similar to those described for FRA.

Proposed Action 1

As stated in Section 3.4.2, less than 1 percent of existing wetlands within DTA could be impacted under Proposed Action 1. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to wetlands. In addition, long-term beneficial impacts could be anticipated for wetlands within DTA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments.

Proposed Action 2

As stated in Section 3.4.2, less than 1 percent of DTA wetlands could be disturbed under Proposed Action 2. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to wetlands. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher function wetlands elsewhere within DTA range lands.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative wetland effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall up to 2,659 acres of wetlands (less than 1 percent), of the 431,940 acres of wetland within DTA could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a minor adverse impact. Measures to avoid and reduce impacts would be similar to those discussed for FRA.

4.2.3 Vegetation

Section 3.5.2 outlines the significance threshold for vegetation; accordingly a severe adverse cumulative impact would result in a 25 percent or greater impact to vegetation resources, segments habitat such that regional wildlife species are jeopardized, or eliminates local populations of rare or sensitive species. The geographic scope for vegetation includes the installation boundaries and adjacent undeveloped private, state, and Federal lands. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to vegetation. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions 1, 3 and Proposed Action 2 (FRA, YTA) with potential moderate cumulative impacts from implementation of Proposed Action 2 (FWA) in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative vegetation impacts by each installation follows the table.

Vegetation Quick Look Table	
Answer	**Question**
No[1]	Would the Proposed Action result in a significant loss to vegetation?

Vegetation Quick Look Table	
Answer	**Question**
No **NA** Yes **PA-1** **PA-2** Unknown **PA-3**	Does the Proposed Action involve a new disturbance, or does it extend beyond the existing disturbance boundaries? *Routine range projects reviewed under Proposed Action 3 have the potential to occur within proximity to these resources, however, this Proposed Action does not involve site-specific project siting, Actual impacts would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.*
No **PA-2** **(FWA)** Yes **NA** **PA-1** **PA-2**	Has a forest stand or vegetation community map been created for the area? *The 1999 Ecological Land Classification survey did not cover FWA Main Post which includes the area within the proposed FWA SAC Range Adaptable Use Zone.*
Yes[1]	Is the proposed site effectively managed as part of an installation ITAM Program?
No **NA** **PA-2** **PA-3** Yes **PA-1**	Does the Proposed Action increase the level of intensity of military activity on military lands? *None of the Proposed Actions directly involve increasing the levels of Soldier training or military activity with USARAK range lands above levels recognized in pervious NEPA documentation (see Section 1.5.1).* *Proposed Action 1 involves a few additional facilities or expansion of facilities which would increase the coverage of military training activities.*
Yes[1]	Will the Proposed Action affect salvageable timber?
Variable[1]	Is the site characterized by poor vegetative cover or high erosion?
No[1]	Are there any threatened or endangered plant species?
Unknown[1]	Is the area characterized by sensitive habitat? *The entire study area has not been surveyed for sensitive plant species of concern communities or associated habitats. Existing habitat classification systems would not capture the small habitat niches occupied by individual rare plant species. Actual impacts would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.*
Unknown[1]	Is habitat for a Species of Concern being affected? *The entire study area has not been surveyed for sensitive plant species of concern communities or associated habitats. Existing habitat classification systems would not capture the small habitat niches occupied by individual rare plant species. Actual impacts would be determined during the NEPA review/checklist process*

Vegetation Quick Look Table	
Answer	**Question**
	as these routine range activities are funded and locations determined.
Unknown[1]	Would a significant amount of rare plant habitat be impacted by the Proposed Action? *If determined necessary, rare plant surveys would be conducted through the RTLA Program prior to trail design and construction activities.*
Yes[1]	Would the Proposed Action result in the potential introduction or spread of any highly invasive plant species? *Both construction equipment during construction, and year round access of military equipment would increase the potential for introduction or spread of invasive species; however, certain BMPs such as equipment washing and strategic location of gravel pit sources away from invasive species would reduce potential for introduction and spread.*
No[1]	Have previous projects in this area affected the same species or habitats that could be affected by the Proposed Action?
Yes[1]	Would the Proposed Action likely result in further construction projects or increased activity in the area in the future that could affect the same species and habitats potentially being affected by the Proposed Action? *Each Proposed Action involves a programmatic approach to streamline NEPA review for existing and future routine range projects.*
Yes[1]	***Is additional cumulative effects analysis needed?***
CEA Level: (2) Analysis and Discussion	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.2.3.1 FRA

No Action Alternative

Past activities within FRA have adversely impacted vegetation and future activities will likely have the potential to affect vegetation within FRA. As indicated in Table 4.0-1 development of range lands and military training have occurred within FRA since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the approximate 7,200-acre cantonment and training infrastructure within FRA range lands, and combined with regional development, have led to historic regional loss of vegetation through construction of facilities and fragmentation through construction of linear infrastructure (i.e., roads, utilities). According to GIS mapping, 1,325 acres or 2 percent of available 54,903 acres of range lands within FRA have been impacted by human activity and would likely have a loss or degree of vegetation degradation. The greatest losses of vegetation have occurred within the developed areas within Anchorage, Eagle River, Elmendorf AFB, and the cantonment area of FRA.

Future foreseeable military use of FRA would have the potential to cause additional vegetation loss and degradation of vegetation communities. Training would increase the potential for degradation of vegetation through crushing and soil disturbances during training exercises. In addition, increased development within FRA and future development within the Joint Base Elmendorf-Richardson and adjacent communities would continue to pose the potential for reduction of regional vegetation. Active monitoring of range and training lands and restoration of degraded areas, however, would continue to reduce overall adverse impacts from military activity of range lands which would also counteract the likelihood of cumulative adverse impacts to existing vegetation resources from current Army operations and future projects.

Proposed Action 1

As stated in Section 3.5.2, less than 1 percent of existing vegetation within FRA could be impacted under Proposed Action 1. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to vegetation. In addition, long-term beneficial impacts could be anticipated for potential vegetation degradation within FRA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments.

Proposed Action 2

As stated in Section 3.5.2, up to 6 percent of existing vegetation within FRA could be disturbed under Proposed Action 2. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to vegetation. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher functioning vegetation communities such as those which offer riparian buffers or valuable wildlife habitat elsewhere within FRA range lands.

Proposed Action 3

As Proposed Action 3 evaluates the adoption and standardized streamline use of SOPs and BMPs for routine range projects, the extent of vegetation impacts could not be quantified, however, Section 3.5.2 concluded that overall adverse impacts to vegetation using a standardized and streamlined SOP and BMP approach would result in no to minor adverse impacts. Beneficial cumulative impacts could occur for future USARAK construction projects as range planners would have a standardized and streamlined SOP and BMP approach which could be transferred to future projects outside of the scope of routine range projects considered as a part of Proposed Action 3 within this PEA. This would likely result in the avoidance and minimization of vegetation disturbance within FRA range lands during the planning process and would also take into consideration preservation of functioning vegetation communities such as those which offer riparian buffers or valuable wildlife habitat.

Overall Impact Summary

Overall up to 3,562 acres of vegetation, or up to 7 percent of the 53,280 acres of vegetation within FRA range lands could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a minor adverse impact. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 would likely counteract the likelihood of cumulative adverse impacts to remaining vegetation resources and result in only minor direct adverse cumulative impacts. In addition, specific mitigative measures including implementation of a SAMP within the proposed FRA SAC Range Adaptable Use Zone (see Chapter 5) would reduce adversity of cumulative impacts to vegetation.

Greenhouse Gas

An indirect adverse cumulative effect from overall regional vegetation removal from USAG FRA projects and other regional development projects could increase the global level of carbon dioxide, a greenhouse gas. As stated in Section 3.5.1 and further discussed here, vegetation also plays a role in the global carbon budget. Forests can play a role in carbon uptake (acting as a net carbon sink) during growth, or release carbon (acting as a net carbon source) when under stress from elements such as fire, insect mortality and harvesting (Banfield and Kurz, 2005). For a stand to be a net carbon sink, the carbon uptake must be higher than the ongoing losses through decomposition; mature forests tend to play a greater role as carbon sources as the growth of older trees is typically slower and decomposition (greater amount of dead trees) is typically higher (Science Daily, 2001).

Retention of forests and forest management has been investigated as a method for controlling greenhouse gases. Research results have determined that in the short term, carbon exchange depends primarily on physical and climatic factors, and in the long term, ecological factors affect carbon uptake including the types of tree species in the forest, their growth rate, and the age of the forest (Science Daily, 2001). Existing research, however, has primarily explored the general mechanisms behind the roles of forests and their mitigative effects to climate change by acting as carbon sinks and providing evapotranspiration, cooling the atmosphere. The available research lacks the data and understanding to calculate the specific harm from a specific local impact; a better understanding is needed regarding the many influences of forests on climate, both positive and negative feedbacks, and how these factors interact with themselves and human activities as climate change occurs (Science Daily, 2008). At the forest landscape scale, however, the disturbance regime has a major impact on the carbon balance. Increasing forest disturbance rates generally result in a carbon source, while reductions in disturbances result in a carbon sink (Banfield and Kurz, 2005). Consequently, management activities having an effect at the landscape scale, such as suppression of natural disturbances or changing harvest rotation lengths can have a large impact on the forest carbon balance (Banfield and Kurz, 2005).

Although the cumulative impact of vegetation removal on global carbon dioxide levels and effects on climate change cannot be quantified, overall impacts to greenhouse gases from the status quo reduction of carbon sinks resulting from the Proposed Actions and projects listed in Table 4.0-1 would likely be insignificant on a global scale. Implementation of ecological principals during project design such as site fingerprinting (see 3.5.2) within proposed and future FRA projects could be used to concentrate development in areas where past development has occurred to help maintain vegetation cover which naturally mitigates greenhouse gas within FRA training and range lands. In addition, development of a SAMP (see Chapter 5) would help identify areas of vegetation preservation. As the scientific understanding behind the relationship of forest type and the carbon budget are better understood, USARAK garrisons could identify mapped ecotypes (see Section 3.5.1) which maximize carbon uptake and adapt forest management principals to reduce the release of carbon into the atmosphere, further mitigating significance of impacts.

4.2.3.2 FWA

No Action Alternative

Past activities within FWA have adversely impacted vegetation and future activities will likely have the potential to affect vegetation within FWA. As indicated in Table 4.0-2 development of range lands and military training have occurred within FWA since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the cantonment and training infrastructure within FWA Main Post and associated range lands, and combined with regional development, have led to historic regional loss of vegetation through construction of facilities and fragmentation through construction of linear infrastructure (i.e., roads, utilities). According to GIS mapping, 667 acres or 12 percent of available range lands within FWA Main Post, 1,380 acres or 0.02 percent of existing

vegetation within TFTA, and 5,800 acres or 2 percent of existing vegetation within YTA have been impacted by human activity and would likely have a loss or degree of vegetation degradation. The greatest losses of vegetation have occurred within the developed areas within Anchorage, Eagle River, Elmendorf AFB, and the cantonment area of FRA.

Future foreseeable military use of FWA would have the potential to cause additional vegetation loss and degradation of vegetation communities. Training would increase the potential for degradation of vegetation through crushing and soil disturbances during training exercises. In addition, increased development within FWA and future development within the adjacent communities including Eielson AFB would continue to pose the potential for reduction of regional vegetation. Active monitoring of range and training lands and restoration of degraded areas, however, would continue to reduce overall adverse impacts from military activity of range lands which would also counteract the likelihood of cumulative adverse impacts to existing vegetation resources from current Army operations and future projects.

Proposed Action 1

As stated in Section 3.5.2, up to 4 percent of existing vegetation within FWA Main Post and less than 1 percent of existing vegetation within TFTA and YTA could be impacted under Proposed Action 1. These percentages, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to vegetation. In addition, long-term beneficial impacts could be anticipated for vegetation within YTA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments, reducing the potential for cumulative degradation to vegetation.

Proposed Action 2

As stated in Section 3.5.2, up to 29 percent of FWA Main Post range land vegetation could be disturbed under Proposed Action 2 and up to 3 percent of YTA vegetation could be disturbed. Significance of impact, however, would be reduced through mitigation measures adopted by USAG FWA (see Section 3.4.2.3.2). These measures to reduce impacts and the low likelihood of full development within the proposed adaptable use zone combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute, overall moderate adverse cumulative impacts to vegetation within FWA and minor cumulative impacts within YTA. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher functioning vegetation communities such as those which offer riparian buffers or valuable wildlife habitat elsewhere within FWA range lands.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative vegetation effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall up to 3,685 acres of vegetation, or 66 percent of the 5,558 acres of vegetation within FWA Main Post and 9,276 acres of vegetation, or up to 4 percent of the 242,200 acres of vegetation within YTA could be impacted from implementation of Proposed Actions 1 and 2 combined. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 and mitigation measures discussed in Chapter 5 would likely counteract the likelihood of cumulative adverse impacts to remaining vegetation resources and result in only minor to moderate adverse cumulative impacts to vegetation.

Greenhouse Gas

Overall impacts to greenhouse gases from the status quo reduction of carbon sinks would likely be insignificant on a global scale and similar to those described for FRA.

4.2.3.3 DTA

No Action Alternative

Past activities within DTA have adversely impacted vegetation and future activities will likely have the potential to affect vegetation within DTA. As indicated in Table 4.0-3 development of range lands and military training have occurred within DTA since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the Fort Greely cantonment and training infrastructure within DTA range lands, and combined with regional development, have led to historic regional loss of vegetation through construction of facilities and fragmentation through construction of linear infrastructure (i.e., roads, utilities). According to GIS mapping, 21,750 acres or 3 percent of available lands within DTA have been impacted by human activity and would likely have a loss or degree of vegetation degradation. The greatest losses of vegetation have occurred within the developed areas within Delta Junction, Fort Greely and DTA East.

Future foreseeable military use of DTA would have the potential to cause additional vegetation loss and degradation of vegetation communities. Training would increase the potential for degradation of vegetation through crushing and soil disturbances during training exercises. In addition, increased development within adjacent communities would continue to pose the potential for reduction of regional vegetation. Active monitoring of range and training lands and restoration of degraded areas, however, would continue to reduce overall adverse impacts from military activity of range lands which would also counteract the likelihood of cumulative adverse impacts to existing vegetation resources from current Army operations and future projects.

Proposed Action 1

As stated in Section 3.5.2, less than 1 percent of existing vegetation within DTA could be impacted under Proposed Action 1. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to vegetation. In addition, long-term beneficial impacts could be anticipated for potential vegetation degradation within FRA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments.

Proposed Action 2

As stated in Section 3.5.2, up to 2 percent of existing vegetation within DTA could be disturbed under Proposed Action 2. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to wetlands. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher functioning vegetation communities such as those which offer riparian buffers or valuable wildlife habitat elsewhere within FRA range lands.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative vegetation effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall up to 11,510 acres of vegetation, or 2 percent of the 601,400 acres of vegetation within DTA could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a minor adverse impact. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 combined with mitigation measures discussed within Chapter 5 would likely counteract the likelihood of cumulative adverse impacts to remaining wetland resources and result in only minor adverse cumulative wetland resource impacts.

Greenhouse Gas

Overall impacts to greenhouse gases from the status quo reduction of carbon sinks would likely be insignificant on a global scale and similar to those described for FRA and FWA.

4.2.4 Wildlife & Fisheries

Section 3.1 outlines the significance threshold for wildlife and fisheries; accordingly a severe adverse cumulative impact would cause discernible population-level impacts at the installation or regional level or would lead to population-level impacts to fish species within local waterways. The geographic scope for wildlife and fisheries includes the installation boundaries and adjacent undeveloped private, state, and Federal lands. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to wildlife and fisheries. Overall, minor adverse cumulative impacts would result from implementation of the Proposed Actions 1, 3, and Proposed Action 2 (FRA, YTA) with potential moderate cumulative impacts from implementation of Proposed Action 2 (FWA) in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative wildlife and fisheries impacts by each installation follows the table.

Wildlife and Fisheries Quick Look Table

Answer	Question
No[1]	Would the alternatives result in a significant impact to any wildlife or fish species identified as management priorities by the installation's Ecosystem Management plans?
No[1]	Does the Proposed Action involve development which would cause significant loss of preferred habitat for and management priority species?
Yes[1]	Is the proposed site effectively managed as part of an installation ITAM Program?
No **NA** **PA-2** **PA-3** Yes **PA-1**	Does the Proposed Action increase the level of intensity of military activity on military lands? *None of the Proposed Actions directly involve increasing the levels of Soldier training or military activity with USARAK range lands above levels recognized in pervious NEPA documentation (see Section 1.5.1).* *Proposed Action 1 involves a few additional facilities or expansion of facilities which would increase the coverage of military training activities.*

Wildlife and Fisheries Quick Look Table	
Answer	**Question**
No[1]	Is habitat for a Species of Concern being affected?
Yes[1]	Are there special interest management areas in the vicinity that could be affected by the Proposed Action? *See individual discussion by Proposed Action.*
Yes[1]	Have previous projects in this area affected the same species or habitats that could be affected by the Proposed Action? *See individual discussion by Proposed Action.*
Yes[1]	Would the Proposed Action likely result in further construction projects or increased activity in the area in the future that could affect the same species and habitats potentially being affected by the Proposed Action? *Each Proposed Action involves a programmatic approach to streamline NEPA review for existing and future routine range projects.*
Yes[1]	***Is additional cumulative effects analysis needed?***
CEA Level: (2) Analysis and Discussion	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.2.4.1 FRA

No Action Alternative

Past activities within FRA have adversely impacted habitat and future activities will likely have the potential to affect habitat within FRA. As indicated in Table 4.0-1 development of range lands and military training have occurred within FRA since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the cantonment and training infrastructure within FRA range lands, and combined with regional development, have led to historic regional loss of habitat through construction of facilities and fragmentation through construction of linear infrastructure (i.e., roads, utilities). According to GIS mapping, 2 percent of available lands within FRA have been impacted by human activity and would likely have a loss or degree of habitat degradation. The greatest losses of habitat have occurred within the developed areas within Anchorage, Eagle River, Elmendorf AFB, and the cantonment area of FRA.

Future foreseeable military use of FRA would have the potential to cause additional habitat loss and degradation of habitat. Training would increase the potential for degradation of habitat through crushing and soil disturbances during training exercises. In addition, increased development within FRA and future development within the Joint Base Elmendorf-Richardson and adjacent communities would

continue to pose the potential for reduction of regional habitat. Active monitoring of range and training lands for wildlife and fisheries activity by USAG Alaska Biologists and restoration of degraded areas through the ITAM Program, however, would continue to reduce overall adverse impacts from military activity of range lands. This would also counteract the likelihood of cumulative adverse impacts to existing wildlife and fisheries resources from current Army operations and future projects.

Proposed Action 1

As stated in Section 3.6.2, less than 1 percent of existing habitat within FRA could be impacted under Proposed Action 1. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to habitat. In addition, long-term beneficial impacts could be anticipated for potential habitat degradation within FRA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments.

Proposed Action 2

As stated in Section 3.6.2, up to 6 percent of existing habitat within FRA could be disturbed under Proposed Action 2. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to habitat. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher functioning habitat communities such as those which contain rare species or high biodiversity.

Proposed Action 3

As Proposed Action 3 evaluates the adoption and standardized streamline use of SOPs and BMPs for routine range projects, the extent of habitat impacts could not be quantified, however, Section 3.5.2 concluded that overall adverse impacts to habitat using a standardized and streamlined SOP and BMP approach would result in no to minor adverse impacts. Beneficial cumulative impacts could occur for future USARAK construction projects as range planners would have a standardized and streamlined SOP and BMP approach which could be transferred to future projects outside of the scope of routine range projects considered as a part of Proposed Action 3 within this PEA. This would likely result in the avoidance and minimization of wildlife and fisheries disturbance within FRA range lands during the planning process and would also take into consideration preservation of habitat and reduction of direct and indirect (sedimentation) impacts to fisheries such as those which offer riparian buffers or valuable wildlife habitat.

Overall Impact Summary

Overall up to 7 percent of habitat within FRA could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a minor adverse impact. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 would likely counteract the likelihood of cumulative adverse impacts to wildlife and fisheries and result in only minor adverse cumulative impacts. In addition, mitigative measures (see Chapter 5) including implementation of surface water buffers throughout FRA range and training lands and implementation of a SAMP within the proposed FRA SAC Range Adaptable would further reduce adversity of cumulative impacts to wildlife and fisheries.

4.2.4.2 FWA

No Action Alternative

Past activities within FWA have adversely impacted habitat and future activities will likely have the potential to affect habitat within FWA. As indicated in Table 4.0-2 development of range lands and military training have occurred within FWA since the 1950's and continue into the present with increased

Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the cantonment and training infrastructure within FWA Main Post and associated range lands, and combined with regional development, have led to historic regional loss of habitat through construction of facilities and fragmentation through construction of linear infrastructure (i.e., roads, utilities). According to GIS mapping, 12 percent of available lands within FWA Main Post, 0.02 percent of existing habitat within TFTA, and 2 percent of existing habitat within YTA have been impacted by human activity and would likely have a loss or degree of habitat degradation. The greatest losses of habitat have occurred within the developed areas within Anchorage, Eagle River, Elmendorf AFB, and the cantonment area of FRA.

Future foreseeable military use of FWA would have the potential to cause additional habitat loss and degradation of habitat. Training would increase the potential for degradation of habitat through crushing and soil disturbances during training exercises. In addition, increased development within FWA and future development within the adjacent communities including Eielson AFB would continue to pose the potential for reduction of regional habitat. Active monitoring of range and training lands and restoration of degraded areas, however, would continue to reduce overall adverse impacts from military activity of range lands which would also counteract the likelihood of cumulative adverse impacts to existing wildlife and fisheries from current Army operations and future projects.

Proposed Action 1

As stated in Section 3.6.2, up to 4 percent of existing habitat within FWA Main Post and less than 1 percent of existing habitat within TFTA and YTA could be impacted under Proposed Action 1. These percentages, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to habitat. In addition, long-term beneficial impacts could be anticipated for habitat within YTA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments, reducing the potential for cumulative degradation to habitat.

Proposed Action 2

As stated in Section 3.6.2, up to 29 percent of FWA Main Post habitat could be disturbed under Proposed Action 2 and up to 3percent of YTA habitat could be disturbed. Significance of impact, however, would be reduced through mitigation measures adopted by USAG FWA (see Section 3.4.2.3.2). These measures to reduce vegetation impacts and the low likelihood of full development within the proposed adaptable use zone combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute, overall minor to moderate adverse cumulative impacts to habitat within FWA and minor cumulative impacts within YTA. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher functioning higher functioning habitat communities such as those which contain rare species or high biodiversity.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative wildlife and fisheries effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall up to 29 percent of habitat within FWA Main Post range lands and 3 percent of habitat within YTA could be impacted from implementation of Proposed Actions 1 and 2 combined. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 and mitigation measures discussed in Chapter 5 would likely counteract the likelihood of cumulative adverse impacts to wildlife and fisheries and result in only minor to moderate adverse cumulative impacts to vegetation.

4.2.4.3 DTA

No Action Alternative

Past activities within DTA have adversely impacted wildlife and fisheries and future activities will likely have the potential to affect these resources within DTA. As indicated in Table 4.0-3 development of range lands and military training have occurred within DTA since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These activities have led to development of the Fort Greely cantonment and training infrastructure within DTA range lands, and combined with regional development, have led to historic regional loss of habitat through construction of facilities and fragmentation through construction of linear infrastructure (i.e., roads, utilities). According to GIS mapping, 3 percent of available lands within DTA have been impacted by human activity and would likely have a loss or degree of habitat degradation. The greatest losses of habitat have occurred within the developed areas within Delta Junction, Fort Greely and DTA East.

Future foreseeable military use of DTA would have the potential to cause additional habitat loss and degradation of habitat. Training would increase the potential for degradation of habitat through crushing and soil disturbances during training exercises. In addition, increased development within adjacent communities would continue to pose the potential for reduction of regional habitat. Active monitoring of range and training lands and restoration of degraded areas, however, would continue to reduce overall adverse impacts from military activity of range lands which would also counteract the likelihood of cumulative adverse impacts to wildlife and fisheries from current Army operations and future projects.

Proposed Action 1

As stated in Section 3.6.2, less than 1 percent of existing habitat within DTA could be impacted under Proposed Action 1. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to wildlife and fisheries. In addition, long-term beneficial impacts could be anticipated for potential habitat degradation within DTA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments.

Proposed Action 2

As stated in Section 3.6.2, up to 2 percent of existing habitat within DTA could be disturbed under Proposed Action 2. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to wetlands. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to higher functioning habitat communities such as those that contain rare species or high biodiversity.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative wildlife and fisheries effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall up to 2 percent of habitat within DTA could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a minor adverse impact. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 and mitigation measures discussed in Chapter 5 would likely counteract the likelihood of cumulative adverse impacts to remaining wildlife and fisheries habitat and result in only minor adverse cumulative impacts to wildlife and fisheries.

4.2.5 Cultural Resources

Section 3.5.2 outlines the significance threshold for cultural resources; accordingly a severe adverse cumulative impact would result in unmitigated loss of cultural resource sites or result in a National Landmark or historic district loosing NRHP designation. The geographic scope for cultural resources is limited to the installation boundaries. Past, present, and reasonably foreseeable future actions include activities dating from the 1950s when Army activities began, through the present and future foreseeable activities as presented in Tables 4.0-1 through 4.0-3.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to cultural resources. Overall, minor to moderate adverse cumulative impacts would result from implementation of the Proposed Actions and in combination with the past, present, and future projects identified in Tables 4.0-1 through 4.0-3. A discussion of cumulative impacts by each installation follows the table.

Cultural Resources Quick Look Table

Answer	Question
Unknown [1] **NA** **PA-1** **PA-3**	Would the Proposed Action result in a significant impact to any cultural resources? *As portions of each Proposed Action have not been surveyed, the potential exists for a severe impact to cultural resources. However, required cultural surveys and mitigation identified as part of the Section 106 consultation would reduce potential impact of the Proposed Actions, likely resulting in minor adverse impacts.*
No **PA-2**	*The Army would avoid or mitigate the eligible site identified within proposed YTA and DTA SAC Range Adaptable Use Zones and would evaluate eligibility for the sites not evaluated within the proposed FRA, YTA and DTA Adaptable Use Zones and either avoid or mitigate for impacts as identified as part of the Section 106 consultation.*
Partially **NA** **PA-1** **PA-3** Yes **PA-2**	Has the area been surveyed for cultural resources? *USAG Alaska actively continues to survey its remaining unsurveyed range lands for cultural resources. Some areas, however, have not surveyed due to lack of access to existing impact areas.*
Yes **NA** **PA-1** **PA-2**	Does the Proposed Action affect any cultural resources that have not been evaluated for National Register eligibility?
Unknown **PA-3**	*Routine range projects reviewed under Proposed Action 3 have the potential to occur within locations containing sites which have not been evaluated, however, this Proposed Action does not involve site-specific*

Cultural Resources Quick Look Table	
Answer	**Question**
	project siting, Actual impacts would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.
Yes **NA** **PA-1** **PA-2** Unknown **PA-3**	Are any sites eligible for listing on the National Register? *Routine range projects reviewed under Proposed Action 3 have the potential to occur within locations containing sites which have not been evaluated, however, this Proposed Action does not involve site-specific project siting, Actual impacts would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.*
Yes **PA-1** No **PA-2** Unknown **PA-3**	Are any of the identified cultural resources contributing elements to an eligible or listed district, National Historic Landmark, or cultural landscape? *Routine range projects reviewed under Proposed Action 3 have the potential to occur within locations containing sites which have not been evaluated, however, this Proposed Action does not involve site-specific project siting, Actual impacts would be determined during the NEPA review/checklist process as these routine range activities are funded and locations determined.*
No[1]	Are any resources covered by previously existing cultural resource Programmatic Agreements or Memorandums of Agreement?
Yes[1]	Are there other potential impacts to cultural resources that individually or collectively could result in significant cumulative effects? *Activities from other projects and activities could result in negative impacts to prehistoric sites in the area (without mitigation).*
Unknown[1]	Is the project located in or near an Alaskan Native cemetery, traditional cultural property or sacred site?
Yes	***Is additional cumulative effects analysis needed?***
CEA Level: (2) Analysis and Discussion	

Table Key: **NA**: No Action Alternative; **PA-1**: Streamline Site-specific Range Project, **PA-2**: SAC Range Adaptable Use Zones **PA-3**: Environmental Stewardship Range Construction Guidelines

[1]A breakdown of analysis for this question by alternative or by location was not conducted, as impacts were determined to be similar among all alternatives and locations.

4.2.5.1 FRA

No Action Alternative

Past activities within FRA have adversely impacted cultural resources and future activities will likely have the potential to affect these resources within FRA. As indicated in Table 4.0-1, Army acquisition of range lands and past and current training activities have either caused development of range lands and military training have occurred within the installations since the 1950's and continue into the present with increased Soldier population and training requirements as a result of Army initiatives such as Transformation and Grow the Army. These development and training activities have resulted in past disturbance to cultural resources. Past surveys have identified the following sites within FRA: 1 historic district (Site Summit); 18 listed archaeological sites and 18 non-evaluated archaeological sites.

Future foreseeable military use of FRA would have the potential to cause the potential for additional disturbance to cultural resources. Training would increase the potential for disruption of soils and disturbance to archaeological sites during training exercises. In addition, increased development within FRA and future development within the Joint Base Elmendorf-Richardson and adjacent communities would continue to pose the potential for the degradation or loss of non evaluated cultural resources. The potential for future impacts, however, would be reduced as USAG FRA and USAG FWA would continue to survey for archaeological potential, and gaps of data would continue to be filled over time, reducing areas of uncertainty. The closure of these gaps will allow military planners and Cultural Resource staff to locate projects and military training activities within FRA range lands to minimize future impacts to cultural resources. Mitigation measures and future surveys and compliance with Section 106 of the NHPA would likely reduce cumulative impacts to minor or moderate. In addition, future ITAM activities would continue to offset indirect impacts to cultural resources from military training (i.e., erosion and the potential for sites to be impacted by exposure) through proactive monitoring to avoid erosion or through restoration of disturbed soils.

Proposed Action 1

As stated in Section 3.10.2, 2 sites within FRA could be impacted under Proposed Action 1; however, impacts would be reduced or avoided through coordination with the USAG FRA and USAG FWA CRM. This level of impact, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to cultural resources. In addition, long-term beneficial impacts could be anticipated for cultural resources within FRA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments, reducing the potential for impacts to cultural sites adjacent to FRA roads.

Proposed Action 2

As stated in Section 3.10.2, 1 up to two cultural sites (also identified in Proposed Action 1) could be disturbed under Proposed Action. Impacts, however, would be reduced or avoided through coordination with the USAG FRA and USAG FWA CRM. This level of impact, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to cultural resources. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to cultural resources sites and non surveyed lands elsewhere within FRA range lands.

Proposed Action 3

As Proposed Action 3 evaluates the adoption and standardized streamline use of SOPs and BMPs for routine range projects, the extent of cultural resources impacts could not be quantified, however, Section 3.10.2 concluded that overall adverse impacts to cultural resources using a standardized and streamlined SOP and BMP approach would result in minor to beneficial impacts. Beneficial cumulative impacts could occur for future USARAK construction projects as range planners would have a standardized and

streamlined SOP and BMP approach which could be transferred to future projects outside of the scope of routine range projects considered as a part of Proposed Action 3 within this PEA. This would likely result in the avoidance and minimization vegetation disturbance within FRA range lands during the planning process and also take into consideration preservation of functioning vegetation communities such as those which offer riparian buffers or valuable wildlife habitat.

Overall Impact Summary

Overall up to 2 cultural sites, or up to 6 percent of the 36 known cultural sites within FRA range lands could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a moderate adverse cumulative impact. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 would likely counteract the likelihood of cumulative adverse impacts to cultural resources and result in only minor adverse cumulative impacts. In addition, mitigative measures including surveying unsurveyed areas for cultural resources before any construction or other soil disturbing activities would reduce adversity of cumulative impacts to cultural resources (see Chapter 5).

4.2.5.2 FWA

No Action Alternative

Similar to FRA, past activities within FWA have adversely impacted cultural resources and future activities will likely have the potential to affect these resources. Past surveys have identified the following sites within FWA Main Post: 1 historic district; 1 National Historic Landmark; 513 listed sites, 155 eligible sites; 281 non-evaluated sites and 77 not eligible sites; YTA: 16 listed sites, 12 eligible sites; 2 non-evaluated sites and 2 not eligible sites; and TFTA: 2 Archaeological Districts, 61 listed sites, 40 eligible sites; and 21 non-evaluated sites.

Also similar to FRA, future foreseeable military use of FWA would have the potential to cause the potential for additional disturbance to cultural resources, however, USAG FRA and USAG FWA would continue to survey for archaeological potential allowing military planners and Cultural Resource staff to locate projects and military training activities within FWA range lands to minimize future impacts to cultural resources. In addition mitigation measures and future surveys and ITAM activities would likely reduce cumulative impacts to minor or moderate.

Proposed Action 1

As stated in Section 3.10.2, 1 historical district within the FWA Main Post cultural sites could be disturbed under Proposed Action 2 and up to 3 cultural sites within YTA could be disturbed. Impacts, however, would be reduced or avoided through coordination with the USAG FRA and USAG FWA CRM. This level of impact, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to cultural resources. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to cultural resources sites and non surveyed lands elsewhere within FWA range lands

Proposed Action 2

As stated in Section 3.10.2, up to no known cultural resources within the proposed FWA SAC Range Adaptable Use Zone would be disturbed under Proposed Action 2 and up to 2 archaeological sites (also identified within Proposed Action 1) could be disturbed within the proposed YTA SAC Range Adaptable Use Zone. This level of impact, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall moderate cumulative adverse impact to cultural resources within YTA. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to cultural resources

sites and non surveyed lands elsewhere within FWA and YTA range lands.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative wildlife and fisheries effects would be similar to those discussed under FRA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall, 1 historic district within FWA Main Post and 3 archaeological sites (10 percent) of the 30 listed, eligible or not evaluated cultural sites within YTA could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a moderate adverse impacts. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 and mitigation measures discussed in Chapter 5 would likely counteract the likelihood of cumulative adverse impacts to cultural resources and result in only minor adverse cumulative impacts.

4.2.5.3 DTA

No Action Alternative

Similar to FRA and FWA, past activities within DTA have adversely impacted cultural resources and future activities will likely have the potential to affect these resources. Past surveys have identified the following sites within DTA: 436 listed sites, 103 eligible sites; 258 non-evaluated sites and approximately 75 not eligible sites.

Also similar to FRA and FWA, future foreseeable military use of DTA would have the potential to cause the potential for additional disturbance to cultural resources, however, USAG FRA and USAG FWA would continue to survey for archaeological potential allowing military planners and Cultural Resource staff to locate projects and military training activities within DTA range lands to minimize future impacts to cultural resources. In addition mitigation measures and future surveys and ITAM activities would likely reduce cumulative impacts to minor or moderate.

Proposed Action 1

As stated in Section 3.10.2, 11 archaeological sites within DTA could be impacted under Proposed Action 1. This level of impact, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to cultural resources. In addition, long-term beneficial impacts could be anticipated for cultural resources within DTA as road improvements would restrict vehicles maneuvering off-road in degraded trail segments, reducing the potential for impacts to cultural sites adjacent to DTA roads.

Proposed Action 2

As stated in Section 3.10.2, 6 archaeological sites could be disturbed under Proposed Action 2. This percentage, combined with the past, present, and foreseeable future actions discussed above under the No Action Alternative would constitute an overall minor cumulative adverse impact to cultural resources. In addition, focusing range training development and impacts within proximity to adjacent SAC range infrastructure would likely reduce future impacts to cultural resources sites and non surveyed lands elsewhere within DTA range lands.

Proposed Action 3

As Proposed Action 3 is similar across installations, cumulative wildlife and fisheries effects would be similar to those discussed under FRA and FWA and would include both minor and beneficial cumulative impacts.

Overall Impact Summary

Overall up to 17 cultural sites, or up to 2 percent of the 361 eligible or not evaluated sites within DTA range lands could be impacted from implementation of Proposed Actions 1 and 2 combined, resulting in a minor adverse impact. This combined impact, with using standardized and streamlined SOP and BMP developed as part of Proposed Action 3 and mitigation measures discussed in Chapter 5 would likely counteract the likelihood of cumulative adverse impacts to cultural resources and result in only minor adverse cumulative impacts.

5.0 MITIGATION MEASURES

In order to avoid the potential for significance of adverse environmental impacts resulting from implementation of Proposed Action 2, USAG garrisons would agree to the following measures:

- Restriction of ground disturbing activities adjacent to streams or surrounding waterbodies within the proposed SAC range adaptable use zones to maintain a vegetative buffer for controlling sediment transport and prevent sedimentation into surface waters. The proposed buffer (commonly 75 feet from the surface water resource) would consider type of proposed activity, proximity to surface water resources, soil types, slope and existing natural vegetative buffers.
- Implementation of a SAMP within the proposed SAC range adaptable use zones to determine the functioning and location of existing wetland resources and quality of vegetation communities (habitat) for use as a planning tool. Using the SAMP, USAG FRA and USAG FWA would use site fingerprinting, which involves clearing and grading only those areas necessary for construction activities. Site fingerprinting could be used during site planning to concentrate development in areas where past development has occurred to help preserve wetlands and maintain vegetation cover within the proposed SAC range adaptable use zones. In addition, the SAMP could be used to develop a general wetland permit for range and training land construction activities. This permit would allow both the Army and USACE to quantify and monitor wetland impacts within the proposed SAC range adaptable use zones and develop project-specific mitigation measures to avoid significance of wetland impacts.
- USAG FWA would mitigate significant adverse impacts to bison spring/summer use areas and sandhill crane roosting located within the proposed DTA SAC Range Adaptable Use Boundary through development of specific mitigation measures in consultation with Federal and State management agencies as projects within the adaptable use boundary are identified that have the potential to impact the use of these species within these areas.
- Areas unsurveyed for cultural resources would be surveyed and the resources identified during the survey would be evaluated before any construction or other soil disturbing activities occur at that location. Those resources determined to be NRHP eligible would be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska State standards for archaeology.

Other SOPs and BMPs contained within Proposed Action 3 would be considered by USAG FRA and USAG FWA for all Proposed Actions as a means to reduce or avoid impact, however, these measures would be performed as a part of USAG Alaska's environmental stewardship initiatives and by environmental permitting (stormwater, wetlands, etc.) and would not serve as additional mitigation for significant adverse impacts identified within this EA.

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EA: Technical Reviewer

Clark, Ellen, ITAM Coordinator, USAG Alaska, CEMML
B.A. Biology
Years Experience: 16
EA: Chapter 2, Wetlands, Appendices, Technical Review

Haddix, John
B.S. Wildlife Biology
A.S. Wildlife Management
Years Experience: 16
EA: Technical Review

Donald Haas
B.A. Physical Geography/Hydrogeology
Years of Experience : 17
EA: Environmental Compliance - Water Programs (Storm Water, Waste Water, Drinking Water, Underground Injection Control wells)

Gibson, Michael
B.S. Natural Resources Management
Years Experience: 10
EA: Chapter 2, Wetlands, Appendices, Technical Review

Graham, Lisa
M.A. History
Years Experience: 5
EA: Technical Review and Support

Larsen, Gary
M.S. Forestry
B.S.Forestry
Years Experience: 22
EA: Chapter 2

Mason, Jeff
B.S.Forestry and Wildlife
Years Experience: 20
EA: Technical Review

McEnteer, Carrie
B.S. Watershed Science
Years Experience: 12
EA: Project Management, NEPA Reviewer

Rees, Dan
B.S. Biology MS Forestry
Years Experience: 15

EA: Chapter 2, Technical Review

Routhier, Michael
B.A.; M.S.E.L; J.D.
Years Experience: 2
EA: Chapter 2, Appendices, Technical Reviewer

Thompson, Dan
B.S. Wildlife Biology
Years Experience: 5
EA: Chapter 2, Appendices, Technical Reviewer

Potomac-Hudson Engineering

Griffin, Robin
M.S. Environmental Management
B.A. English Composition
Years Experience: 14
EA: Public Access, Recreation, and Subsistence; and Fire Management

Martin-McNaughton, Jamie
B.S. Geology-Biology
Years Experience: 4
EA: Soils, Surface Water

Naumann, Robert
M.S. Environmental Science
B.S. Natural Resources
Years Experience: 11
EA: Project Manager: Wetlands, Human Health and Safety, Cumulative Effects Analysis

Ong, Cynthia
M.S. Environmental Sciences
B.S. Civil Engineering
Years Experience: 7
EA: Noise and Land Use, Energy, and Utilities

Shinkle, Deborah
B.A. Environmental Studies
Years Experience: 6.5
EA: Geo-spatial analysis, Figure development

Wade, Catherine
B.S. Environmental Science and Policy – Biodiversity and Conservation Biology
Years Experience: 3
EA: Vegetation, Wildlife and Fisheries

Walker, Debra A.
B.A. Biology
Years Experience: 32
EA: Program Manager

New South Associates

Olson, Christina
M.A. Historic Preservation
B.A. Historic Preservation
Years Experience: 7
EA: Cultural Resources

Reed, Mary Beth
M.A. American Civilization
B.A. Anthropology
Years Experience: 23
EA: Cultural Resources Project Manager

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Appendix A.1 – Agency Scoping

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Example Scoping Letter

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON ALASKA AND FORT RICHARDSON
724 POSTAL SERVICE LOOP #6000
FORT RICHARDSON, ALASKA 99505-6000

REPLY TO ATTENTION OF:

JUL 29 2008

Office of the Garrison Commander

Salcha-Delta Soil and Water Conservation District
Attn: Jeff Durham
P.O. Box 547
Delta Junction, Alaska 99737

Dear Mr. Durham:

The U.S. Army Garrison (USAG Alaska), in compliance with the National Environmental Policy Act of 1969 (NEPA), is preparing a programmatic environmental assessment (PEA) that will analyze certain proposed actions as they affect USAG Alaska range lands. As part of its scoping process, USAG Alaska submits this letter to introduce its multi-faceted approach, as well as to request input from your agency regarding the proposed actions and their potential environmental consequences.

USAG Alaska must meet military readiness needs by providing Soldiers with the most modern and highest quality training possible, and it must do so while fostering sustainable use environmental stewardship of its range lands. Pursuant to meeting these needs, as well as related and ancillary objectives, USAG Alaska is developing a PEA that addresses the following four proposed actions:

1. Development of a programmatic analysis for routine range projects within all USAG Alaska's range lands.

The PEA will identify these routine projects and analyze them at an installation level to determine the potential for environmental and cultural impacts, measures to avoid adverse impacts, and mitigation options. The information gathered through this programmatic approach will help USAG Alaska maintain military readiness by expediting future environmental review of routine range maintenance, upgrade and construction projects.

2. Specific analysis of known or foreseeable construction projects within USAG Alaska ranges.

The environmental and cultural impacts, as well as avoidance measures and mitigation strategies, will be analyzed on a site-specific level for specifically identified and foreseeable range construction projects. This approach would provide federal, state, and local agencies with a comprehensive and efficient review mechanism

applicable to known or foreseeable future range projects, and would reduce the need to prepare and review multiple separate NEPA documents.

3. Adoption and study of "high use zones" consisting of lands associated with USAG Alaska's Small Arms Complex Ranges.

Lands associated with Small Arms Complexes are typically the best candidates for future range upgrades, both from an institutional as well as environmental perspective, due to their proximity to existing ranges, their previously disturbed nature, and the need for consistent on-site Soldier training. This PEA will provide detailed analysis of these areas in an effort to enhance USAG Alaska's knowledge of environmental conditions and the capacity for upgrades and new construction. Overall, this approach should enhance the quality of planning decisions while minimizing environmental degradation as well as costs and time associated with project planning.

4. Development and implementation of accepted standard operating procedures (SOPs) and best management practices (BMPs) to guide future USAG Alaska range projects.

A comprehensive and effective list of SOPs and BMPs would provide USAG Alaska and coordinating partners with the knowledge and the tools to minimize training impacts on the environment, to maintain sustainable use of range lands, and to foster environmental stewardship. USAG Alaska is particularly interested in obtaining potential SOPs and BMPs from your agency, and would include this information in the Draft PEA.

Please submit comments within 30 days of the stamped date on this letter to assist us in the development of the PEA. USAG Alaska will provide a copy of the Draft PEA (anticipated September 2008) for your agency's review and comment.

The point of contact for this action is Mr. Michael Routhier, Fort Richardson NEPA Coordinator, at (907) 361-9688 or by email at michael.p.routhier@us.army.mil.

Sincerely,

David L. Shutt
Colonel, U. S. Army
Commanding

Agency Scoping Response – USFWS

-----Original Message-----
From: Nora_Rojek@fws.gov [mailto:Nora_Rojek@fws.gov]
Sent: Wednesday, August 13, 2008 12:02 PM
To: Routhier, Michael P Mr CTR USA USARPAC
Subject: Re: USAG Alaska Programmatic Environmental Assessment

Mr. Michael Routhier,

This email is in response to your request for comments on the development of a Programmatic Environmental Assessment (PEA) for the U.S. Army Garrison Alaska range lands. Thank you for requesting information on possible impacts to endangered and threatened species, and critical habitats pursuant to Section 7 of the Endangered Species Act of 1973, as amended (Act).

No listed species occur on USAG Alaska range lands, and there is no designated or proposed critical habitat in the vicinity of the range lands. Therefore, the Service concludes that proposed actions to be analyzed in the PEA are not likely to adversely affect listed species. The PEA may include a statement that consultations under section 7 of the Act regarding the proposed actions will not be necessary.

This response applies only to endangered and threatened species under our jurisdiction. It does not preclude the need to analyze impacts to non-listed wildlife species.

Thank you for your cooperation in meeting our joint responsibilities under the Act. If you need further assistance, please contact me.

-Nora

Nora Rojek
Fish & Wildlife Biologist
USFWS - Fairbanks Fish & Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
(907) 456-0276
nora_rojek@fws.gov

1

Agency Scoping Response – Municipality of Anchorage

-----Original Message-----
From: Mayor Mark Begich [mailto:Mayor@ci.anchorage.ak.us]
Sent: Monday, August 25, 2008 3:11 PM
To: Routhier, Michael P Mr CTR USA USARPAC
Subject: PEA Scoping Letter

Mr. Routhier,

I have solicited staff's input on the matter you requested. The following is the response:

The Municipality of Anchorage regulates activities that affect the water quality of the streams and lakes in Anchorage. We are subject to a wastewater discharge permit from EPA for storm water discharges to surface waters in the Municipality. Our municipal code prohibits discharges of pollutants to our waterways. Under these responsibilities, we have developed best management practices for water resource protection for activities within the Municipality. These are applicable to locations in which there is a potential for surface runoff to reach surface water or groundwater.

We are not familiar with specific activities at USAG ranges or potential activities that will be evaluated in the Draft PEA. However, some of the BMPs we have developed may be applicable to range projects on range lands that are adjacent to the Municipality of Anchorage and should be considered for inclusion in the proposed Draft PEA. BMPs to be included in the Draft PEA should include:

* Minimum setback standards for activities near streams, lakes, and wetlands

* Procedures to stabilize cleared or disturbed lands

* Standards to minimize vegetation removal

* Procedures for vegetation management practices that minimize

1

effects of toxics and hazardous materials

* Standards to control invasive species during revegetation efforts

* Procedures for handling and cleanup of hazardous materials to minimize environmental exposure

We are interested in reviewing the draft PEA when it becomes available.

Mayor Mark Begich

Agency Scoping Response – Fairbanks North Star Borough

Fairbanks North Star Borough Office of the Mayor
809 Pioneer Road P.O. Box 71267 Fairbanks, Alaska 99707-1267 907/459-1300
Fax 907/459-1102
Email mayor@co.fairbanks.ak.us

August 11 2008

Mr. Michael Routhier
Fort Richardson NEPA Coordinator
Department of the Army
Installation Management Command
Headquarters, U.S. Army Garrison Alaska and Fort Richardson
724 Postal Service Loop #6000
Fort Richardson, AK 99505-6000

RE: USAG Alaska Programmatic Environmental Assessment

Dear Sir:

The Fairbanks North Star Borough (Borough) appreciates the offer from the U.S. Army Garrison (USAG Alaska) for input into the programmatic environmental assessment (PEA) that is underway for proposed actions that will affect USAG Alaska range lands within the Borough.

The Borough is pleased to hear that the USAG Alaska is advancing the PEA process. Since a large portion of the range lands included within this process lie within Borough boundaries we may be able to bring some expertise to the process, especially within our Land Management and Community Planning Divisions and our Stormwater Management, Air Quality, and Floodplain Programs.

The Borough would be pleased to provide input on standard operating procedures (SOP's) and best management practices (BMP's) for training lands located within the Borough. Resources within the Borough that you may feel free to contact directly on SOP's and BMP's include the Borough's Community Planning Director, Bernardo Hernandez, at 907-459-1251, bhernandez@co.fairbanks.ak.us, the Borough's Air Quality Director, Glenn Miller at 907-459-1007, gmiller@co.fairbanks.ak.us, and the Borough's Land Management Director, Paul Costello, at 907-459-1236, pcostello@co.fairbanks.ak.us.

Thank you again for including the Borough within the planning and comment processes of the PEA that are currently being prepared for range activity. The Borough looks forward to continuing our productive relationship with the USAG Alaska. The FNSB point of contact for this action is Bob Shefchik, Chief of Staff, bshefchik@co.fairbanks.ak.us, 907-459-1305.

Sincerely,

Jim Whitaker, Mayor

JW:cs-csm

cc: Bob Shefchik, Chief of Staff - FNSB
Bernardo Hernandez, Community Planning Director – FNSB
Glenn Miller, Transportation Director – FNSB
Paul Costello, Land Management Director – FNSB

Agency Scoping Response – USACE

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
REGULATORY DIVISION
WESTSIDE BUSINESS PARK
2175 UNIVERSITY AVENUE, SUITE 201E
FAIRBANKS, ALASKA 99709-4910

REPLY TO ATTENTION OF:

September 10, 2008

Regulatory Division
POA-2008-1308

Directorate of Public Works
IMPC-SWA-PWE (Routhier)
1060 Gaffney Road #4500
Fort Wainwright, Alaska 99703-4500

Dear Mr. Michael Routhier:

This letter is in response to your 29 July 2008 request for comments in preparation of a programmatic environmental assessment (PEA) analyzing proposed actions as they affect U.S. Army Garrison (USAG, Alaska) range lands.

Section 404 of the Clean Water Act requires that a Department of the Army (DA) permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified by the Alaska District.

We cannot determine whether a DA authorization is required at this time. However, due to the extent of the proposed activities, portions of the proposed range activities may involve the discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands, and may require a DA permit. In order to provide us with the information we need to assess potential impacts to waters of the U.S., including wetlands, we recommend that the PEA include the following:

- A summary of the current extent and type of wetlands and other waters of the U.S. within the proposed analysis area.
- A discussion of the functions and values of the various vegetation communities found within the proposed analysis area.
- A discussion and summarization of the potential impacts to waters of the United States, including wetlands.

-2-

- A discussion of specific practices that would be implemented to avoid impacts to wetlands and to minimize impacts to wetlands when avoidance is not practicable (for example, a list of proposed best management practices (BMPs) that would be implemented for specific types of construction or maintenance activities. Examples of BMPs can be found on our website http://www.poa.usace.army.mil/reg/NWPs/BMP.pdf. This is not an all inclusive list, but provides ideas for the development of BMPs that would be specific to your project type).

- A discussion of the practicability of alternatives that would avoid wetland impacts.

- Maps of the various impact areas showing location of wetlands and other waters of the U.S.

- Address the requirements of Executive Order 11990 - Protection of Wetlands

- Address the requirements of Executive Order 11988 - Floodplain Management

You may contact me via email Ellen.H.Lyons@usace.army.mil, by mail at the address above, or by phone (907) 474-2166, if you have questions. For additional information about our Regulatory Program visit our web site at www.poa.usace.army.mil/reg.

Sincerely,

Ellen Lyons

Ellen Lyons
Project Manager

Appendix A.2 – Draft EA Comments & Responses

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1.0 Public Comments and Responses on the Draft U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades Programmatic Environmental Assessment

1.1 Introduction

This appendix contains the comments submitted to the Army on the *U.S. Army Alaska's Range Complex and Training Land Upgrades Draft Programmatic Environmental Assessment (PEA)* and presents the Army's responses to those comments. The Army prepared the Draft PEA in accordance with the Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) (Title 40 of the Code of Federal Regulations [CFR] 1500-1508) and the Army's NEPA-implementing regulations (32 CFR 651). These procedures and regulations provide for a period of public comment on a Draft EA prior to the publication of a Final EA.

The Notice of Availability (NOA) of the Draft PEA was published in the Anchorage Daily News and Fairbanks Daily Miner on December 28th, 2009, the Alaska Star on December 31st, 2009, and the Delta Wind on December 24th, 2009. The NOA provided for a 30-day public comment period (from December 28, 2009, to January 26, 2010), which is in accordance with NEPA regulations [40 CFR 1506.10(c)]. Section 1.2 includes an example NOA published in the local papers,

The Army held two agency meetings to receive comments on the Draft PEA; the first in Fairbanks on January 13th, 2010, and the second in Anchorage on January 14th, 2010. All comments that were received have been considered in preparing the Final PEA. Section 1.2 includes an example letter sent to the agencies to solicit comments on the Draft PEA and to invite them to the agency meetings.

Section 1.3 includes copies of the comments submitted during the Draft PEA comment period along with Army responses. No comments were received from elected officials or individuals. The comments received are organized in the following order:

- Federal Agencies (FA);
- State Agencies (SA).
- Local Community Organizations or Interest Groups (LC).

The comment documents are organized by commentor type and each is assigned a unique document number. Responses for each document are presented following the original comment letter and are presented numerically according to the multiple comments within each document. One document may contain multiple comments. Each comment is assigned a sub-number that follows numerically from the beginning to the end of the document.

1.2 Example Agency Letter and Notice of Availability

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON FORT RICHARDSON
724 POSTAL SERVICE LOOP #6000
FORT RICHARDSON, ALASKA 99505-6000

REPLY TO ATTENTION OF:

December 28, 2009

Office of the Garrison Commander

Alaska Department of Environmental Conservation
Division of Air Quality
555 Cordova St.
Anchorage, AK 99501-2617

Dear Sir or Madam:

The United States Army Garrison, Fort Richardson (USAG FRA) and Fort Wainwright (USAG FWA), has prepared an Environmental Assessment (EA) and Draft Finding of No Significant Impact (FNSI) to evaluate the potential environmental impacts for three separate Proposed Actions within their range complexes and training lands *(Note – these actions were formerly referred as the U.S. Army Garrison Alaska Range Upgrades Programmatic NEPA Analysis)*:

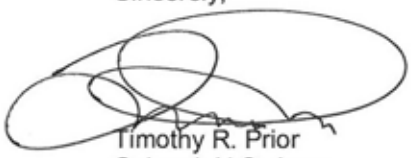
- Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training;
- Proposed Action 2 – Sustainable Range Planning for Small Arms Range Complex (SAC) Ranges Using Adaptable Use Zones;
- Proposed Action 3 – Environmental Stewardship Range Construction Guidelines.

The Proposed Actions would meet military readiness needs by providing Soldiers with the most modern and highest quality training possible while fostering sustainable planning, sustainable use, and continue environmental stewardship of its range and training lands.

You are invited to an agency meeting to discuss the Proposed Actions and Alternatives presented in the EA. USAG FRA and FWA staff will be available at the meeting to explain the programmatic nature of the document and the document's use for future routine range and training lands maintenance, upgrades and construction projects. In addition, we request any additional best management practices your agency would like USAG FRA and FWA to consider within Proposed Action 3. The meeting is scheduled for January 14th from 1:00 p.m. to 3:00 p.m. in Anchorage at the Anchorage Residence Inn Midtown (1025 35th Avenue).

USAG FRA and FWA requests the submission of your agency's comments on the EA and Draft FNSI within 30-days from the date of this letter. If you have any questions, the point of contact for this action is Mr. Michael Routhier, Fort Richardson NEPA Coordinator. Mr. Routhier may be reached by phone at (907) 361-9688 or by email at michael.p.routhier@us.army.mil.

Sincerely,



Timothy R. Prior
Colonel, U.S. Army
Commanding

U.S. Army Garrisons Fort Richardson and Fort Wainwright, Alaska

NOTICE OF AVAILABILITY

RANGE COMPLEX AND TRAINING LAND UPGRADES PROGRAMMATIC ENVIRONMENT ASSESSMENT (PEA) and DRAFT FINDING OF NO SIGNIFICANT IMPACT

U.S. Army Garrisons, Fort Richardson and Fort Wainwright, Alaska, have prepared a Programmatic Environmental Assessment (PEA) and Draft Finding of No Significant Impact (FNSI) to evaluate potential environmental impacts for three separate Proposed Actions within existing training range complexes and training lands: Proposed Action 1 – Streamline Site-specific Range Projects in Support of Soldier Training; Proposed Action 2 – Conduct Sustainable Range Planning for Small Arms Range Complex (SAC) Ranges Using Adaptable Use Zones; and Proposed Action 3 – Employ Environmental Stewardship Range Construction Guidelines. The Proposed Actions would meet military readiness needs by providing Soldiers with the most modern and highest quality training possible while fostering sustainable military training range use and planning while continuing environmental stewardship of Army training lands.

The PEA and Draft FNSI can be viewed at http://www.usarak.army.mil/conservation/. A paper copy is also available for review at the Z.J. Loussac Public Library in Anchorage, the Chugiak-Eagle River Branch Library in Eagle River, the Noel Wien Fairbanks North Star Borough Public Library in Fairbanks, and at the Delta Community Library in Delta Junction.

Requests for further information or submittal of public comments must be received no later than January 26, 2010. For further information or to submit comments, please contact:

Ms. Carrie McEnteer
ATTN: IMPC-FWA-PWE (McEnteer)
1060 Gaffney Road #4500
Fort Wainwright, AK 99703-4500
carrie.mcenteer@us.army.mil

1.3 Responses to Comments

Table 1.2-1 provides a listing of the commentors and their assigned identification numbers. The remainder of this section provides scanned images of the comment documents and the Army's individual responses to the comments. This section begins with the written comments received by Federal Agencies, followed by State agencies and local interest groups.

Table 1.2-1 Commentor Index

Commentor Number	Commentor
Federal Agencies	
FA1	United States Army Corps of Engineers (USACE), Regulatory Division, Fairbanks Field Office (Ellen Lyons)
FA2	USACE, Regulatory Division, Anchorage Field Office (Leslie Tose)
State Agencies	
SA1	Alaska Department of Environmental Conservation (ADEC) Division of Spill Prevention and Response Contaminated Sites Program (Deb Caillouet)
SA2	ADEC Division of Spill Prevention and Response Contaminated Sites Program (Louis Howard)
Local Community Organizations or Interest Groups	
LC1	Delta Farm Bureau (Michael Paschall)

Commentor FA1 – USACE (Ellen Lyons)

28 Jan 2010

Corps of Engineers, Regulatory Division, Fairbanks Field Office
Ellen Lyons, Project Manager

Comments on U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades PEA:

FA1-1 ***3.4.2 Environmental Consequences, P. 3-41*** **-** Please provide a more complete definitions/discussion for the categories used in assessing potential impacts resulting from the Proposed Actions. ("Minor to Moderate (insignificant)" and "Severe (significant)". How did you choose 10% as the cutoff point? How do these relate to the categories used in the tables (discussed below)?

FA1-2 ***Tables 3.4-1a through 3.4-3 (p. 3-45 through 3-55):***

A permanent loss of wetlands would not be considered a "minor" impact. Overall, the loss of a small portion of wetlands considered in a broader context *may* be minor, but broken down as you do in the table, the direct impact of the loss itself would not be minor.

FA1-3 What is the context used to determine overall impacts? Are you looking at a watershed scale, the military training ground where the impact will occur, all military lands? If possible, it would be best to evaluate the overall impacts from the various proposed projects using a watershed approach. (i.e. evaluating impacts within a specific watershed, instead of within all military lands).

FA1-4 Is zero acres impacted truly zero acres (all upland impacts) or less than 0.5?

FA1-5 Add definitions of the categories to the text somewhere in the wetlands section (i.e. define "vegetation alteration", "wetland degradation", "permanent loss of wetlands", "alteration of hydrology", etc.)

FA1-6 Consider waiting to put value statements on impacts until you determine the "Overall Impact". For example, define the categories, state whether that category would occur or not for that proposed project, consider beneficial impacts (perhaps describe), and then make the call as to the severity of the overall impact.

FA1-7 Without the definitions of the categories, I'm assuming that if there is a permanent loss of wetlands that most likely vegetation alteration and alteration of hydrology has also occurred. This should be reflected in table, or explained somewhere in the text.

FA1-8 ***3.3 Surface Water and Floodplains***

The comments above about the tables can also be applied to the tables in 3.2 Soils, and 3.3 Surface Water and Floodplains.

Commentor FA1 – USACE (Ellen Lyons)

POA-RD-NF comments on EA 28 JAN 2010

- 2 -

FA1-9 I did not see a discussion of potential impacts of activities on aufeis issues and associated flooding in the surface water and Floodplains section. We are aware, in particular, of aufeis issues associated with activities in the Jarvis Creek Drainage in the Donnelly training area. Discussion of impacts to aufeis and associated flooding due to the proposed activities should be included in the Environmental Consequences section of this chapter.

FA1-10 *p. 3-27, fourth paragraph*: In the absence of quantitative data regarding current impacts to surface waters it would be more reasonable to state that "these projects would likely result in reducing the current level of impacts to sediment levels in adjacent surface waters, and may result in improvements to surface water quality." (as opposed to "would likely result in net beneficial impacts to surface waters….").

FA1-11 *BMPs p. 3-36*
Consider adding a BMP within the Project Design section that addresses the inclusion of appropriate measures to address cross-drainage issues, for example: "Maintain natural drainage patterns by the installation of culverts of adequate number and size (to prevent ponding or concentrating surface runoff waters.)" (Similar to BMP found in wetlands section).

Appendix C – USAG Alaska Range Project Checklist

FA1-12 *WETLANDS checklist p. 4 – number 5 "Could impacts to wetlands…."* – What portion of the EA should be looked at? Tables 3.4-1 through 3.4-3? Ensure what you are asking them to compare the impacts to is clearly described within the checklist. Ensure the description of the impacts in the EA are clearly defined for easy and accurate comparison.

FA1-13 *WATER RESOURCES checklist p.5* – number 2 "Is any part of the project footprint….." define the "close enough" distance…. 75'?

FA1-14 *Number 4 "Will the project involve discharge (or runoff of sediment…."* Clarify if it's a direct discharge into the waterway, or if the potential for an indirect discharge should be evaluated.

FA1-15 *Cumulative Effects:* Where are the referenced "significance thresholds" defined?

Responses

Response to FA1-1

The 10 percent threshold level of significance used in this EA document is consistent with the impact assessment methodology used in previous USARAK NEPA documents. This threshold helps capture direct, indirect, and cumulative impacts to wetlands using an installation-sized scale.

Consistent with USACE comments below, the wetlands impacts definitions within the Final EA have been modified to further distinguish between minor and moderate impacts which tend to result from temporary and permanent (but mitigable) impacts, respectively. These modifications also further stress the importance of maintaining regionally unique or rare wetlands and their functions:

- **Minor to Moderate (insignificant) –** The degree to which activities affect installation wetlands, particularly jurisdictional wetlands. Minor impacts would result from any temporary impacts to wetlands. Activities that permanently impact wetlands but comply with Section 404 and any associated mitigation requirements would represent moderate impacts. In the case of regionally unique or rare wetlands, any temporary or permanent impacts would represent moderate impacts.
- **Severe (significant) –** Activities that result in an unpermitted loss of jurisdictional wetland function or the loss of more than 10 percent of an installation's wetlands would represent a significant impact.

USARAK will continue to work with the USACE to refine wetland impact assessment methodology for Army projects, and will continue to incorporate any official guidance issued by the USACE into its NEPA and other planning documents. It should be remembered that this NEPA planning process is designed to complement, rather than replace, the Army's ongoing commitment to complying with Section 404 and associated mitigation requirements.

The definitions in Section 3.4.2 defining minor to moderate and severe impacts were used to determine the anticipated intensity of impact in Tables 3.4-1a through 3.4-1c and in Table 3.4-3. The type of impact in these tables was defined by the nature of the proposed activity (i.e., construction, crossing, operations, etc.). Tables 2.2-1 through 2.2-3 describe each site-specific activity and Appendices B and E provide more detailed descriptions of each activity. Based on the proposed activity and proximity to wetlands, the intensity of impact was assigned by potential impact type using the thresholds of significance described above.

Response to FA1-2

As stated on pages 3-41 and 3-42, Tables 3.4-1a through 3.4-3 show anticipated level of impact following the incorporation of BMPs during construction and site restoration. *"Adverse impacts to wetlands from construction of these projects would be additionally mitigated to insignificant (minor or moderate) adverse impacts through the use of the following BMPs during construction and site restoration"*. The potential for impacts to these wetlands, therefore, are assumed to be potentially-significant if no BMPs were employed during design (avoidance), construction and restoration of these activities. These tables also reflect the reduced level of impact accounted for from stipulations required by Section 404 permitting as stated on page 3-41: "*Prior to any construction within area wetlands, USAG FRA and USAG FWA will consult with the USACE, Alaska District, to*

determine whether the particular action requires a Clean Water Act Section 404 permit. All projects will adhere to mitigation requirements imposed as a condition to receiving a CWA Section 404 permit. These mitigation measures will serve to avoid significant adverse impacts to local wetlands resources." Also see response to USACE-1 for further refining of minor wetland impact definition.

Also see response to FA1-1 for further refinement of "minor" and "moderate" wetland impact definition in light of this and other comments.

Response to FA1-3

The impact rating within the last column of these tables examines the overall impact to the resource area (i.e., wetlands) on a project-by-project basis by examining all impact intensities assigned to the type of impact for a specific project. Consideration of the wetland inventory of each Army installation in Alaska helps USARAK ensure that minor and/or moderate impacts of multiple projects do not cumulatively produce significant adverse impacts.

USARAK recognizes that the level of significance for wetland impacts is determined by a complex variety of factors, including the type of wetland, functioning of wetland, scale of impact on the wetland itself, and the scale of impact in regards to the watershed. USARAK will continue to work with the USACE on improving wetlands impacts tracking and management, and remains willing to incorporate any official, standardized guidance issued by the USACE or EPA into future planning processes. USARAK also looks forward to the evaluation of impacts on specific watersheds during the Section 404 permitting process. In order to further quantify and track wetlands impacts associated with this EA document, USARAK has modified its checklist to elicit information regarding watersheds:

"*Name the USGS 5th or 6th Order Watershed where the project is located.*"

It should also be noted that an additional BMP promoting the preservation of regionally unique or rare wetlands has been incorporated into the analysis. By prioritizing the conservation of these resources, USARAK hopes to better preserve the variety and diversity of wetland functions that serve a healthy watershed.

Response to FA1-4

The acreages listed in these tables apply to only wetland impact. The column heading has been edited to clarify this to read "*Approximate acreage of potential **wetland** impact*". Data are rounded to a tenth of an acre. Thus, when a project is listed as posing 0 acres of impacts to wetlands, it follows that less than 0.05 acres of impacts would occur.

Response to FA1-5

The following text has been added to Section 3.4.2 following definition of significance thresholds:

"*In addition, the following bullets provide general descriptions of the type of impacts used in the wetland impact analysis:*

- *Permanent loss of wetland includes loss of wetland acreage or function due to direct impacts which include additions of fill material or creation of impervious surface in areas containing wetlands or indirect impacts such as alternation of wetland hydrology (see alteration of hydrology definition).*

- *Temporary disturbance includes disturbance to a wetland over a short period of time (i.e., placement of construction matting during construction). When the temporary disturbance is removed, wetlands are capable of restoring to their natural state.*
- *Vegetation Alteration (operations) includes disturbance to vegetation during Army training or use of the site which would alter the vegetative composition of a wetland such as the conversion of forested wetland areas to scrub-shrub or wet meadow.*
- *Wetland degradation includes disturbances which alter wetland composition or functioning, however, does not result in the total acreage loss of a wetland.*
- *Alteration of hydrology includes disturbance which alter the hydrology of wetlands, either increase flooding/ponding conditions or by obstructing the level of water reaching a wetland.*
- *Beneficial impact includes those actions which would benefit wetlands by removing or reducing the potential for wetland disturbance during operations."*

Response to FA1-6
Please see responses to FA1-1 and FA1-3, the severity of impact for each impact type was used to determine the overall impact for each specific project.

Response to FA1-7
Please see response to FA1-5 regarding definitions of impact type added to text.

Response to FA1-8
The following text has been added to Section 3.2.2 following definition of significance thresholds:

"*In addition, the following bullets provide general descriptions of the type of impacts used in the soils impact analysis:*

- *Permanent loss of soil includes loss of soils due to direct impacts which include creation of impervious surface in areas, excavation, or placement of fill material (i.e., gravel).*
- *Soil compaction includes disturbance to soils which affect soil structure (i.e., placement of heavy machinery over soil). This type of disturbance does not cause a loss in soil acreage, however, can adversely affect the functioning of the soil such as the ability to filter water or support vegetative growth.*
- *Wind erosion (construction) includes the loss of the upper soil horizons by wind due to exposed soils from construction.*
- *Water erosion (construction) includes the loss of the upper soil horizons by runoff due to exposed soils from construction.*
- *Permafrost impacts include the degradation of permafrost soils through melting of permafrost and subsidence of soils.*
- *Soil stability (ongoing use) includes the potential disruption of soil stability during operations resulting from loss of vegetative cover and would likely contribute to conditions prone to wind and/or water erosion.*
- *Beneficial impact includes those actions which would benefit soils by removing or reducing the potential for soil disturbance during operations.*"

The following text has been added to Section 3.3.2 following definition of significance thresholds:

"In addition, the following bullets provide general descriptions of the type of impacts used in the surface water and floodplains impact analysis:

- *Channelization of stream includes the alternation of stream morphology due to channelization (e.g., alteration of stream banks using concrete walls).*
- *Loss of streambed includes the loss of streambed through placement of structures such as culverts.*
- *Increased turbidity (construction) includes the increased potential of sedimentation from construction site runoff.*
- *Degraded water quality (operations) includes the increased potential of sedimentation from operations in areas adjacent to water resources. This impact is dependent upon the type of proposed activity, condition of vegetative cover, stormwater management and landscape terrain.*
- *Change of flow direction includes potential alteration of stream flow direction through placement of structures such as surface water crossings. Including the potential to affect aufeis conditions at DTA.*
- *Change of velocity includes the potential alternation of stream flow velocity through stream channelization, placement of culverts and other types of stream crossings such as bridges with abutments within the floodplain.*
- *Permanent fill in floodplain includes the addition of fill material within the 100-year floodplain of surface waters. Including the potential for fill activities to affect aufeis conditions at DTA.*

Beneficial impact includes those actions which would benefit surface water and floodplains by removing or reducing the potential for soil disturbance during operations."

Response to FA1-9

The following text has been added to Section 3.3.1.3, "*Compared to other USARAK training areas where storm events and snow melt are primary contributors to flooding conditions, aufeis is the primary cause of flooding along Jarvis Creek with some additional flooding extending near the mouth and upstream of Ober Creek within DTA. Aufeis is an ice sheet that forms on the creek bed and adjacent floodplain areas over the winter as normal channels freeze solid or are otherwise dammed so that flowing water and groundwater forced to the surface spreads out in a shallow layer over the surface and freezes forming thick ice accumulations within the active floodplain*."

Aufeis will be considered on a project-specific basis as projects are developed off of this EA. The checklist item "Will the project involve diversion or obstruction of stream flow" would include the consideration of the project on aufeis.

Response to FA1-10

Text revised as suggested for FRA, FWA and DTA write-ups to read, *"...therefore, these projects would likely result in reducing the current level of impacts to sediment levels in adjacent surface waters, and may result in improvements to surface water quality through repairing existing segments which could act as nonpoint sources of sediments and upgrading these segments to maintain sustainable use.*"

Response to FA1-11
Text added as suggested.

Response to FA1-12
The checklist user is to refer the proposed activity to determine if that action falls within scope of either Proposed Action 1, 2 or 3 (see "Project Eligibility for PEA Teiring" portion at the beginning of the Checklist). Depending upon which Proposed Action the activity falls under, the checklist user will be directed to the applicable section of the PEA.

Response to FA1-13
The proximity and vulnerability of the resource would depend on the nature of the proposed activity and other considerations such as slope. For a typical standard, however, the following text has been added for guidance *"(typically within 75 feet)*".

Response to FA1-14
Text clarified to read "*either direct or indirect discharge*".

Response to FA1-15
The thresholds are described at the beginning of each resource area in Section 3.3.2 of the PEA. Also see response to FA1-1.

Commentor FA2 – USACE (Leslie Tose)

Comments on the Army Training PEA,
submitted Feb. 2, 2010 by Leslie Tose, USACE-RD-AFO

To: Carrie MacEnteer, CTR USA IMCOM

I appreciate opportunity to attend the January 14 agency PEA review and comment session held in Anchorage. The work you and your team have put into this PEA is commendable. I did an Army training permit approximately 10 years ago, and compared to this effort, the permit I did was rudimentary. I also appreciated the opportunity to meet the people I'll be working with at Fort Richardson, and to receive a visual and verbal synopsis of the material before diving into the document. After reviewing the handout materials as well as selected sections of the PEA, I have a several comments for you.

FA2-1

1. In the introduction, there is a discussion of the anticipated intensity of direct environmental effects to wetlands and surface waters. Those impacts are anticipated to be minor to moderate with the use of BMP's and SOP's. The information about the impacts that supports the "minor to moderate" classification might be located somewhere else in the document, but, Table 2.21 shows 400 + acres of proposed range projects (number of acres of wetlands or waters affected is not known) and, SAC projects appear projected to affect 107 acres – overall impacts to wetlands and waters appear to be up to 500 acres, which is not minor or moderate! (Which you probably already know) Applying a minor to moderate conclusion at this point in time - without a context that states "compared to what" – might be premature. Are you assessing proposed Impacts within military owned lands? Within watersheds? Sub-watersheds?

FA2-2

2. One suggestion for you is to develop more than one scale of analysis – for example, within military owned lands, but also within watersheds.
    a. Corps guidance requires a watershed approach to compensatory mitigation. (33 CFR Part 322.2, definition of Watershed Approach. Also check out Part 332.3 (b) and (c). There is guidance on how to develop a watershed approach where there is not specifically a watershed plan.
    b. Fort Richardson contains two primary watersheds – Ship Creek, and the Eagle River – and a number of sub-watersheds. Military lands include approximately half of the land area within the Anchorage Bowl. Although there is considerable information available for applying a watershed approach within the Anchorage Bowl, there is not much information available about watershed impacts on the military bases. Your document could be a useful contribution to the resource management community in Anchorage.
    c. Wetland. functions should be considered on a landscape scale within a watershed context.

FA2-3

3. Section 2.2 Action 1 – Table 2.21 identifies Range Construction Projects that have been identified to occur during the next 10 years. The 10 year timeframe is a good idea because I think it will give you a good handle on potential indirect and cumulative impacts, even with the realization that 100% of impacts not going to occur.

FA2-4

4. On the projects listed in Table 2.21, road improvements appear the most likely to cause the greatest impacts, although not enough information is provided to tell if this is so. The table states that 107 miles of road will be improved, with the potential to convert 390 acres of land (upland and wetlands) to gravel roadbeds with standard 30 foot top width and 20 foot shoulders. The new footprints would be 70 feet in diameter. Without more information, this

Commentor FA2 – USACE (Leslie Tose)

FA2-4 (cont'd) would not be considered a minor impact, even for the state DOT. Justification for this expansion of width in wetlands will require careful analysis and pre-identification of the areas that most need width expansion in wetlands.

FA2-5 5. Action 2 proposes Small Arms Complex ranges projects with Adaptable Use Zones. [As you already know] site specific delineations are needed, to determine the level of the proposed impacts. The term "Adaptable use zone" needs more explanation. Table 3.42A and subsequent text indicate that 107 acres of wetlands are anticipated to be affected, out of a total of 2,259 acres of wetlands contained within the SAC Range areas. Although this sounds good, it is premature to state that the impacts are minor without more contextual information.

FA2-6 6. Action 3 –Standardized Stewardship Practices – a list of BMP's and SOP's to be consulted for applicability for each project. This list will be useful to Army planners as they develop minimization measures for each proposed action. It is assumed that Action 3 can be applied to Actions 1 and 2.

FA2-7 7. In section 1.2.1, it is stated that degradation– such as trampling, compaction, erosion, and sedimentation - have occurred to Army lands as a result of repeated usage and/ or inadequate maintenance. These types of effects also include effects from recreational ATV use, like trail ruts, and could be classified into a category of unregulated but predictable secondary impacts. It should be suggested that as Actions 1 and 2 progress, a priority should be placed on identifying and restoring degraded areas (wetland and upland). This could contribute towards satisfying Compensatory Mitigation Requirements. With the actions having a 10 year life cycle, there is an opportunity to make tremendous progress in land reclamation.

FA2-8 8. I think that I read somewhere a statement that, because some of these areas are degraded, they are likely to be scored lower in a functional analysis, and, overall require less compensatory mitigation. This assumption might not carry through as anticipated – it is proposed that degraded areas will need to be considered within a site specific context. I also may have mis-interpreted what I read.

FA2-9 9. Another minimization measure could be the consideration of rotating use of areas that receive heavier impacts. This was probably mentioned in your SOP list that I didn't read as closely as I should have.

FA2-10 10. The Anchorage Wetlands Assessment Method is used to evaluate wetland functions in Anchorage. A partner method is the Anchorage Debit Credit Method (ADCM), which assesses debits for impacts for projects in wetlands or waters. I am also attaching some info on the Anchorage In-Lie Fee agreement with Greatland Trust, which establishes monetary values for debits in REV 1, 2, and 3 wetlands. The ADCM is central to determining mitigation within the Anchorage Bowl.

Leslie W. Tose 2/2/10

PROJECT MANAGER

Responses

Response to FA2-1
See responses to FA1-1 and FA1-3.

Response to FA2-2
See responses to FA1-1 and FA1-3.

Response to FA2-3
Comment noted. As stated during the agency meeting, as this document provides long-term planning considerations and the accompanying checklist and database will be used to track impacts, USARAK believes the document and checklist tools will help in assessing cumulative impacts within USARAK range and training lands.

Response to FA2-4
The acreage of wetland impacts for the projects is a worse-case scenario. Acreage of impacts was determined using a standard 30 foot top width and 20 foot shoulders from either side of the centerline to calculate the maximum potential impact to wetlands. As previously referred to in response FA2-1, the initial impact as stated in the text on pages 3-41 and 3-42 was determined to be significant. The use of BMPs in design (such as narrowing road widths in wetlands or widening/improving roads in the direction opposite of wetlands) along with stipulations required from Section 404 permitting would reduce impacts to insignificant levels. USARAK agrees that the justification for impacts to wetlands does require detailed justification which would have to demonstrate avoidance and minimization efforts along with an explanation of why an impact is unavoidable. The level of detail required for this analysis would be provided during the project design stage and Section 404 permitting.

Response to FA2-5
The intent and proposed use of adaptable use zones are explained in Section 2.2.2. USARAK is aware that Section 404 permitting would be required for specific activities occurring in Adaptable Use Zones. Please see response to comment FA2-4.

Response to FA2-6
One intent of the document is to simplify the selection of SOPs and BMPs for range construction projects as detailed in Proposed Action 3. If USARAK garrisons decide not to implement Proposed Action 3, the SOPs and BMPs would still be conducted on a project-by-project basis to minimize adverse impacts and to promote environmental stewardship.

Response to FA2-7
The following bullet has been added to the wetland SOP as part of Proposed Action 3:

"Using Range Training Land Assessment data, USARAK will continue to identify areas of degraded training lands, including degraded segments of streams and wetlands. This data will continue to assist USARAK in identifying opportunities in performing restoration activities while maintaining sustainable range use."

Response to FA2-8
The document does not state that degraded wetlands would require less compensatory mitigation. What the document does consider is wetlands within or adjacent to highly used range/training areas would likely experience a higher degree of degradation. This

connection is made to justify the SAC range adaptable use zone as a good planning tool – concentrating range development activities within and surrounding existing SAC ranges and avoiding "undisturbed" areas of range lands which may have higher value/functioning wetlands. Any mitigation ratio for unavoidable impacts to wetlands would be determined through the Section 404 permitting process.

Response to FA2-9
See response to FA2-7. This data would be used to determine rotational use of training areas to maintain sustainable use.

Response to FA2-10
Comment noted.

Commentor SA1 – ADEC (Deb Caillouet)

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

SEAN PARNELL, GOVERNOR

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File: 108.38.076

January 22, 2010

Ms. Carrie McEnteer
ATTN: IMPC-FWA-PWE (McEnteer)
1060 Gaffney Road #4500
Fort Wainwright AK 99703-4500

Re: Range Complex and Training Land Upgrades Programmatic Environmental Assessment, December 2009

Dear Ms. McEnteer:

As the Remedial Project Manager for the contaminated sites at Fort Wainwright I have reviewed the Programmatic Environmental Assessment referenced. There are several areas within this document with which I have concern. These concerns are specific to Fort Wainwright but may also apply to Fort Richardson.

SA1-1 Table 1.8-1 does not include Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, enacted by Congress on December 11, 1980. Fort Wainwright is a listed site under CERCLA.

SA1-2 Table 1.8-1 does not include the Alaska Oil and Other Hazardous Substances Pollution Control regulations at 18 AAC 75.

SA1-3 W3, W4, W9, W18, W20, and W41 appear to be collocated with known contaminated sites. As such any soil movement is regulated by the Alaska Department of Environmental Conservation (18 AAC 75.325(i), 75.370(b)). The movement of the soil requires a work plan 18 AAC 75.360.

SA1-4 Actions already have occurred that impact the contaminated sites associated with project W41 that are not addressed in this document.

SA1-5 The Adaptable Use Zone proposed contains a known contaminated site, FTW 085.

SA1-6 Section 2.2.3, activities within the ranges may involve the use of treated contaminated soil or movement of contaminated soil. Before movement of soil the soil must be characterized and a PID vapor sample is inadequate to detect lead and other munitions constituents. The movement of the soil requires a work plan 18 AAC 75.360.

G:\SPAR\SPAR-CS\38 Case Files (Contaminated Sites)\108 Fort Wainwright\108.38.076 Fort Wainwright Sitewide General\Range Complex PEA comment letter.docx

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Commentor SA1 – ADEC (Deb Caillouet)

SA1-7 Table 2.6.1, DEC disagrees that there is minor to moderate impacts or beneficial impacts with any of the action alternatives. The Best Management Plans (BMPs) listed in Section 3.12.2.2.1 do not mitigate actions on known or unknown contaminated sites. Fort Wainwright does not have a current Institutional Control Policy and has not been able to provide DEC with a schedule for developing one. Reliance on a non-existent policy will not protect the environment. DEC believes these actions have the potential for Severe impacts. This is also apparent in the decision to not carry forward for further analysis Hazardous Substances as foot noted on Table 3.1-1.

SA1-8 Section 3.12.2.4, the use of field screening for contaminants in the soil is inadequate. The 20 ppm level will not detect any non-volatile contaminants; complete characterization utilizing a work plan approved by DEC is required.

SA1-9 The Checklist for Human Health and Safety asks if there are contamination concerns at the project site and if yes refers to the guidelines for noise reduction and prevention measures. This does not address the required compliance with 18 AAC 75.

SA1-10 Appendix D SOPs for Human Health and Safety. There is no provision for identifying known contaminated sites on the property; therefore there are also no procedures for mitigating impacts to known contaminated sites. The field screening showing 20 ppm or higher is inadequate to determine if there are impacts from hazardous substances to the soil.

Thank you for the opportunity to review this PEA. If you have any questions on this letter please contact me at 907-269-0298 or Deb.Caillouet@alaska.gov

Sincerely,

Deb Caillouet
Environmental Program Specialist

cc: Jacques Gusmano-EPA
Bill Adams-EPA
Louis Howard-DEC

Responses

Response to SA1-1
The following text has been added to Table 1.8-1:

"*Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Superfund)/ CERCLA addresses the cleanup of uncontrolled or abandoned hazardous waste sites as well as accidental and other emergency releases of pollutants and contaminants into the environment.*"

Response to SA1-2
The following text has been added to Table 1.8-1:

"*Alaska Spill Prevention and Response Statutes and Regulations (18 AAC 75)/ These regulations serve as the basis for decisions which are made to prevent and clean up spills and contaminated properties in Alaska.*"

Response to SA1-3
FWA was listed on the NPL in 1990 after contamination was discovered at the installation. FRA was placed on the NPL in 1994. This designation addresses all of FWA and FRA, and all activities on the installation must comply with the relevant guidelines for work within a CERCLA site. An FFA between EPA Region 10, ADEC, and the Army is also in place. The FFA sets deadlines, objectives, responsibilities, and procedural framework for implementing an Installation Restoration Program. Institutional Controls (ICs) have also been established at several locations at FWA and FRA. ICs in place on all Garrison-controlled Army lands in Alaska serve as a guide for conducting work in and around sites of known contamination. ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. ICs have been agreed upon by the Army, EPA, and the ADEC in accordance with CERCLA as amended by SARA. Records of Decision (RODs) and other decision documents negotiated with EPA and ADEC mandate the implementation of ICs. ICs also apply to remedial actions agreed upon under Two-Party Compliance Agreements between USAG-AK and ADEC addressing petroleum, oil, and lubricant (POL)-contaminated sites. All work conducted on USAG-AK lands by any entity is subject to the USAG-AK IC policy.

FWA and FRA will continue to follow all management guidelines as set forth in the FFA under the three Proposed Actions.

Several BMPs and SOPs have been added to the PEA to ensure coordination and compliance with existing Army policy and state and federal regulations. Please see Section 3.12.2.4.

- Due to the nature and type of training conducted in the past (especially prior to 1986), unidentified contamination could be found on Army lands. All work involving the modification of facilities or excavation of any kind shall be coordinated via the USAG FWA or FRA "Work Clearance Permit" a minimum of five working days prior to mobilization to the site. Coordination requirements are outlined on the permit. Any potentially contaminated soil or groundwater encountered during this action shall be segregated, sampled, analyzed, and containerized in approved containers (specified in 49 CFR 178.500). Soil and

groundwater shall not be removed from any part of the installation or transported off the installation, regardless of whether it is clean or contaminated, without written authorization from an appointed USAG FWA or FRA representative.

- If unidentified contaminated soils, drums, or unusual debris (i.e., unexploded ordnance, discarded military munitions, or munitions debris) are encountered at any time on or around the work site, the agency or contractor shall stop work immediately and notify the Public Works Environmental Office. Contaminated soils or groundwater shall be segregated, sampled, analyzed, and containerized for transportation, and taken off-site for disposal within 90 days of final lab results being received. If soil or groundwater is scheduled for remediation off-post, it shall be returned to the installation after treatment and certified laboratory analyses, conducted by the treatment facility, to confirm the material does not exceed a regulatory cleanup level.
- All military units using the sites will be required to possess and have available appropriate spill response materials for the types and quantities of hazardous materials they may transport and use within proximity to this work area. All spills / releases will be reported to Fort Wainwright's or Fort Richardson's Fire Department and DPW- Environmental, Spill Prevention and Response (SPAR). All appropriate remediation measures will be accomplished.
- HAZWOPER certified workers may be needed if clean-up and disposal of hazardous materials is necessary. All materials should be handled, stored and disposed of in accordance with applicable laws and regulations, including USAG FWA or FRA Department of Public Works Environmental Institutional Controls. The potential for encountering hazardous materials/substances exists, including but not limited to petroleum, oils, and lubricants (POL), POL degradation by-products, asbestos, lead based paint, PCBs and mercury. Contaminated groundwater, soils, and debris shall be segregated, sampled, analyzed, and containerized for proper disposal according to the type of contamination identified.
- Project proponents will utilize the installation's Institutional Control map to avoid known contamination when siting facilities. If known contamination cannot be avoided, established BMPs/SOPs will be followed. Project proponents will coordinate with installation Environmental Clean Up personnel in a timely fashion prior to project contract award and construction start in order to gain proper regulatory approval of work in a contaminated site, if applicable.

Response to SA1-4

Known contamination exists within this project foot print, specifically Operational Units at milepost 2.7 and 3.0 of Birch Hill Road. Coordination with the FWA Environmental Office, EPA, ADEC, CRREL, and Fairbanks Environmental Services Inc. (FES) has occurred and work within these areas has been approved. Approval was granted with the following conditions: 1) soil disturbance within the operational units will be limited to the extent practicable to control drainage; 2) no soil excavated in the operational units is to be removed from the site; 3) no active monitoring wells will be disturbed; and 4) wells no longer in use shall be removed by FES. A final project map, scope of work, and health and safety plan will be submitted to the FWA Environmental Office prior to construction in the known contaminated areas. Construction is anticipated to begin in May of 2010.

This project has been removed from Proposed Action 1. Creation of an Improvised Explosive Device Defeat Training Lane has been added to Proposed Action 3 as a "routine action".

Response to SA1-5
See response to SA1-3.

Response to SA1-6
See response to SA1-3.

Response to SA1-7
See response to SA1-3.

Response to SA1-8
See response to SA1-3. U.S. Army Garrison FWA and FRA will continue to comply with Army policy regarding field screening levels.

Response to SA1-9
Text citation was incorrect, text has been revised to read, "....*for human health and safety SOPs and BMPs."* Also see response to SA1-3.

Response to SA1-10
See response to SA1-3.

Commentor SA2 – ADEC (Louis Howard)

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

SEAN PARNELL, GOVERNOR

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Anchorage, AK 99501
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File: 2102.38.000

January 21, 2010

Ms. Carrie McEnteer
ATTN: IMPC-FWA-PWE (McEnteer)
1060 Gaffney Road #4500
Fort Wainwright, AK 99703-4500

Re: U.S. Army Garrison Fort Richardson and Fort Wainwright Programmatic Environmental Assessment (December 2009)

Dear McEnteer:

Thank you for your email of January 8, 2010 which announced the release and availability of the subject document for download from your website. Comments were requested on the PEA by January 26, 2010. ADEC has conducted an expedited review of the document as a courtesy to the Army. As project manager for ADEC on Fort Richardson, these comments are focused on any impacts the actions, guidelines or standard operating procedures may have on existing contaminated sites on the Post. These comments are also relevant to Fort Wainwright.

3.12.2.4 Proposed Action – Environmental Stewardship Range Construction Guidelines Page 3-174
The seventh bullet states: "Any project that involves excavation or movement of soils must include field screening for petroleum (plus any other identified contaminants). Soils registering less than 20ppm are considered clean and may be reused on site or transported to the Post landfill for cover. Soils screening 20ppm or higher must be follow USARAK contaminated soil policies."

SA2-1

ADEC disagrees with the assumption in USARAK contaminated soil policies that soils registering less than 20 ppm are "clean" or meet cleanup levels specified in 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations (site cleanup rules). ADEC does not allow responsible parties to rely solely on field screening devices to determine compliance with site cleanup rules. It is assumed that the Army is coordinating with ADEC's project managers on obtaining prior approval (on a site-specific basis) before moving/disposing of soil on site or transported to the Post landfill in accordance with the following regulations:

18 AAC 75.325
(i) A responsible person shall obtain approval before disposing of soil or groundwater from a site
1. that is subject to the site cleanup rules; or

Commentor SA2 – ADEC (Louis Howard)

2. for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1).

18 AAC 75.370 Soil storage and disposal
(b) A responsible person shall obtain approval before moving or disposing of soil subject to the site cleanup rules. (Eff. 1/22/99, Register 149; am 8/27/2000, Register 155; am 10/9/2008, Register 188)

The use of field screening devices shall be always supplemented with laboratory analyses to confirm whether a positive deflection/reading on the field screening device is indicative of contaminated soils.

The assumption on any project (absent those activities taking place in known areas of contamination) is that the soils should not be contaminated and there should be no positive response from field screening devices. A photoionization detector (PID) field screening device does not allow a "qualified" person to differentiate between detectable compounds in a mixture of gases from various contaminants at the site. It only measures total organic vapors and gases.

It has been shown that PID screening results (ppm) do not correlate well with actual laboratory analysis results at sites with weathered petroleum in soil. For example, the following PID readings were obtained during headspace screening of soil samples taken from a petroleum contaminated Air Force site in Alaska. The data demonstrates that there is a wide variance in PID readings versus actual (DRO) laboratory results:

SA2-1 (cont'd)

PID Readings	DRO laboratory results
1 ppm	911 mg/kg
4 ppm	1,600 mg/kg
5 ppm	1,130 mg/kg
6 ppm	11,500 mg/kg
10 ppm	35,800 mg/kg
10 ppm	3,520 mg/kg
12 ppm	1,600 mg/kg
12 ppm	28,200 mg/kg
17 ppm	18,100 mg/kg
17 ppm	67,200 mg/kg
19 ppm	17,300 mg/kg
20 ppm	1,350 mg/kg

Relying solely on a 20 ppm reading from a PID or FID to determine whether soils are "clean" or "dirty" is not recommended, endorsed nor supported by ADEC(without laboratory analysis) at any of Fort Richardson's sites/projects nor should this criterion continued to be used at Fort Wainwright.

The ADEC's UST Procedure Manual (adopted by reference in 18 AAC 75.355[d]) does not list a specific threshold for field screening readings as to whether a site is clean or not.

Commentor SA2 – ADEC (Louis Howard)

SA2-1 (cont'd)

"The results of field screening *must be used to determine the location from which to obtain samples*. Samples must be obtained from locations that field screening and observations indicate are most heavily contaminated. A positive field screening result is one in which ***any deflection*** *in the meter reading occurs* at locations **where samples are required**. Samples analyzed with field screening devices **may not be substituted for required laboratory samples**."

SA2-2

Fort Richardson's dig permit application *(eff. January 29, 2009)* ***does not state a specific numerical threshold*** for field screening device readings as being indicative of contaminated soils:

General Requirements for Excavation/Soil Boring Work
MONITORING: The unit or contractor shall monitor the excavation or boring for *signs or indications of contaminated soil or water*. These may include *active or passive, physical or instrumental, or other methods*. DPW Environment Resources may stipulate the methods or procedures for monitoring.

Evidence of contamination includes (*but is not limited to*):

a) Chemical, hydrocarbon, or petroleum odors
b) Iridescent / petroleum sheen on water or soil surfaces
c) Free floating non-aqueous liquids. Such liquids frequently float on water.
d) Observation of colored or off-color inclusions or concretions of non-soil material
e) Articles, materials, or containers which may contain hazardous chemicals or hazardous waste
f) *Instrumental field screening (PID instrument) and/or sampling and laboratory analysis for specific chemicals or classes of chemicals*
g) Other indicators as appropriate or necessary or as specified by DPW Environment Resources.

NOTIFICATION: At ***the first sign or indication of hazardous waste contamination*** in the excavated soil or purged water, the unit or contractor project manager must notify the Fire Department (384-0774) or 911. *Work must cease and not resume until DPW Environment Resources has investigated the problem and authorized work to continue*. Proper notification in cases of suspected contamination is a condition of continuing project approval.

SA2-3

Appendix C – USAG Alaska Range Project Checklist
ADEC requests the Army include in this appendix (or another applicable appendix) reference to adopting as part of the review checklist procedures: the latest version of: U.S. Army Garrison Fort Richardson Institutional Controls Standard Operating Procedures (APVR-RPW (200-1)), the companion August 18, 2008 Institutional Controls for United States Army Garrison Fort Richardson (USAG FRA) and the January 29, 2009 Dig Permit packet which is required whenever soil disturbing activities (currently defined as six inches or more and to include activities such as: construction, road repair and realignment, utility work, digging, trenching, excavation, paving, or drilling of soil borings and wells.)

Commentor SA2 – ADEC (Louis Howard)

Appendix D – Environmental Stewardship Range Construction Guidelines Page 17
The third bullet states: "Any project that involves excavation or movement of soils must include field screening for petroleum (plus any other identified contaminants). Soils registering less than 20 parts per million (ppm) are considered clean and may be reused on site or transported to the Post landfill for cover. Soils screening 20ppm or higher must be follow USARAK contaminated soil policies."

SA2-4

ADEC disagrees with the statements in Appendix D regarding field screening results (presumably referencing use of PID or flame ionization detector [FID]) of less than 20 ppm to be considered clean. See comments above regarding field screening requiring laboratory confirmation results at Section 3.12.2.4.

Appendix F – Environmental Concerns for Construction and Renovation Projects Page 3
At item number one "Contaminated Soils" it states: "Any project that involves excavation or movement of soils must include field screening for petroleum (plus any other identified contaminants). Soils registering less than 20ppm are considered clean and may be reused on site or transported to the Post landfill for cover. Soils screening 20ppm or higher must be handled IAW Appendix A, Handling/Management of Contaminated Soil. POC: Carlton Haenel, 361-6249."

SA2-5

ADEC does not concur with the statements regarding soils registering less than 20 ppm (using a PID or FID) are considered "clean" or meeting cleanup levels specified in 18 AAC 75, until confirmed by laboratory results. See comments above at Section 3.12.2.4.

For consistency purposes, ADEC recommends the Army implement Fort Richardson's most recent versions of the following:

- Institutional control (IC) memorandum for distribution (signed by Col David L. Shutt on August 18, 2008) and IC Standard Operating Procedures APVR-RPW (200-1);
- Dig permit form (eff. January 29, 2009);

for all applicable project and site work on Fort Wainwright (e.g. MILCON, restoration, compliance, NEPA, etc.).

Sincerely,

Louis Howard
Environmental Program Specialist
Ft. Richardson Remedial Project Manager

cc: Bill Adams, US EPA Region 10 Seattle, WA
Deb Caillouet, ADEC via email
Therese Deardorff, IMPC-FRA-PWE
Jacques Gusmano, US EPA Region 10 Anchorage, AK

Responses

Response to SA2-1
See response to SA1-3.

Response to SA2-2
See response to SA1-3.
The following question has been added to the "Human Health and Safety" portion of the USAG Alaska Range Project Checklist (Appendix C): "*Does the project involve the modification of facilities or excavation of any kind? If so, work shall be coordinated via the USAG FWA or FRA "Work Clearance Permit" a minimum of five working days prior to mobilization to the site.*"

Response to SA2-3
See response to SA1-3 and SA2-2.

Response to SA2-4
See response to SA1-3.

Response to SA2-5
See response to SA1-3.
Information in Appendix F has been added to reflect Fort Richardson points of contact.

Commentor LC1 – Delta Farm Bureau (Michael Paschall)

DELTA FARM BUREAU CHAPTER

PO BOX 760 DELTA JUNCTION, ALASKA 99737

President Michael Paschall- Vice President Lyall Brasier
Secretary Jane Hamilton - Treasurer Donald Marsh

January 13, 2010

Colonel Timothy A. Jones
Commander, U.S. Army Garrison Fort Wainwright
c/o Ms. Carrie McEnteer
Attn: IMPC-FWA-PWE (McEnteer)
1060 Gaffney Rd. #4500
Fort Wainwright, AK 99703-4500

Dear Colonel Jones:

The Delta Chapter of the Alaska Farm Bureau is concerned that the U.S. Army Garrison Alaska's Draft Determination and Finding of No Significant Impact (FNSI) for Range Complex Training Land Upgrades does not properly address the impact the proposed work will have on the Delta Bison Herd.

LC1-1

The Delta Bison Herd is a problematic herd of nonnative animals that cause significant damage to agricultural commodities and poses a significant risk to people and other property in the Delta Junction area when the herd is disturbed. Any activity in the Donnelly East Training Area (including Black Rapids) and the Grestle River Training area pose a disturbance to the animals. The draft FNSI minimally addresses disturbance of the herds "bison spring/summer use areas" along the Delta River, but does not address disturbance of the herd during migration to and from the spring/summer use area to the Delta Bison Range, which encompasses portions of the Grestle River Training Area. The Draft FNIS also fails to address disturbance of the herd in the Grestle River Training Area.

Currently the Best Management Practices (BMP) contained in the Memorandum of Understanding between USAG-AK and the Alaska Department of Fish & Game outline the following rules pertaining to disturbance of the herd:

> (2) USAG-AK shall:
>
> (b) Maintain a minimum of 50 acres of bison food plots on Donnelly Training Area. Over time the location of these food plots may move depending on military requirements and the location of bison.

Commentor LC1 – Delta Farm Bureau (Michael Paschall)

-USAG-AK will minimize disturbance to bison calving areas on Donnelly Training Area during 15 April – 31 May if bison are present. USAG-AK will minimize disturbance to bison pre-migration areas 1 July -31 August (Figure A1) if bison are present. USAG-AK will not conduct indirect fire operations within 2000 meters of bison in the impact area during any time of the year. USAG-AK will not conduct activities or operations within 500 meters of any bison during any time of year to minimize the impacts on bison.

(e) Conduct military activities or operations in such a manner that will not adversely affect the characteristics of unique or sensitive habitats. Designate important or fragile natural areas with special protection status ands manage such areas as "special interest areas" for their unique features.

-*Delta Bison Area.* USAG-AK has imposed restrictions to limit disturbance to bison calving areas from 1 April – 31 May, if bison are present. The Army can conduct military activities in these areas if they first consult with Alaska Department of Fish and Game.

LC1-1 (cont'd)

The BMP does not adequately address procedures to eliminate impact on the herd outside of the time periods shown, nor does it address how construction activities will alter seasonal movement of the herd. The increase in vehicle activity and the use of large machinery can easily impact the herd's movement. Procedures must be put in place to monitor the movement of the herd and discontinue activity as the herd approaches.

In the draft FNSI, the majority of projects are listed as showing no impact to large mammal movement. Further, when impact is shown, it is listed as minimal. I believe these findings are incorrect and severe impact to the movement of bison may be caused by or during most of the construction projects listed.

LC1-2

Any activity that alters the movement of the herd during migration or causes movement of the herd toward the Sawmill Creek area will have a direct impact on the ability of producers to successfully operate their farming operations. Further study of this possible impact on the herd and resulting damage to agricultural activities is necessary before a finding of no significant impact is acceptable.

LC1-3

Further, the Delta Bison Range, which includes portions of the Grestle River Training area, is used to help hold bison south of the Alaska Highway prior to harvest. Increased activities in this area will have an impact on movement of the herd. Failure to identify this impact in the draft FNSI further shows the failure of acceptability of a FNSI.

Sincerely,

Michael R. Paschall
Chapter President

cc: Steve DuBois, Area Biologist, Alaska Department of Fish & Game

Responses

Response to LC1-1
The latest *Memorandum of Agreement (MOA) between United States Army Garrison Alaska and United States Department of Interior, U.S. Fish and Wildlife Service and Alaska Department of Fish and Game* which includes cooperative efforts in bison management is contained within the *2007-2011 Integrated Natural Resources Management Plan*. Within this agreement, USARAK continues to enhance its lands for wildlife management which includes maintaining a minimum of 50 acres of bison food plots on Donnelly Training Area. Time of year restrictions contained within the MOA pertain to Army training activities which would be upheld for any training-related activities resulting from projects contained within the EA. Additionally, through the MOA, USARAK has committed to partner with ADF&G to aid in bison management activities which include monitoring the overall population and movement to help determine the location of food plots on Army lands depending on military requirements, ADF&G goals and the location of bison. The following text has been added to Section 3.6.1.3 of the PEA to clarify bison management on Army lands and MOA requirements:

"*USARAK has developed and maintained approximately 50 acres of bluegrass and fescue food plots since 1999 for bison. Currently, 55 acres of bluegrass food plots are still in production. Maintenance of the food plots has included harrowing the fields to break up bison manure, and application of herbicide to remove foxtail barley. Also, a 3,300 acre prescribed burn in 2007, to maintain military training ranges in and adjacent to Texas Range created sedge/grass communities that were subsequently utilized by bison. A bison working group consisting of representatives from USARAK, ADF&G, Salcha-Delta Soil and Water Conservation District, and the University of Alaska Cooperative Extension, have set forth future habitat improvement suggestions to improve bison habitat on DTA. Habitat improvements planned in 2010 will include fertilization of existing food plots and additional natural forage areas east and west of the Delta River within the historic bison calving area. In addition to fertilization, new bison food plots may also be created. Military training needs also require continued use of prescribed fire on the 3,300 acres in and adjacent to Texas Range continuing in 2010 and repeating every 2 to 3 years. This action will subsequently promote early succession sedge/grass communities, benefitting bison*."

In addition, the following SOP has been modified to specifically reference time of year military restrictions for bison management as outlined in the MOA (See Section 3.6.2.4):

- Continue to cooperatively manage the Delta Bison Herd with ADF&G *according to conditions outlined in the 2007 MOA and within the INRMP* to ensure sustainment of the military mission and the health of the bison population.

Response to LC1-2
USARAK has determined that overall impacts will be minimal from the Proposed Actions. USARAK will continue to work with ADF&G and surrounding communities to meet management goals. In addition, the construction of projects contained within the EA would be phased over time (i.e., the construction of all the projects listed would not be widespread nor would occur all within the same construction season), minimizing impacts. Also see response to LC1-1.

Response to LC1-3
See responses to LC1-1 and LC1-2.

Appendix B – Site-specific Range Projects

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Fort Richardson (FRA)		
Project Name	**Project Description**	**Project Reference Number**
FRA Urban Assault Course (UAC) Upgrade	Upgrades to the FRA UAC include: 1) Construct berms which will contain the fires for the Individual Techniques Trainer and the Grenadier Gunnery Trainer. 2) Construct an Urban Defense Building that consists of a 142.7 per floor concrete block and reinforced concrete floor training building. 3) Construct a Grenadier Gunnery Trainer that consisting of the following: 7 firing points; 3 hasty positions, 2 vehicle pads with vehicles, 2 low log walls and a 2 story facade that has 1 doorway and 5 windows (3 on second floor and 2 on bottom floor). 4) Construct an Individual Techniques Trainer that consists of the following: Building with 3, 18- by-15-foot, rooms that are joined; doors that can be replaced frequently due to destruction from live-fire; has an external roof constructed of a material which does not present a ricochet hazard that is detached from the building with a minimum of 1 meter separation between top of building and roof also maintain integrity under Alaska environmental conditions. 5) Construct a General Instructional Building consisting of an 800 square-foot (74.3 square-meter) concrete /masonry structure with slab-on-grade floor construction and metal standing seam roof on light gauge metal trusses with a slope of 5 on 12.	R1
Dig a well at the ISBC Site	Construct a class "A" well that will provide potable water at the Davis Range Complex.	R2
Raise the Infantry Squad Battle Course (ISBC) Road	Upgrade current road system to prevent any more damage to the training land due to an inadequate designed road network to support the range.	R3
Provide Turnaround Infantry Platoon Battle Course (IPBC)	Upgrade current road system to prevent any more damage to the training land due to a inadequate designed road network to support the range.	R4
Create a Bivouac Site UAC	Construct a company size site to accommodate up to 200 Soldiers and equipment. Site will include a general instruction building, arctic latrine and graveled area for tent pads that allow for drainage of melting snow.	R5

Fort Richardson (FRA)		
Project Name	**Project Description**	**Project Reference Number**
Range Operation Complex	This project consist of a range use command and control facility (20,000 square feet) that will house all range control functions including range control, scheduling safety and inspection offices, briefing and conference rooms, material and equipment storage space target fabrication and issue, and range equipment repair. Law enforcement game regulation offices for the Bureau of Land Management are included. Supporting facilities include; utilities electrical service, fiber optic cable, sanitary sewer, fire protection and alarm systems paving, walks, curbs, gutters, storm drainage, site improvements, erosion control, information systems, heating, air conditioning and fencing.	R6
FRA Roads Upgrade	This project will improve 107 miles of roads in the FRA Training Area. The proposed improvement includes grading road surfaces, clearing trees and brush to widen existing roads (to a standard width of 30 feet), removing boulders, installing culverts and drainage ditches to control severe erosion, realigning roads to eliminate unnecessary switchbacks on steep grades, and providing passing areas where needed. This project encompasses the entire FRA unpaved training area road system outside of the cantonment area. There is an estimated 107 miles of roads to bring up to Army standards by re-establishing an adequate road crown and then capping with a 6 inch crushed rock D-1 layer.	R7
Vehicle Storage/ Maintenance Building	Construct a 6,000 square-foot maintenance building at the range control complex to house store and repair range support vehicles and equipment. This will reduce to down time of all range equipment.	R8
Install Flagpole	Install a standard range flagpole at Eagle River Gate to notify trespasser of ranges being active and no access granted.	R9
Waterless Arctic Latrine	Replace all old latrines with a ROMTEC style arctic vaulted uni-sex latrine.	R10
Covered Bleachers	Install a set of covered bleachers on each small arm ranges and training area.	R11

Figure B-1a

Site-Specific FRA - SAC Range Projects

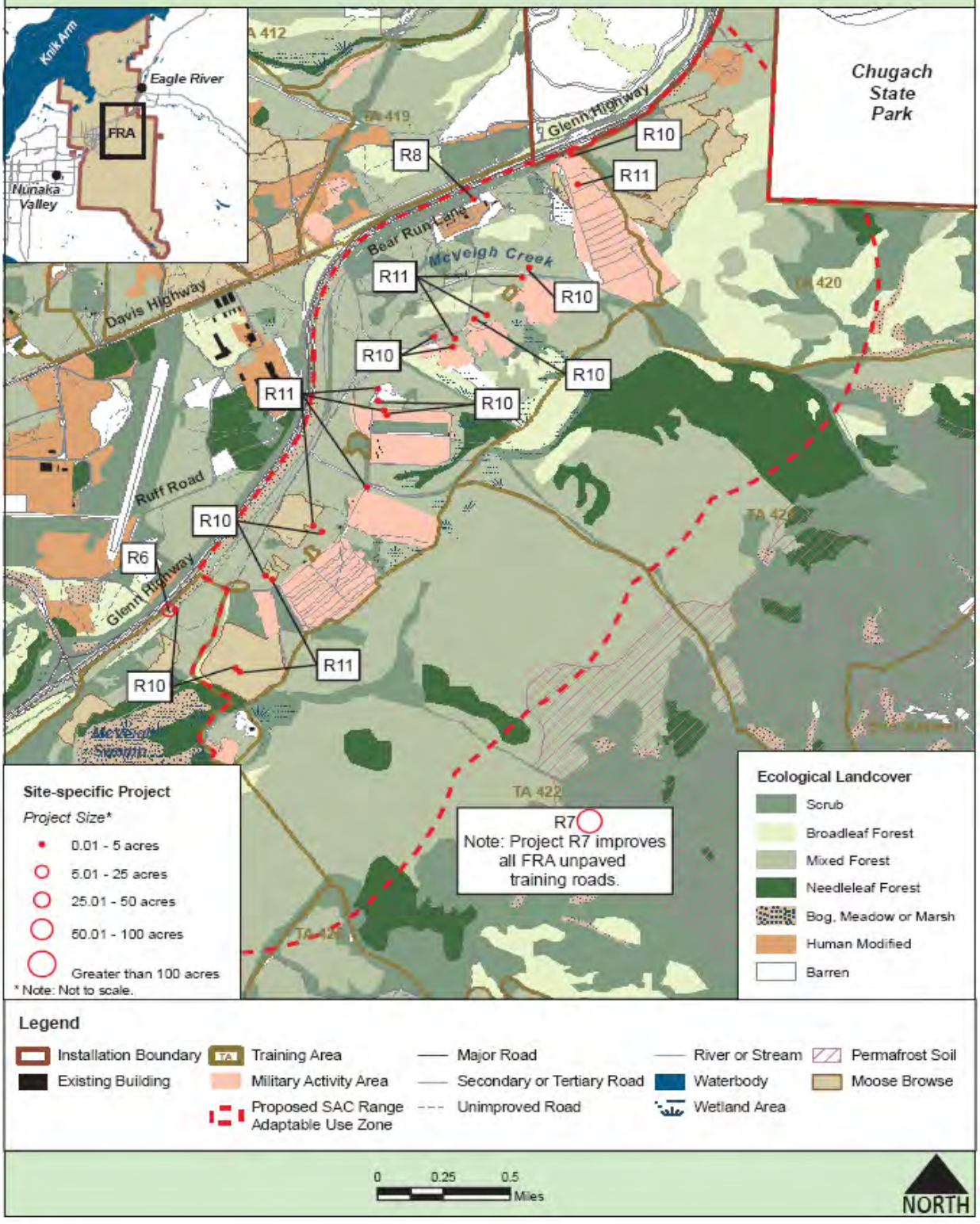


Figure B-1b

Site-Specific FRA - South Projects

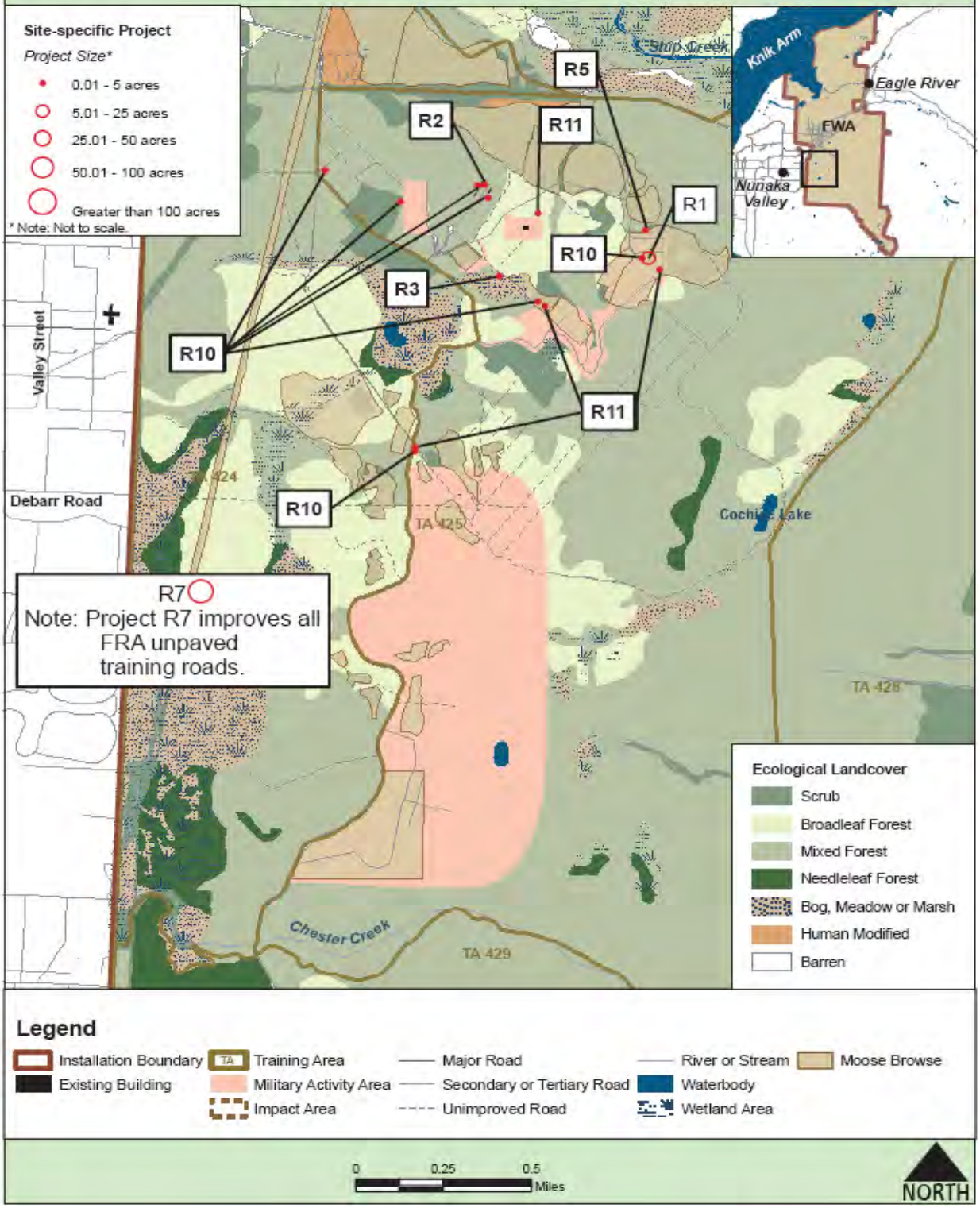


Figure B-1c

Site-Specific FRA - Central Projects

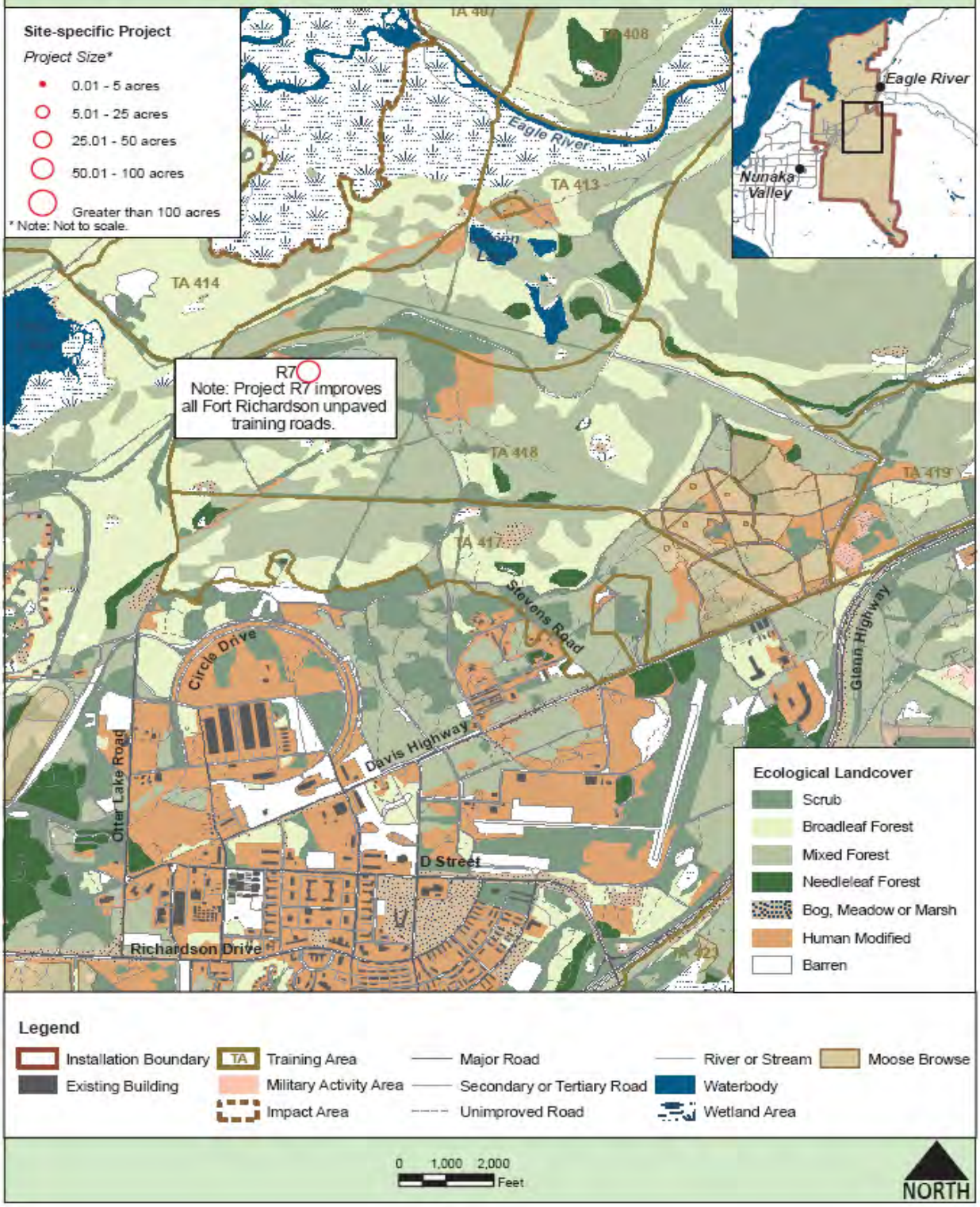
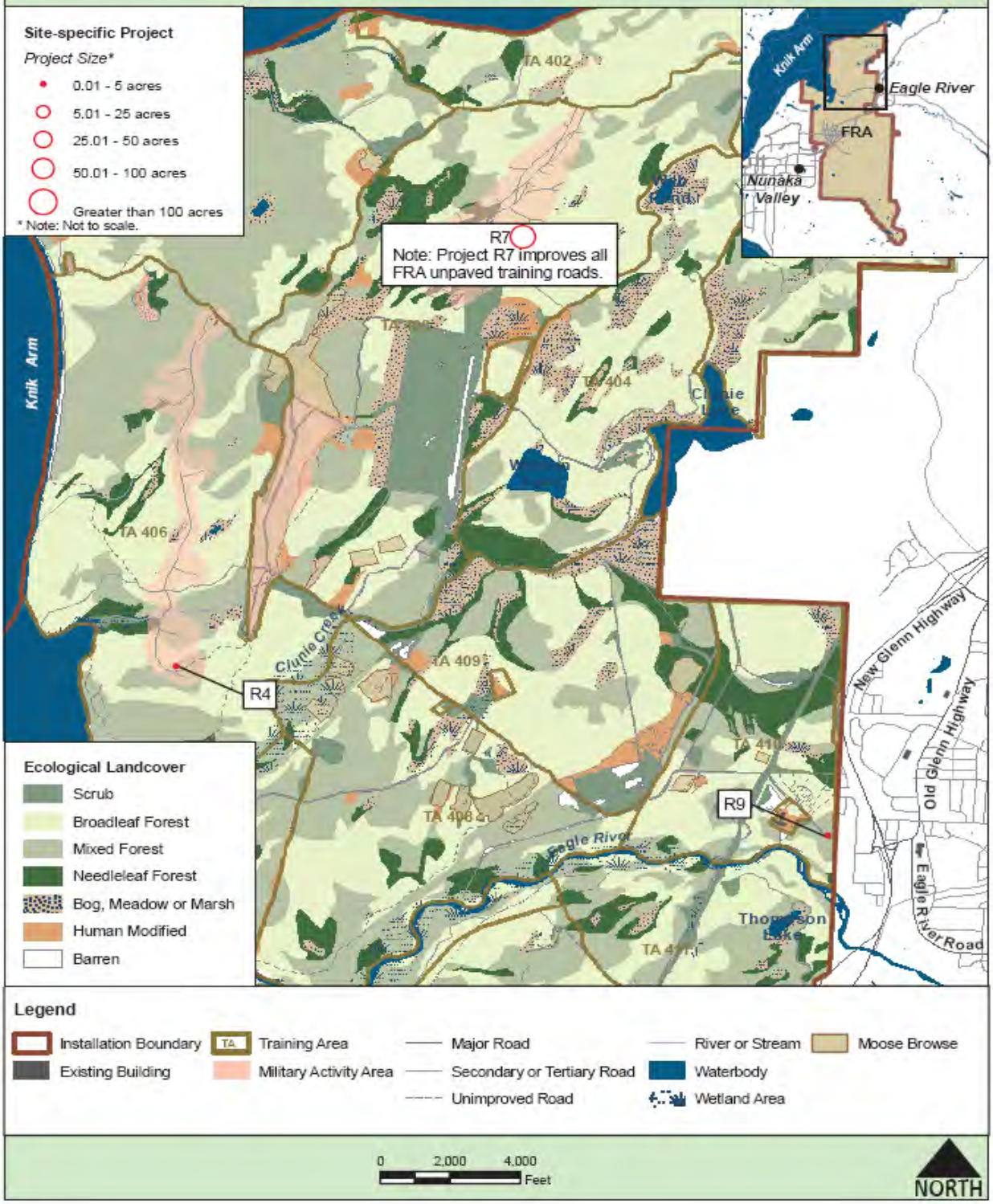


Figure B-1d

Site-Specific FRA - North Projects



Fort Wainwright (FWA)		
Project Name	**Project Description**	**Project Reference Number**
Ammunition Breakdown Buildings	This project is located throughout the FWA SAC. This project would provide for the construction of Ammunition Distribution Buildings on all the SAC ranges. Currently they are either temporary structures or there are none. This is a requirement of TC 25-8. There will be a total of 10 buildings.	W2
Demo Pond Range	This project is located in the FWA SAC. This project will consist of refurbishing this range to a useable state. The project will consist of establishing a blasting pad, constructing a missile proof shelter and hardening the existing access road.	W3
General Instructional Building CACTF	This project is located in the FWA LTA at the CACTF. This project will provide for a General Instructional Building to support the Life Support Requirements of the units utilizing the facility. The building will be 40 by 80 feet, heated and lighted.	W4
Indoor Shooting Range	Construct an indoor live-fire range for weapons zero, qualification, and night fire training. Project will provide a 15 firing point lit, heated, covered, and protected environment to allow live fire training during the winter months and night fire training during summer months. Facilities include a ventilation system, energy monitoring and control systems (EMCS), local area network connections and anti-terrorism/force protection (AT/FP) measures such as structural reinforcements, setbacks and reinforced (laminated) glass. Supporting facilities include utilities; electric service; exterior lighting; fire protection and alarm systems; mass notifications systems; keyless lock system; paving, walks, curbs and gutters; parking; erosion control and storm drainage; site grading and contouring; information systems; site improvements; and power distribution extension service. Supporting facility costs are high due to extensive earthwork and the requirement for underground utilidors to protect the utilities in subzero climate.	W6
Range Operation Complex	This project consist of a range use command and control facility (30,000 square feet) that will house all range control functions including range control, scheduling safety and inspection offices, briefing and conference rooms, material and equipment storage space target fabrication and issue, and range equipment repair. Law enforcement game regulation offices for the Bureau of Land Management are included. Supporting facilities include; utilities electrical service, fiber optic cable, sanitary sewer, fire protection and alarm systems paving, walks, curbs, gutters, storm drainage, site improvements, erosion control, information systems, heating, air conditioning and fencing.	W8

Fort Wainwright (FWA)		
Project Name	**Project Description**	**Project Reference Number**
FWA C130/17 Mock-up	Construct 1 each C-17 and 2 each C-130 Air Transport Mockup's at FWA. Mockups will consist of a ramp and platform structure to allow loading, securing and unloading of vehicles, equipment, and personnel. Mockup design shall ensure dimensions, heights, clearances, and tie down positions are representative of actual aircraft. Protection from the inclement winters shall be provided on the exterior of the structure in a manner that compliments the Ladd Field National Historic District requirements. Interior lighting will be provided at adequate levels to support training during winter months. Supporting facilities to include connection to existing electrical infrastructure, exterior lighting, paving, walks, curbs, gutters, erosion control measures, emergency phone, site improvements, anti-terrorism/force protection (AT/FP), and fire protection.	W9
Welding/ Carpentry Shop	This project is located on the FWA SAC. The project will provide 2, each fully functional 60-by-120 foot Welding and Carpenter shops to support the operations of Range Control. The building will be heated, lighted, with sufficient ventilation and dust collection.	W10
Harden Access to Arctic Village	This project is located on the FWA SAC. The project will include hardening the surrounding area and expanding the number of buildings to better replicate an urban setting.	W11
Small Arms Complex East Expansion	This project is located on the FWA SAC. The project will involve hardening an existing trail to a width of 36 feet to allow for additional access for the breech facility, Firing Points 25 and 26 and future ranges.	W12
KD Range Expansion	This project is located on the SAC. The project will consist of moving the target berm south 1,312 feet (400 meters) to facilitate a 3,280 feet (1,000 meters) range. Firing Berms will be constructed at 328-656 and 984 feet (100-200 and 300 meters).	W13
Pave Range Road	This project is located on the FWA SAC. The project will consist of paving the existing Range Road to reduce maintenance costs and eliminate dust to provide a safer driving surface. The length of the road to be paved is 13,582 feet (4,140 meters) with a 40-foot top.	W14
SAC Security Fence	This project is located on the FWA SAC. The project will include installing a security fence around the entire SAC to meet regulatory requirements. Dimensions for this project is a length of 46,522 feet (14,180 meters) with a width of 16 feet (5 meters).	W15
Rebuild MRF Firing Line	This project is located on the FWA SAC. This project will include resurfacing and widening the berm to a top width of 18 feet and establish stairways at each firing position.	W16

Fort Wainwright (FWA)		
Project Name	**Project Description**	**Project Reference Number**
CACTF Trail Upgrade	This project is located within the cantonment area and will improve a network of existing trails approximately 5,140 feet in length to an all season surface and width of 24 feet with adequate slope and drainage. Approximately 15 feet of vegetation will be cleared either side of the hardened trails to facilitate line of site and future maintenance. Vegetation will also be cleared at undetermined locations adjacent to the hardened trail network to accommodate training aids and hardened parking pads .This project will improve access to FWA CACTF and control erosion by improving drainage through grading, establishing ditches, installing culverts, low water crossings, geotextile, fill material, and confining activities to hardened surfaces.	W17
Drivers Training Course Phases 1-5	The project is located in the cantonment area within the Local Training Areas 113 and 114 and will improve approximately 36,090 feet of existing roads and trails to an all season surface and width of 24 feet with adequate slope and drainage. Approximately 15 feet of vegetation will be cleared either side of the hardened roads and trails to facilitate line of site and future maintenance. Concrete and earthen obstacle proficiency stations will be installed throughout the Drivers Training Course route. The project will be installed in 5, 7,218 feet phases, and will provide basic and proficiency training opportunities through the negotiation of several different types of obstacles, such as side slopes, inclines, declines and self recovery areas. This project will improve access and control erosion by improving drainage through grading, re-establishing ditches, installing geotextile, fill material, culverts, low water crossings, and confining activities to hardened surfaces.	W18
Latrine – Birch Hill Biathlon Range	This project is located in the cantonment area and will install ROMTEC SST Single Restroom pre-fabricated latrine at the newly constructed Birch Hill Biathlon Range. The facility currently has no latrine associated with it and is in an area open to public recreational use. This project will provide for appropriate and sanitary human waste disposal.	W19
Warrior Forward Operations Base Phase 3	This project is located in the cantonment area and will upgrade 7 acres of existing pads and roads with an additional 6 inches of cap fill material, approximately 17,000 cubic yards. This project will expand upgrades made in Warrior FOB Phase 2 and improve year round access to the site. This project will facilitate erosion control by maintaining the existing erosion control structures and installing additional erosion control structures such as culverts, low waters crossing, grading, and establishing ditches where necessary.	W20
Latrines	This project is located in on the FWA SAC and LTA will install pre-fabricated ROMTEC SST Restroom latrines at the Zero/CQM Range, KD and CACTF.	W22

Fort Wainwright (FWA)		
Project Name	**Project Description**	**Project Reference Number**
TFTA		
Alpha Impact Area Survey Line	This project is located in the Tanana Flats and will cut a 141,664 feet by 19.7 feet survey line around the permanent impact area. This project will create a mechanically treated, highly visible impact area perimeter that will improve safety during training exercises and other operations adjacent to the impact area. It will also provide a moderate firebreak.	W21
YTA		
Digital Air Ground Integration Range	Range includes multiple battle positions (to be determined), safety cameras with towers, 1 each small After Action Review building, 1 standard large Range Operations Center, 2 each Range Towers upgrade, 1 each Range Maintenance Building, 1 each General Instruction Building, 2 each Arctic Latrines, 1 each enclosed Mess Facility, 1 each enclosed Bleachers and associated power and data to support the range facilities. The range would also support aviation units with a Forward Area Arming and Refueling Point. This range will have the technological capability to be linked with and operate with other instrumented ranges, live and virtual environments either independently or simultaneously with supporting vehicles. This range will use Commercial Off-the-shelf (COTS) Targetry. A total of 6 camera towers are required. The range will include new targetry consisting of 245 stationary infantry targets, 72 each stationary armor targets, 25 moving infantry targets, 15 each moving armor targets, and 2 each, 300 meter by 400 meter rectangular rocket target boxes, 6 each live fire villages, and 4 each 2-story facades. The range will also include aviation; 6 each rocket pits (4 SATS per rocket pit), 2 each harmonization panels, 8 each known distance panels, 2 each aviation asset holding areas with 1 each ammo break down building, 1 each ammunition loading dock, tie downs, military specification grounding points and landing pads for 8 each aviation assets.	W1
Stuart Creek Integrated Target Array	This project is located in the YTA within the Stuart Creek Impact Area. The project will consist of hardening a existing and new access trails, 1,550 meters with a top width of 15 feet. In addition, 3 each 150 by 150 meter target areas will be hardened to facilitate the construction of targets and the maintenance of. This project will increase the training opportunities for integrated fires. Material for the hardening of the trails and pads will come from an area adjacent to this project. The size of this pit will be approximately 350 by 250 feet in depth.	W5
Firebird UAV Building	Construct a 120-by-50-foot building to support UAS operations on Firebird. The building will have power, heat and lights with a drive through capability.	W7

Fort Wainwright (FWA)		
Project Name	**Project Description**	**Project Reference Number**
Charlie Battery FOB	This Project is located in the YTA. The project will continue to develop the existing structure of the vacant Nike Hercules Site and surrounding area to facilitate use as a Forward Operating Base, Bivouac and Indirect Firing Point. Work will include clearing vegetation, establishing harden pads, roads and berms, repair of existing building to make them structural sound and safe, installation of latrines, power, communication lines fencing and construction of support buildings. This project will also facilitate erosion control by maintaining the existing erosion control structures and installing additional erosion control structures such as culverts, low waters crossing, grading, and establishing ditches where necessary.	W23
YTA Convoy Live Fire Range Phase 1	This project is located in the YTA adjacent to the Stuart Creek Impact Area and will upgrade 13,123 feet of existing road by spot hardening, clearing lines of sight and installing 2, 656-by-656-foot target objective areas. This area is characterized by steep slopes, rill erosion, poor drainage and rutting. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile, culverts, low water crossings, fill material, and confining activities to hardened surfaces.	W24
Winter Camp FOB	This project is located in the YTA within an area formally known as Lower Winter Camp. The project will expand the existing hardened areas and provide permanent support structures such as Living quarters, mess areas, latrines and maintenance areas. The area will be fenced and power and communications will be provided. This project will continue to improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile, culverts, low water crossings, fill material, and confining activities to hardened surfaces.	W25
YTA Firing Point 13 Upgrade	The YTA Firing Point 13 Upgrade will harden an un-improved existing firing point. Firing Point 13 is located in the YTA, FWA. The existing firing point will be cleared of vegetation and upgraded for all-season use through the installation of a 599-by-26-foot looping gravel access trail with a 20-foot top surface and a 328-by-328-footfiring point pad. Vegetation will be cleared 10 feet either side of the access trail for line of sight. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing culverts, installing geotextile and fill material and confining activities to hardened surfaces.	W26
Husky DZ FOB	This project is located in the YTA and will expand the existing Harden Bivouac site (3.39 acres) to a full 500-by-500-foot area to allow for year round use of the area. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing culverts, geotextile, fill material, and confining activities to hardened surfaces.	W27

Fort Wainwright (FWA)		
Project Name	**Project Description**	**Project Reference Number**
YTA Latrines	This project is located in the YTA and will install pre-fabricated ROMTEC SST Restroom latrines at previously constructed Firing Points and Bivouac Sites in the YTA, including Firing Point Charlie, Firing Point Bravo 3, OP Shack, Firing Point 20, and Firebird Assault Strip. Installing permanent latrines will eliminate the need for units to contract portable latrines when conducting firing activities.	W28
YTA Demolition Range	This project is located in the YTA and will improve a 1,800-meter existing trail to a 24-foot width all season surface and harden a 15.5-acre clearing. This road will be used as the access route for YTA Demolition Range. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing geotextile and fill material and confining activities to hardened surfaces.	W29
YTA Firing Point Direct Fire	This project is located in the YTA and will improve a 1,000-meter existing trail to a 24-foot width all season surface. In addition, 2.5-acre a pad will be hardened. This facility will be used to allow units to fire their direct fire system, Mobile Gun System, Javelins and TOWs into the Stuart Creek Impact Area. This project will improve access and control erosion by improving drainage through grading, ditching, removing overburden to gravel or bedrock, installing fill material and confining activities to hardened surfaces.	W30
Stuart Creek Access Trails	This project is located the YTA within the Stuart Creek Impact Area. The project will consist of hardening trails and target pads within the impact area to facilitate Target installation and maintenance.	W31
Stuart Creek Impact Area Survey Line	This project is located in the YTA and will cut a 131,526-by-19.7-foot survey line around the permanent impact area. This project will create a mechanically treated, highly visible impact area perimeter to improve safety during training exercises and other operations adjacent to the impact area. It will also provide a moderate firebreak.	W32
FP 9 Direct Firing Point	This project is located in the YTA. This project will consist of hardening a 5,249-foot access trail with a 30-foot gravel top surface and 2, 328-by-328-foot gravel pads to develop a firing platform for direct firing weapon systems. Additional clearing and site hardening will be needed to facilitate target emplacement.	W33
Husky DZ Resurface	This project is located in the YTA. The project will involve clearing vegetation, disking, leveling, grading, and reseeding the existing drop zone to improve safety and facilitate future maintenance.	W34
Gravel Source YTA	This Project is located in the YTA at Firing Point Bravo 2, Firing Point Bravo 3, and LZ Moose. The project would provide for establishing a classified material site for a source material in the construction and maintenance of roads and areas throughout the YTA. Activities would include clearing, excavating, drilling, blasting, crushing, sorting and stockpiling material.	W35

Fort Wainwright (FWA)		
Project Name	**Project Description**	**Project Reference Number**
Bravo Battery FOB	This project is located in the YTA. The project will continue to develop the existing structure of the vacant Nike Hercules Site and surrounding area to facilitate use as a Forward Operating Base, Bivouac, and Indirect Firing Point. Work will include, clearing vegetation, establishing harden pads, roads and berms, repair of existing buildings to make them structural sound and safe, installation of latrines, power, communication lines, fencing, and construction of support buildings. This project will also facilitate erosion control by maintaining the existing erosion control structures and installing additional erosion control structures such as culverts, low waters crossing, grading, and establishing ditches where necessary.	W36
Maintenance Building MCRC	This project is located in the YTA adjacent to the Moose Creek Range Complex. The project will provide a fully functional 60-by-100-foot maintenance building to support range operations at the MCRC. The building will be heated, lighted and have electrical power.	W37
High Capacity Well	This project is located in the YTA adjacent to the Moose Creek Range Complex. The project will provide a high capacity all season well to support the operations of the MCRC, fire-fighting activities and road maintenance throughout the YTA.	W38
YTA Roads Upgrade	This project encompasses the entire YTA unpaved training area road system to include Johnson, Quarry, Manchu, Brigadier, Skyline, Beaver Creek, North Beaver Creek, Transmitter, North CAM, South CAM, Firing Point 16 Road, and Manchu Lake Roads. There is an estimated 91 miles of roads to bring up to Army standards by re-establishing an adequate road crown and then capping with a 6 inch crushed rock D-1 layer. The proposed improvement includes grading road surfaces, clearing trees and brush to widen existing roads from a 24-foot wide top surface to a 42-foot wide top surface. This project will also remove boulders, install culverts and drainage ditches to control severe erosion, realign roads to eliminate unnecessary switchbacks on steep grades, and provide passing areas where needed.	W39
YTA Manchu Trail Bridge Upgrade	Repair by replacement of the Manchu Road and trail bridges. Replace current temporary bridges with a permanent structure to meet the requirements to support the STRYKER Brigade. Replace with a 2-lane, 30-ton bridge.	W40
Harden Firebird FP and Bivouac Area	Harden an area adjacent to Firebird FLS to be utilized as an Artillery Firing Point and company bivouac area. Construct a 1,312-foot road with a 42-foot wide top surface, and 2 level pads totaling roughly 7.7 acres. This project will improve access and control erosion by improving drainage through grading, establishing ditches, installing culverts, low water crossing, geotextile, and fill material and confining activities to hardened surfaces.	W42

Figure B-2a

Site-Specific FWA - Local Projects

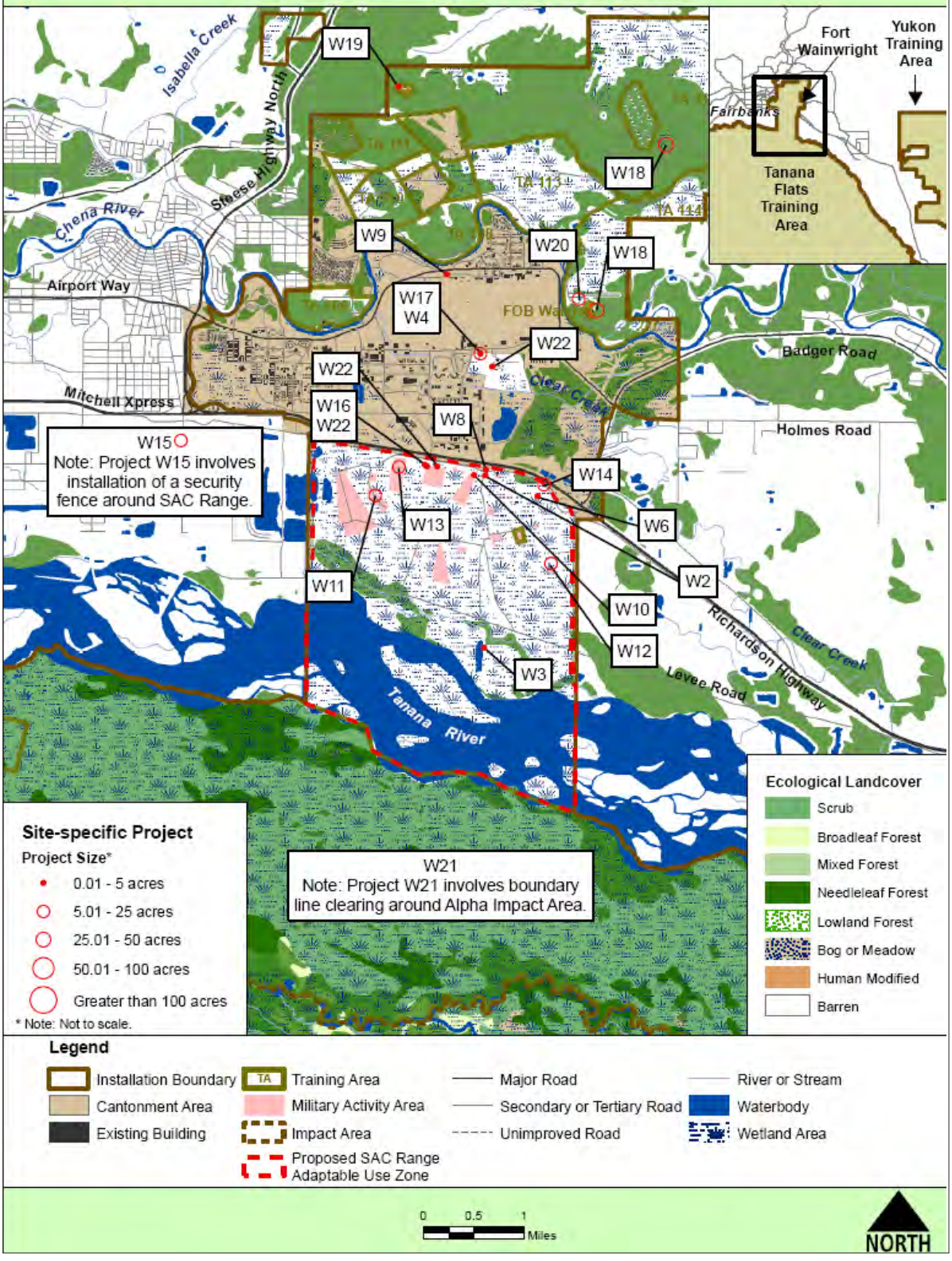


Figure B-2b

Site-Specific FWA - TFTA Projects

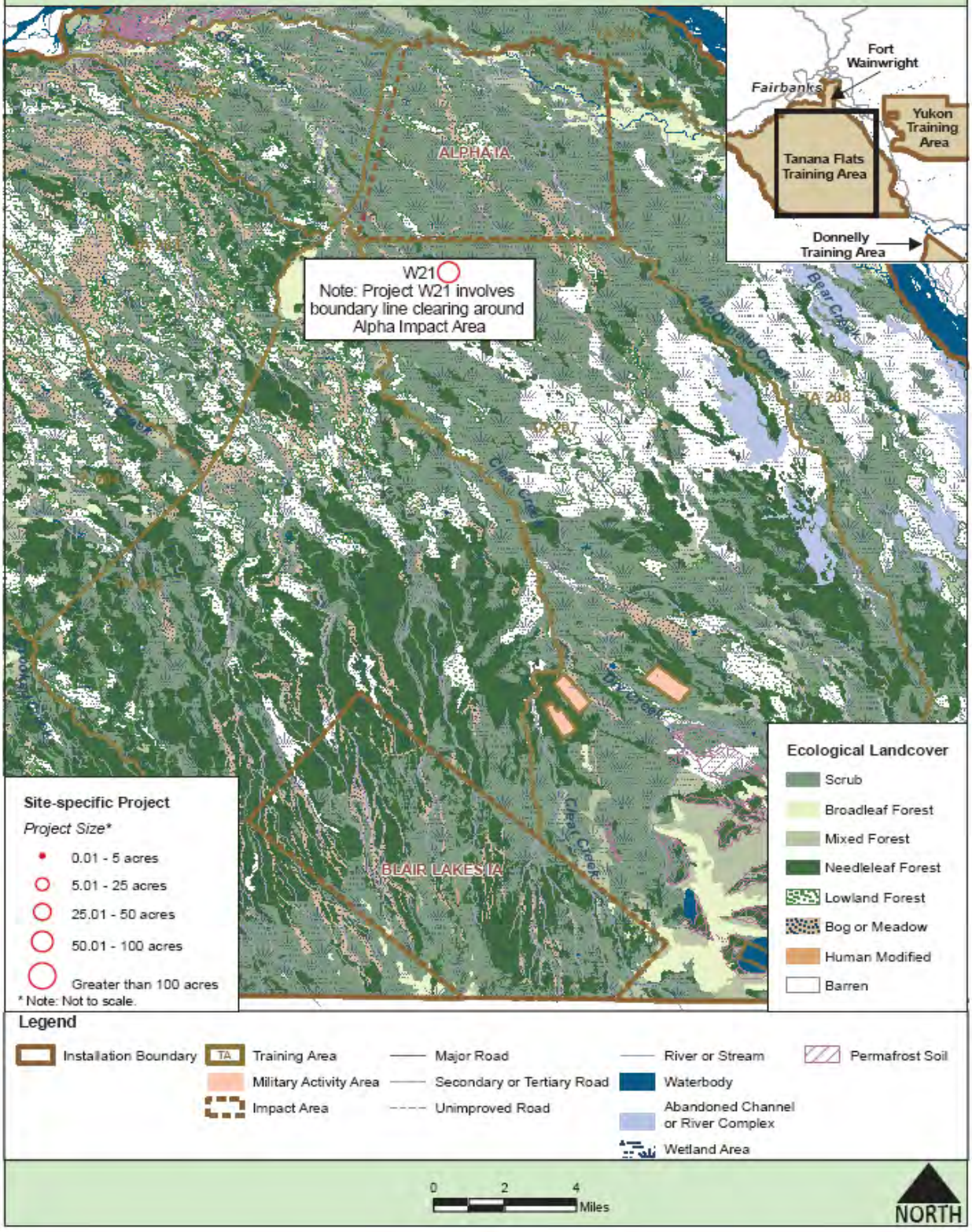


Figure B-2c

Site-Specific FWA - SAC Range and YTA West Projects

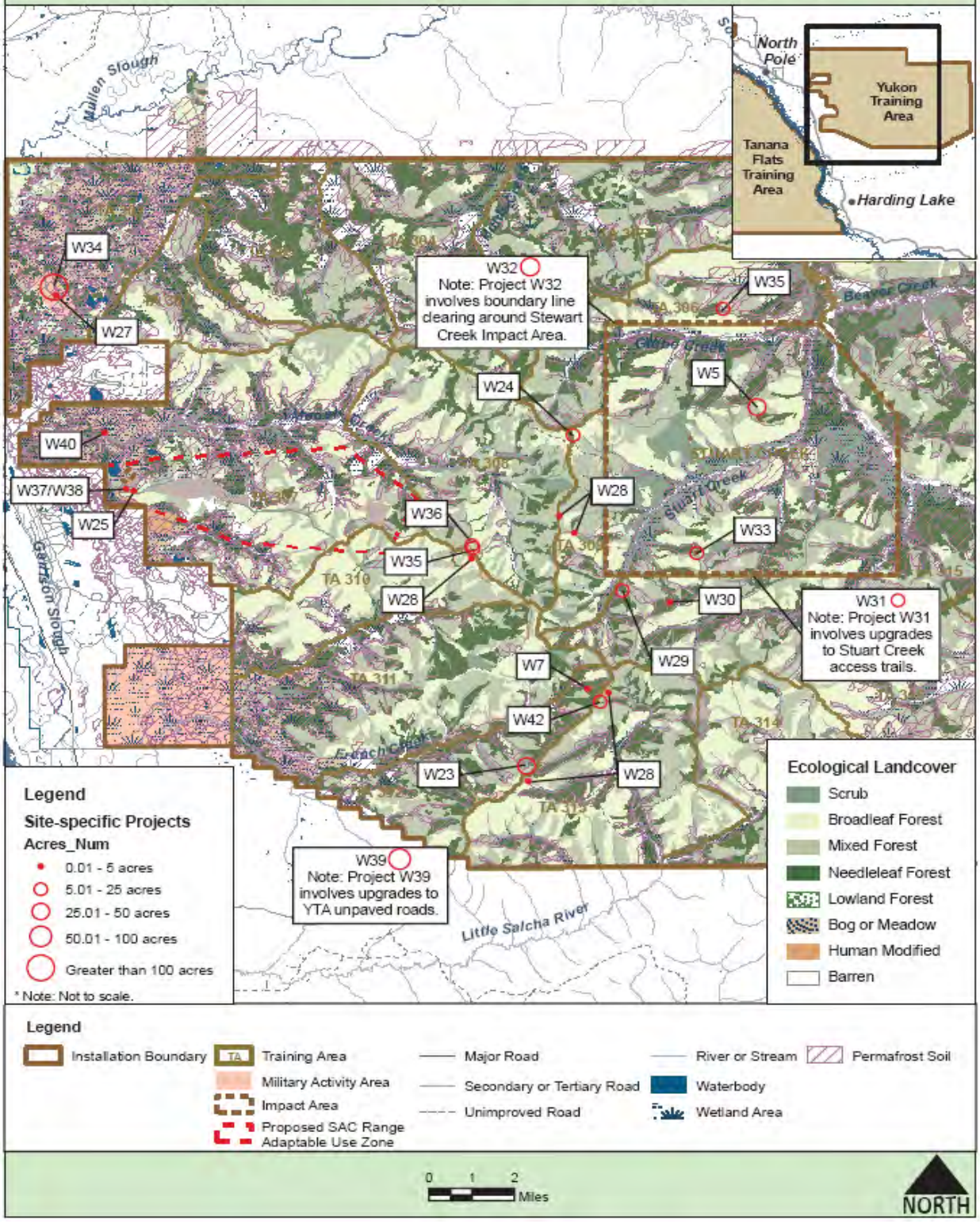
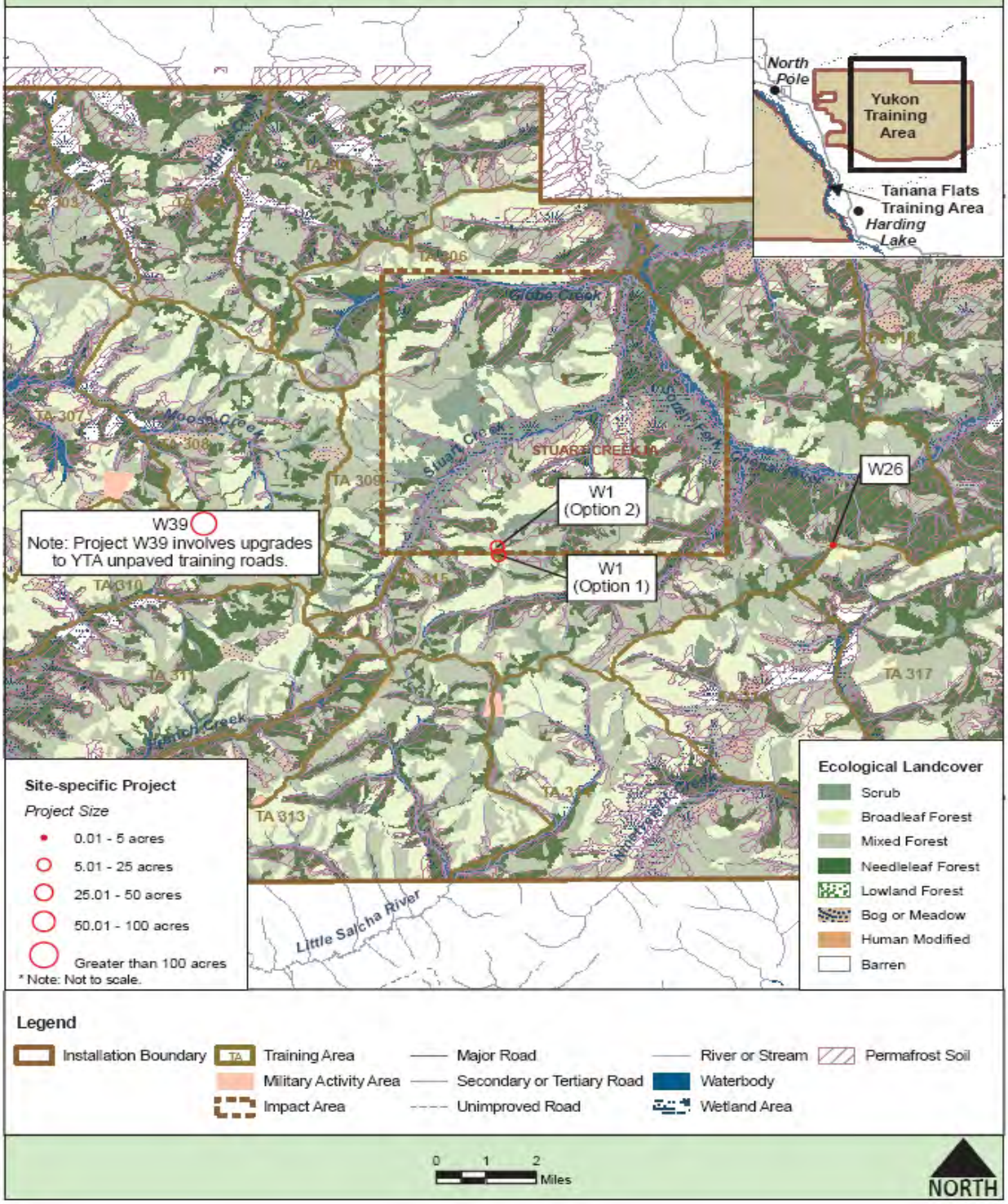


Figure B-2d

Site-Specific FWA - YTA East Projects



Donnelly Training Area (DTA)		
Project Name	**Project Description**	**Project Reference Number**
Range Operation Complex	This project consists of a range use command and control facility (15,000 square feet) that will house all range control functions including range control, scheduling safety and inspection offices, briefing and conference rooms, material and equipment storage space target fabrication and issue, and range equipment repair. Supporting facilities include; utilities electrical service, fiber optic cable, sanitary sewer, fire protection and alarm systems, paving, walks, curbs, gutters, storm drainage, site improvements, erosion control, information systems, heating, air conditioning, parking areas and fencing. It is in the general area of the Beales Range Maintenance Facility, will be easily accessible from the Richardson Highway, and will be outside of the Space Missile Defense Command (SMDC) cantonment, where Range Control is currently a tenant. The objective of this project is to provide a modern range operations and control facility that is accessible to units training at DTA and to the general public. Other DTA land management offices (ITAM, Environmental, and Natural and Cultural Resources) will also be housed in this facility. This building is also being proposed as an option to house seasonal fire crews in accordance with the MOA with Delta Junction for the BAX/CACTF.	D1
DTA Roads Upgrade	Upgrade and improve a portion of the training area road system to support heavier vehicles including the Stryker vehicle. This project encompasses the unpaved training area road system between the Richardson Highway and the Delta River. Previous NEPA has analyzed upgrades to the road system east of the Richardson Hwy. There is an estimated 136 miles of roads to bring up to Army standards by re-establishing an adequate road crown and then capping with a 6-inch crushed rock D-1 layer.	D2

Donnelly Training Area (DTA)		
Project Name	**Project Description**	**Project Reference Number**
DTA Firing Points	DTA Firing Points involves: 1). Upgrade and enlarge existing firing points. Upgrades to the access trails were accomplished by ITAM in 2007. After use by the SBCT, more upgrades have been suggested. This project may encompass up to 5 of the Meadows Road Firing Points, and will consist of improving areas that can support a complete company of artillery. At each firing point, the pad area will be cleared and graded, and geotextile and gravel installed. Each will be about 55 by 55 meters, or 0.8 acres. 2). Establish firing points at OP 5 and 6. This would help to alleviate the conflicting use issue since these OPs are north of the Collective Training Facility and Convoy Live Fire course. These can be the smaller sized firing points. At OP 6, grade and install geotextile and gravel in the cleared area, which is approximately 55 by 55 meters, or 0.8 acres. OP 5 is sited to avoid a small pothole wetland and archaeology sites. The area was burned in the 1999 Donnelly Flats Fire. It will be cleared (timber salvaged), with the overburden pushed to the downhill side to expand the area that will be level (approximately 2.9 acres). Pit run gravel will be added in layers. The usual methods for building a gravel pad will be employed. Gravel for both of these sites will be obtained from a new source near OP5. The location (D3) does not have any archaeology sites or wetlands, and about 40 percent was previously disturbed. There is an old rappel tower that partially burned and is unsafe. All of the scrap associated with this tower will be removed and recycled or disposed of. Once the gravel has been utilized, the site will be leveled and also made available as another firing point. 3). Establish a new firing point in Texas Range on Windy Ridge (D4). Placing a firing point here will not interfere with any other training facility already in place. The layout is designed to avoid wetlands and archaeology sites. There is no timber on the site because of the elevation and the 1981 fire. For training purposes, it is slightly farther away from the impact area than the other existing and proposed firing points, providing more of a range of training scenarios. This site also provides the largest possible footprint when considering terrain, wetlands, and archaeological resources. Currently, it is laid out to be approximately 15 acres, 490 meters long and averaging about 105 meters wide.	D3/D4
New Load Ramps at Donnelly Drop Zone	Replace the existing facility located near the northern end of the Donnelly Assault Strip close to the Richardson Highway. The footprint would be approximately 50 feet per side (15.2 meters).	D5
MATCH Shoot House at CO South	Shoot House at Colorado South in the existing small arms complex. Located towards the east end of the range within previously cleared area.	D6

Donnelly Training Area (DTA)		
Project Name	**Project Description**	**Project Reference Number**
Expand KD Range	Expand KD Range from 10 lanes to 20. The expanded lanes would only be 600 meter distance and would be on the south side of the existing lanes. Approximately half of the area is already clear.	D7
Target Emplacement	Place hard targets in the impact areas (distribute throughout all of DTA impact areas). These would include old tanks and other vehicles.	D8
Construct additional support buildings at BAX/CACTF	One troop support/warm-up/general instruction building is required at the CACTF either at the contractor lay-down yard or near the ROCA. One vehicle preparation/instrumentation building is needed and can be placed at now abandoned contractor lay-down yard. These would be the same 40-by-80-foot warehouse design as other new buildings going up on the small arms range and UAS Complex. A fire station/house is required near the BAX, with the proposed location currently being near the well at the construction lay-down yard. Typical fire station to support range wild fire suppression and prevention activities. An observation tower is needed just south of 33-Mile Loop Road in between the two ends of Course Road 1.	D9
Maintenance Buildings for units training at DTA	Construct 2 large maintenance buildings for units to use while they are training at DTA. One would be located on the Buffalo Bivouac site and the other would be located near the Interim Staging Base.	D10
Beales Replacement	This would replace the existing Beales Range Maintenance Facility with an 8,000-square-foot building to support DTA Range carpentry, welding, and target construction. Alternative locations include somewhere near the proposed Range Operations Building north of the ISB, or on Meadows Road in the TA 49 area. Includes access road, parking areas, storage areas for lumber, equipment and other vehicles.	D11
Area of Responsibility Village	Clear areas within the existing CACTF footprint and install a combination of wood and CONEX structures to replicate an Iraqi village. Includes roads and ditches.	D12
Theater Specific Village	This would also be a combination wood and CONEX structures, preferably set in mountainous terrain at BRTA to replicate an Afghanistan-style village. Additional locations include GRTA, Molybdenum Ridge, and the CACTF. The CACTF would be the easiest, but least preferred because it is not mountainous. The idea is for a strictly portable/temporary facility emplaced by Chinook helicopter without a road. Training would be accomplished by foot maneuvers climbing up to the village, or by helicopter facilitated maneuvers. It would be placed above treeline providing for any number of appropriate landing zones without modification to the vegetation. Because of the portable nature, several locations are considered together because it could be installed at Black Rapids, then moved in a few years to Molybdenum Ridge, then to Gerstle River, etc. It is possible they could be installed concurrently.	D13

Donnelly Training Area (DTA)		
Project Name	**Project Description**	**Project Reference Number**
Expand OP 26 for Range Control West Operations	Construct a barracks-style building that can support range personnel for necessary maintenance and construction operations in DTA West. This would be for overnight/week-long stays due to the expense of helicopter flights or the amount of time necessary to drive out to OP26 during winter. Construction would include heat, a well and septic, and a maintenance building.	D14
Delineate DTA East Boundary	Survey and mark the entire DTA boundary east of the Delta River. This could include using a hydro-axe or dozer to clear 1 blade width so that the boundary is clearly marked and obvious. The exception to this would be where Granite Creek is the boundary and no clearing of the riparian vegetation would take place. A less intrusive, but more labor intensive alternative would be to hand cut a 3-to-4-foot wide demarcation, leaving stumps about 3 feet high. This would allow visibility of signage, while preventing trespassers from driving along the boundary. Signs would be installed every 200 meters along the boundary, as necessary. The purpose is to ensure safety of the general public to prevent someone from accidentally wandering into the firing fan of the BAX, and other issues of trespass onto DTA.	D15
Sign the Impact Area	Place signs (on trees or posts as needed) around the impact areas on DTA.	D16
Improve Buffalo Drop Zone	Fill in old foxholes and other larger holes, pits and abrupt depressions in the DZ. This would primarily be dozer work to smooth out the DZ as a whole, using material around each low spot (similar to a cut and fill method for a road). Revegetate with native grass seed mix and fertilizer. Top soil may be required.	D17
Expand Buffalo Drop Zone	Clear trees, level the ground, plant grass, etc to expand the drop zone. This will allow for full capability of this DZ. Since the development of the Missile Defense area in the early 2000's, the flight line approaches are limited by SMDC restricted airspace. Expanding into the southeast corner so the DZ becomes more of a square will allow for approaches that are parallel to Fort Greely rather than crossing over Fort Greely.	D18
Extend the Donnelly FLS	Extend the Donnelly FLS (Donnelly Assault Airfield) by 600 meters to the south. This would enable C-17s more options for landing and taking off during inclement weather. Grade, fill and compact gravel.	D19
Convert Fuel Break to Airstrip	Upgrade the fuel break northeast of the CACTF to act as a small aircraft-style airstrip façade in support of training scenarios at the CACTF. Level the ground and use just a single 6-inch lift of compacted gravel to make it appear like an airstrip. A representative tower would be created by installing a CONEX on end. It could also be used as a landing zone by helicopters. Final size would be about 200 feet wide by 2000 feet long.	D20

Donnelly Training Area (DTA)		
Project Name	**Project Description**	**Project Reference Number**
New Road to bypass CTR	A new route is needed around some of the live fire facilities along Meadows Road. Options include 1) no action, 2) upgrade the existing Old Richardson and Windy Ridge Roads to provide an alternate route (but this would be the long way around), 3) Create a by-pass road close to Meadows Road that would be located just out of the firing fans, and 4) Create a new road along the base of Windy Ridge. The last option is one that has been considered before, but has challenges associated with wetlands and archaeology sites. It is also the preferred option for CRTC, who would benefit most from the project. Range Control's preferred option is to upgrade existing roads (#2 above).	D21
BAX East Maneuver Corridor	Create a new maneuver corridor in TA 8 east of the BAX. Hydro-axe 6.5-meter wide lanes within a 68-acre polygon, to create a network of Stryker maneuver trails. Total distance would be approximately 3,700 meters. No gravel would be added. Maneuver trails would utilize the wood chips from the hydro-axing as the base material. Soils in this area do not contain permafrost.	D22
Black Rapids TA Roads Upgrades	Improve the trails at BRTA. Same methods/materials as other trail improvement projects. Trail width need not support 2-way Stryker traffic (32-foot width maximum). The main difference is some of the routes are slightly more challenging due to the steepness of the slopes. Low water crossings are the preferred method over culverts here. Sometimes summer rain events can cause heavy runoff and even flooding down the gullies and ravines in this area.	D23
Gerstle River TA Road Upgrades	Improve the trails at GRTA. Same methods/materials as other trail improvement projects. Trail width should support 2-way Stryker traffic for at least half the distance (90-foot width to include ditches and snow clear zones). The other half would be 32 feet wide. Trail improvements in this TA will be very similar to what was analyzed in the DTA East Maneuverability EA. Soils, wetlands, vegetation, fire history all contribute to practically the same conditions at GRTA as East DTA. A 2-to-3-mile portion would be selected as a convoy blank-fire route with small clearings for targets placed adjacent to the road (approximately 5 acres total).	D24
Combat Outposts (COP)	Construct a platoon to company size simulated combat outpost overlooking the Bondsteel live fire village located within restricted airspace. The hilltop where the AAR building at Bondsteel is located will be cleared of trees and gravel added. Large Jersey barriers or Hesco baskets would surround the clearing and replicate a blast-proof barrier. Twelve CONEXs will serve as billets inside. Two guard towers would be constructed. A road will go through the facility from one end to the opposite, with entry and exit points. Existing waterless latrines will be retained for use in the COP. An additional COP would be constructed at Gerstle River TA on an appropriate hilltop, eastern portion. Waterless Latrines would need to be installed along with all of the other features described for Bondsteel.	D25

Donnelly Training Area (DTA)		
Project Name	**Project Description**	**Project Reference Number**
Replace or Relocate Simpsonville Buildings	Simpsonville is located in DTA west at the foot of Dinosaur Ridge. Several of the existing plywood structures burned in a 2007 fire, and the sandbag building footers are disintegrating. Building replacement would consist of 8 buildings on pressure treated lumber footers that would elevate them about the ground surface and minimize the wetland footprint. The area is wetland muskeg. Buildings would be a variety of 1 and 2-story, 12 by 16 feet, 12 feet square, or 8 feet square. Plus 2 small bunkers, 4 feet square and some wooden walkways between buildings. In addition 1 or 2 guard towers would be constructed. An alternative to replacing Simpsonville on site would be to relocate it to the winter trail between the Delta River and OP 26. An exact location has not been selected, but would be based on minimizing wetland impacts.	D26
Construct Unmanned Aerial System tracking pad and access	The UAS airstrip has a parking area for tracking the UAV while in flight. However, it is located in front of the airstrip (between the strip and the restricted airspace it is allowed to maneuver in). When the UAV lands, it must go behind the radar and the Soldiers cannot track it there. A new parking pad on the back site of the strip would solve this problem, and would require a short access trail from the Twin Lakes Road.	D27
Upgrade Delta Creek Assault Strip	Improve the surface of this airstrip, and lengthen it to accommodate C-17 rough surface landing requirements. Add 600 meters in length to the north, clear vegetation back from all sides to safety standards. Grade, fill and compact gravel. The existing assault strip is in an abandoned channel of Delta Creek. All improvements and vegetation clearing would remain within this habitat type, which has stable non-permafrost soils and smaller trees.	D28
Install Waterless Latrines	Install permanent waterless latrines, 2 each, at the CACTF, Buffalo Bivouac, and Georgia Range.	D29
Construct FAARPs	Construct Forward Arming and Refueling Points (FAARPs), 1 each at Delta Creek Assault Strip and Wills Range. This consists of creating slightly elevated (1-2 feet) compacted gravel pads and fuel containment berms that can be lined with plastic to catch spills during exercises. Grounding rods need to be installed. Generally, 4-8 each of the pad/berm/grounding rod set-ups would be installed at each site.	D30
Add New OPs along the Winter Trail	Construct 5 new OPs along the winter trail in DTA West. Each point would vary from 2 to 5 acres of vegetation clearing and disturbance, but a smaller area for gravel fill and building footprints. OPs would consist of a survivability shelter (small CONEX-sized) and bunkers. A range tower, observation building similar to what exists on the east DTA OPs, and latrine would be installed at each site. The existing OPs 27-30 also need to be enhanced with the addition of the same structures.	D31

Figure B-3a

Site-Specific DTA - SAC Range Projects

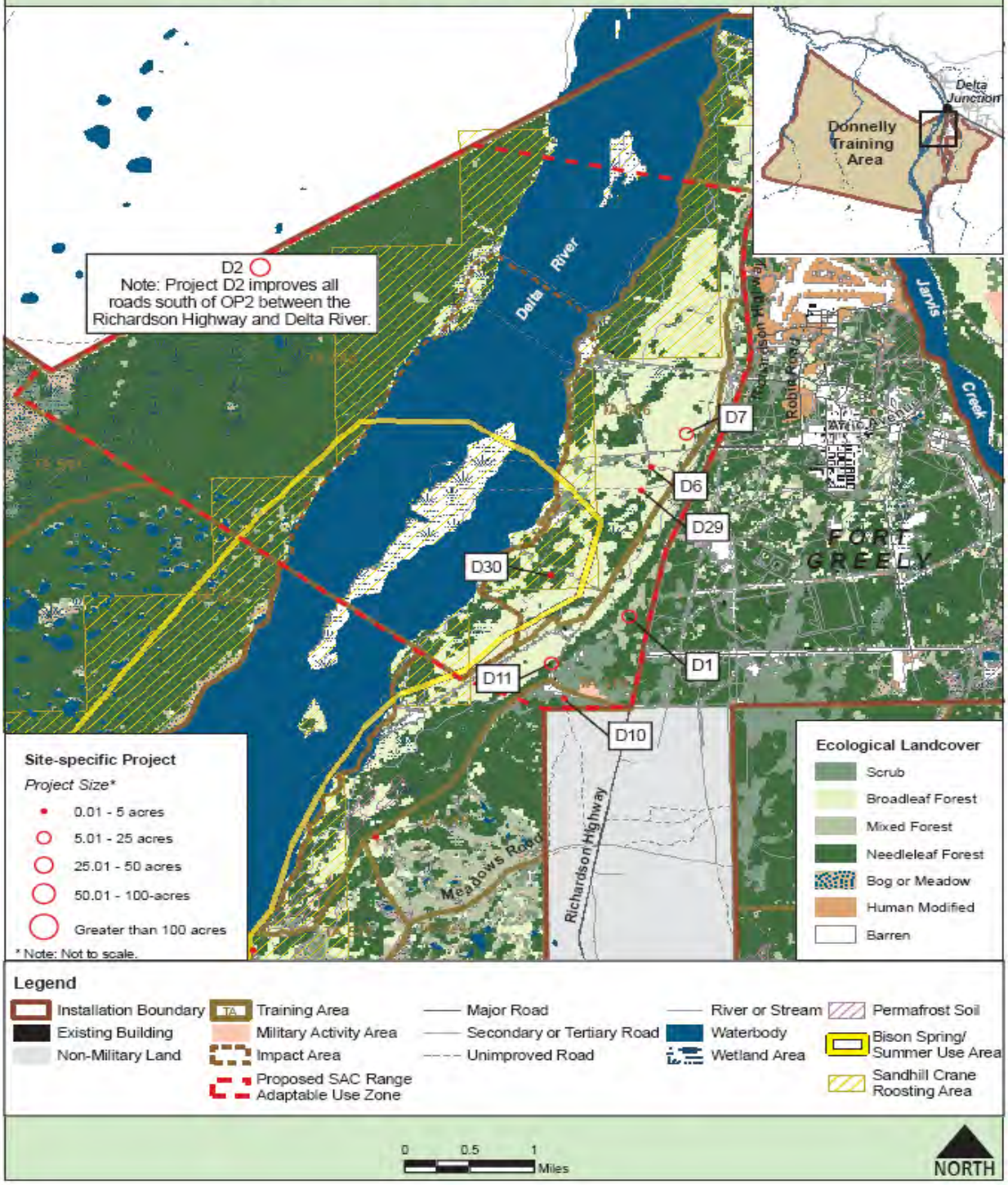


Figure B-3b

Site-Specific DTA - South Projects

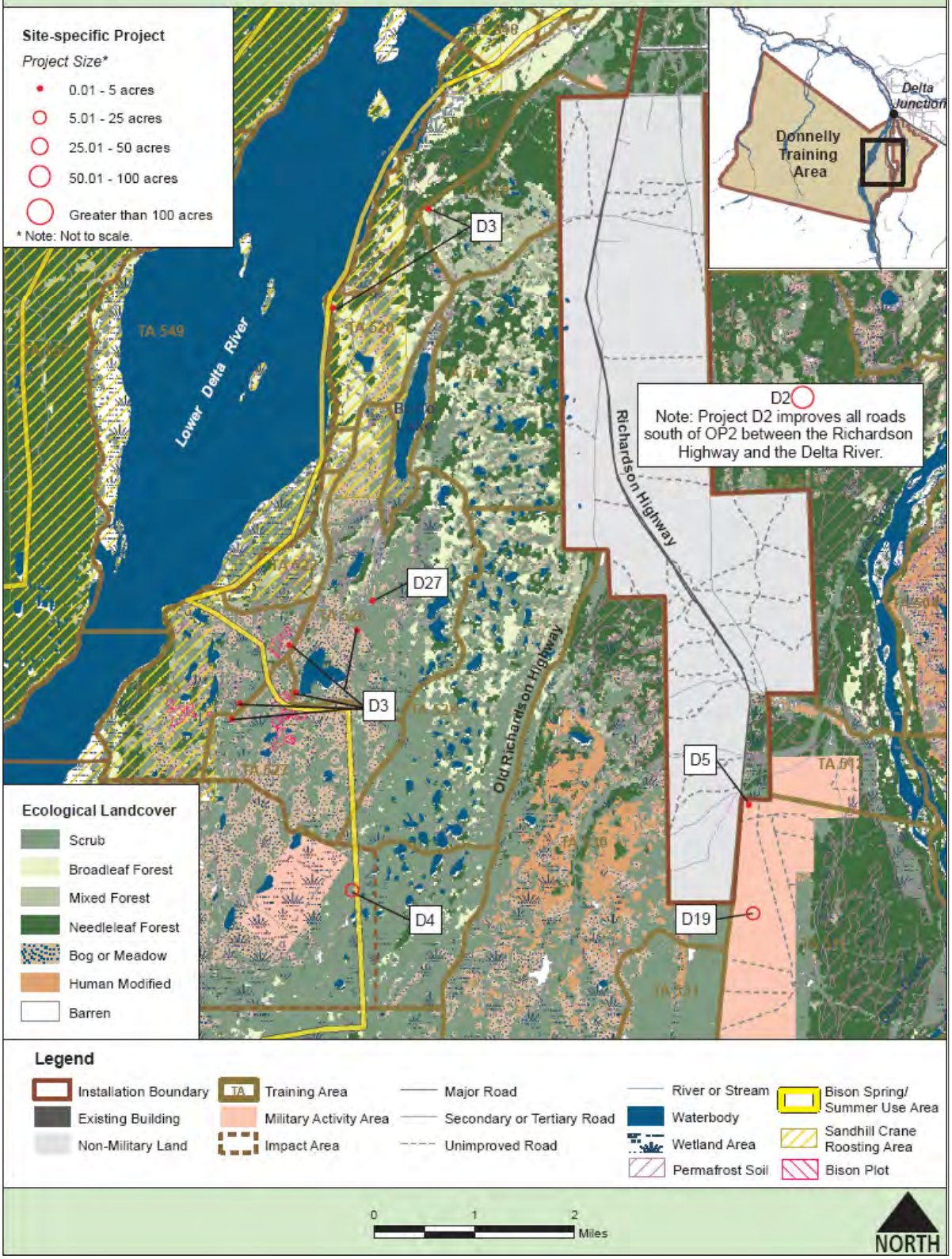


Figure B-3c

Site-Specific DTA Project 21 - New Road Bypass

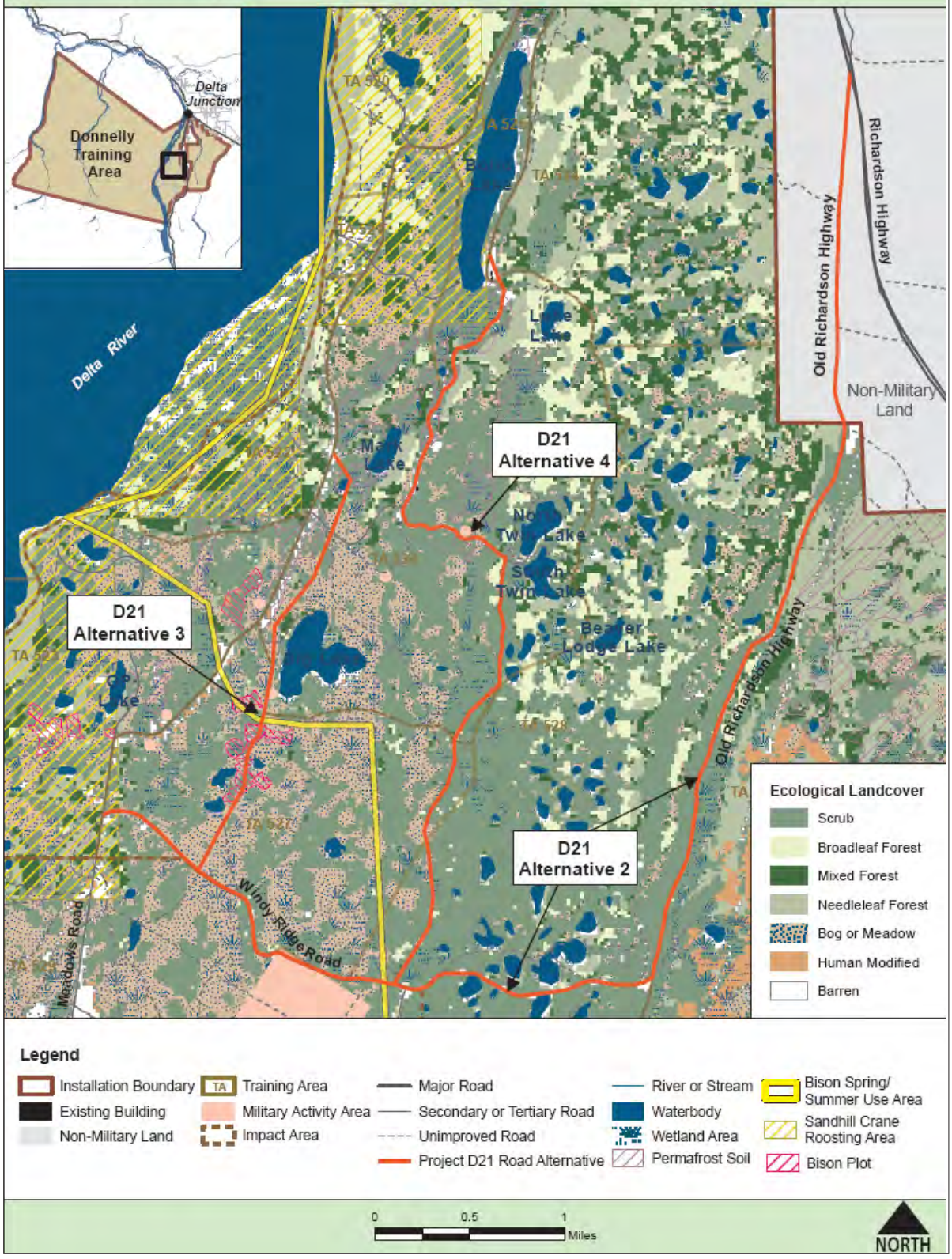


Figure B-3d

Site-Specific DTA - East Projects

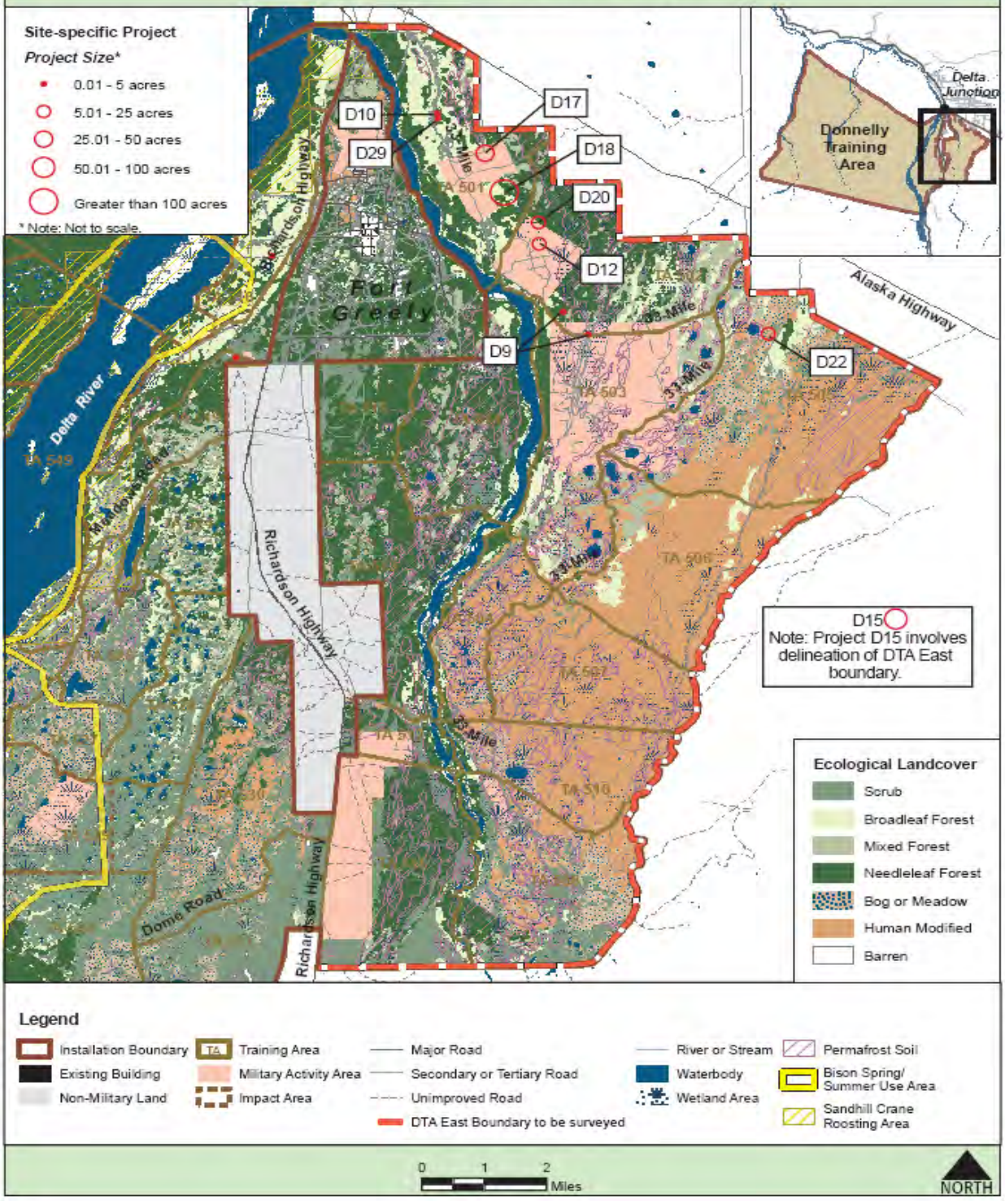


Figure B-3e

Site-Specific DTA - Northwest Projects

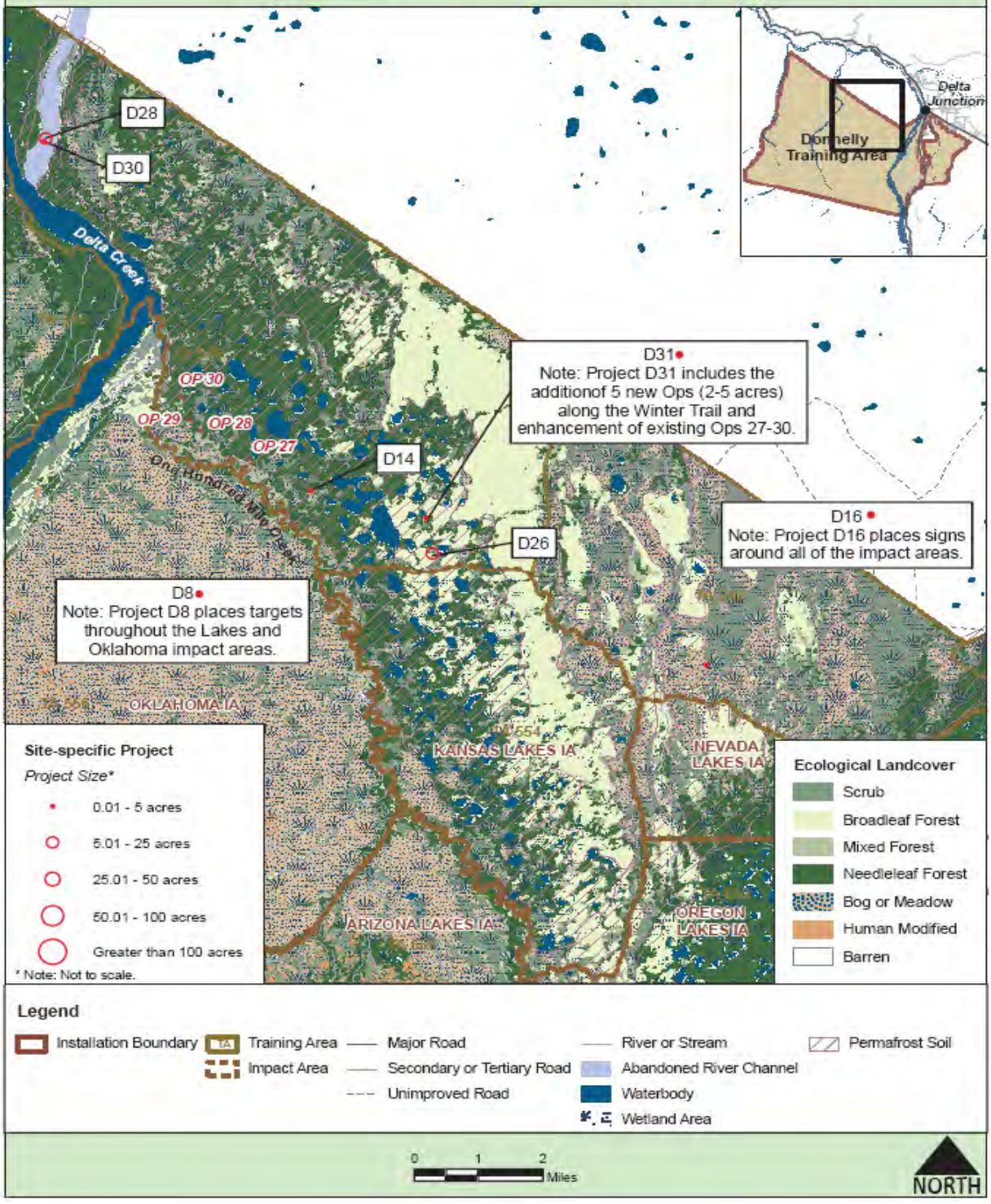


Figure B-3f

Site-Specific DTA - West Projects

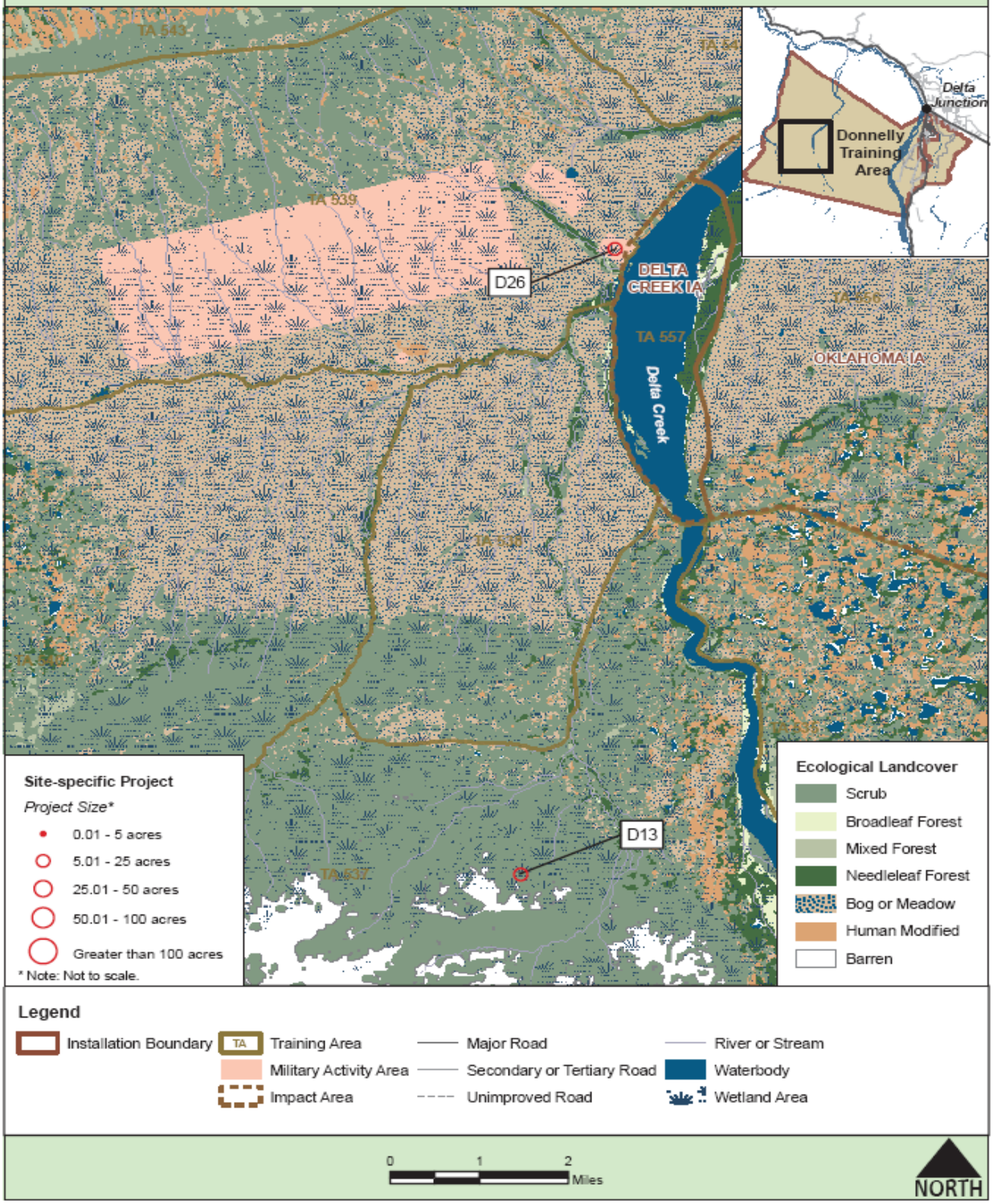


Figure B-3g

Site-Specific DTA - Black Rapids Training Area Projects

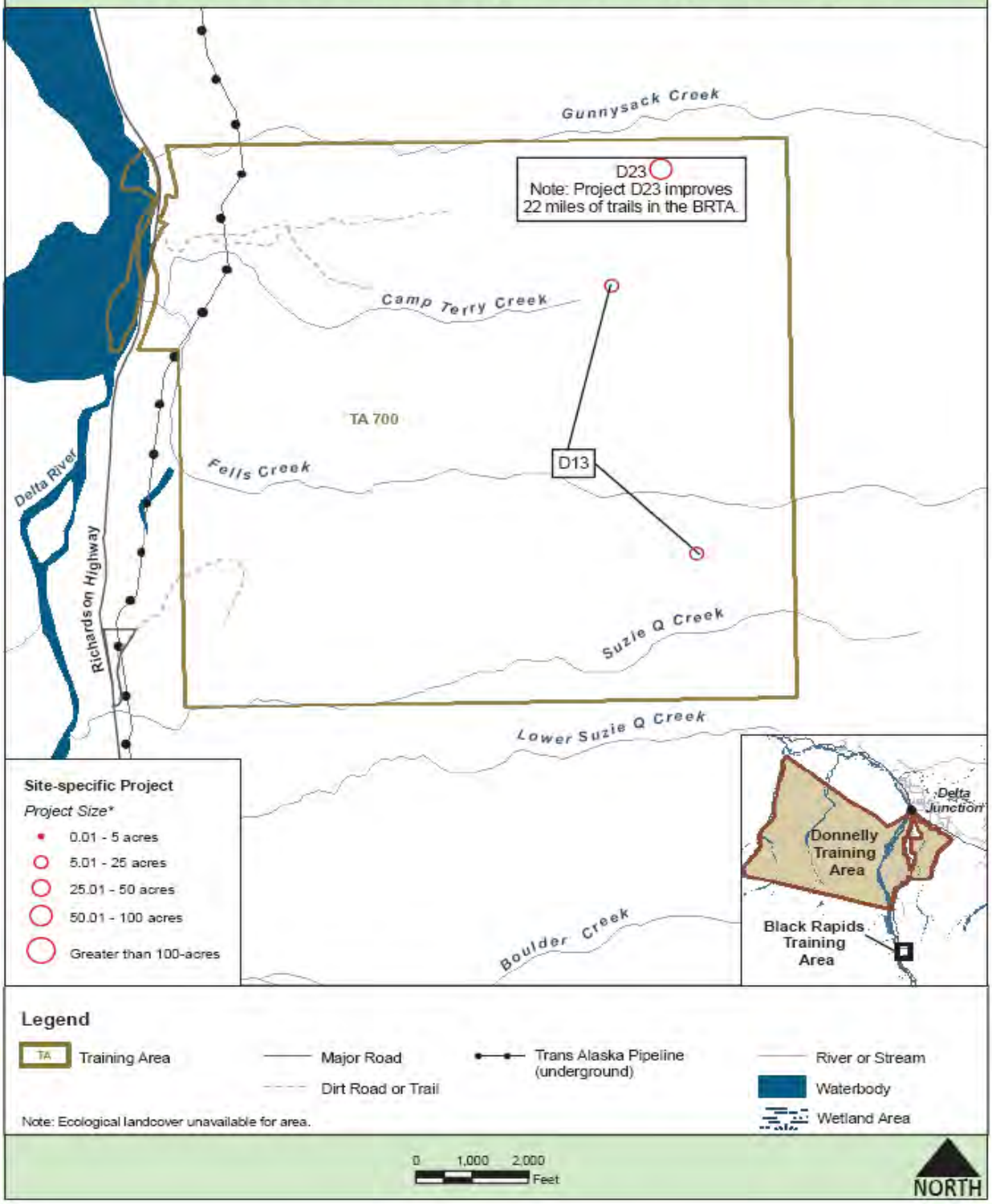
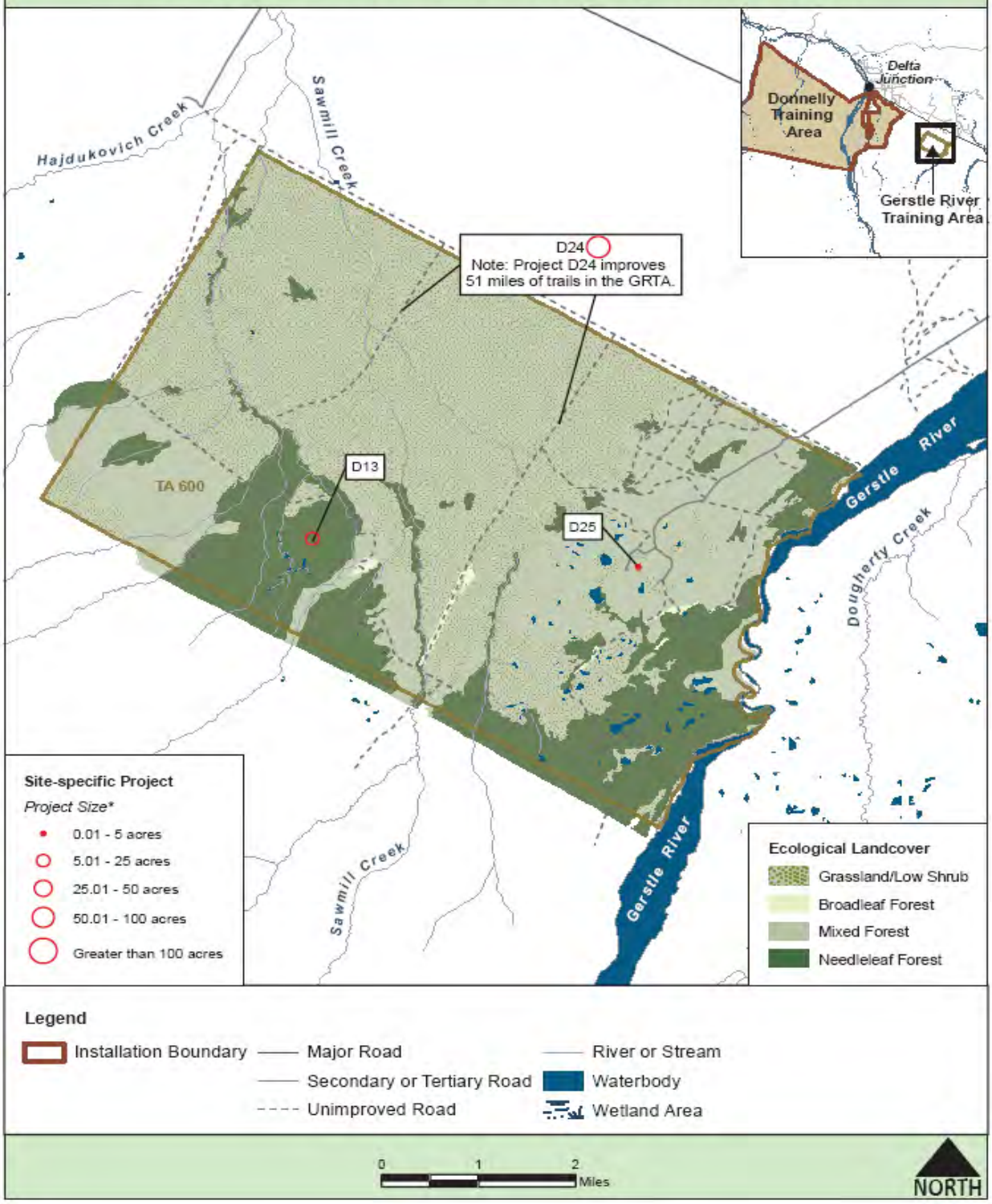


Figure B-3h

Site-Specific DTA - Gerstle Training Area Projects



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Appendix C – USAG Alaska Range Project Checklist

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U.S. ARMY GARRISON (USAG) ALASKA RANGE PROJECT CHECKLIST

PROJECT TITLE:
WORK ORDER NUMBER:
DESCRIPTION AND LOCATION:

Enter project grid coordinates or attach a location map.
Enter acreage of footprint disturbance.
Name the USGS 5th or 6th Order Watershed where the project is located.
Describe type of activity (construction).
Describe type of activity (use).
Describe any other relevant project components.

FORM COMPLETED BY: _____ **DATE:** _____

After providing a detailed description of the proposed project, proponents are to complete the attached Checklist based on all available information and thorough environmental analysis as early in the planning process as possible. If "yes" is indicated for any of the valued environmental component (VEC) questions, Environmental Stewardship Range Construction Guidelines should be considered for avoidance or reduction of resource impacts during project design, construction and operations (see Appendix D of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*). Comment sections are provided for discussion of potential mitigation regarding each VEC.

Information contained within this Checklist may support a finding as to whether the project falls within the scope of the USAG Alaska Range Complex and Training Land Upgrades Programmatic Environmental Assessment (PEA). USAG Alaska Environmental (NEPA) staff should be provided a copy of this checklist and consulted prior to project activity to ensure project compliance with NEPA. Project proponents may suggest "tiering" off the Range PEA by indicating the portion of the PEA which analyzes the project, and by submitting the Form for review by USAG Alaska NEPA staff.
USAG Alaska NEPA staff are to review each project description and checklist and certify whether the project may be "tiered" off of the PEA. Project managers should also maintain this checklist as part of the project administrative record. Submission of the checklist as early in the planning process as possible is recommended.

NEPA Review: Based on the information contained within this Checklist and an independent assessment of potential impacts to the environment, it is determined that the Proposed Action is not sufficient to warrant preparation of a separate environmental assessment. The proposed action would not degrade the existing environment, is not environmentally controversial, nor would it adversely affect environmentally sensitive resources. Anticipated impacts associated with this project are comparable with those addressed in the *USAG Alaska's Range Complex and Training Land Upgrades PEA 2009*.

Form Reviewed by: _____

Signature:_____ **Date:**_____

Note: No other NEPA Review Form is required to supplement the above certification.

Project Eligibility for PEA Tiering

Check All Which Apply

- ☐ The project is listed in Appendix B (Site-Specific Project Reference Number) of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*.
- ☐ The project is listed in Appendix E (Routine Range Project Title) of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*.
- ☐ The project located within a Small Arms Complex (SAC) Range Adaptable Use Zone as part of the Proposed Action 2 of the *USAG Alaska's Range Complex and Training Land Upgrades PEA.*

Soil Resources

Yes	No	
☐	☐	Is permafrost present within the project footprint? If "yes", indicate the acreage of permafrost impact: Acres
☐	☐	Would the project result in conditions prone to soil erosion?
☐	☐	Could impacts to soils resulting from the project be greater than those described in Section 3.2, Soil Resources, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?
☐	☐	Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for soil conservation measures. Also refer to Installation Dust Control Plan.*

Comments:_____
_____
_____
_____

Wetlands

Yes	No	
☐	☐	Does the project site exhibit any identifying characteristics of a wetland?
☐	☐	If "yes", has a wetland delineation been performed?
☐	☐	Will the project involve dredging, disposal of dredged material, excavation, or filling of a jurisdictional waterway or wetland requiring a permit under Section 404 of the Clean Water Act? If "yes", indicate the extent (linear feet) or waterway impact and acres of wetland impact: Temporary Permanent
☐	☐	Could the project result in modifications (such as clearing) or adverse effects to wetlands (such as trampling of vegetation or compaction of soils by heavy equipment)? If "yes", indicate the acres of wetland impact: Temporary Permanent
☐	☐	Could impacts to wetlands resulting from the project be greater than those described in Section 3.4, Wetlands, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?

☐ ☐ Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for wetland protection measures and Appendix G – Programmatic Finding of No Practicable Alternative (FNPA).*

Comments:_____
_____
_____

Water Resources

Yes	No	
☐	☐	Is the project located within a known floodplain (Executive Order [EO] 11988)?
☐	☐	Is any part of the project footprint close enough (typically within 75 feet) to open water bodies so as to require a buffer?
☐	☐	Would the project result in ground disturbance of 1 acre or greater or would the project result in increased impervious surfaces? *If "yes", coordination with the Alaska Department of Environmental Conservation (ADEC) Division of Water will be necessary and may require a Construction General Permit and preparation of a stormwater pollution prevention plan (SWPPP).*
☐	☐	Will the project involve either direct or indirect discharge (or runoff) of sediment into a waterway or storm sewer?
☐	☐	Will the project result in diversion or obstruction of stream flow?
☐	☐	[DTA only] Will the project impact a Wild or Scenic River (Wild & Scenic Rivers Act, October 2, 1968)?
☐	☐	Could the project result in potential impacts to surface water quality?
☐	☐	Would the potential exist to impact groundwater outside of parameters described in Section 1.5, Scope of Environmental Analysis, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA?*
☐	☐	Could impacts to waters resulting from the project be greater than those described in Section 3.3, Surface Water and Floodplains, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?
☐	☐	Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for protection of water resources and Appendix G – Programmatic FNPA.*

Comments:_____
_____
_____

Vegetation

Yes	No	
☐	☐	Could the project significantly contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area (EO 13112)?
☐	☐	Will the project occur in an ecotype that is the preferred habitat of a rare plant species?
☐	☐	Would operations of the project (if applicable) result in loss of vegetative cover and areas of bare soil?
☐	☐	Will the project involve vegetation removal (deforestation/habitat fragmentation or conversion)? If "yes", indicate the acres of vegetation impact: Temporary Permanent
☐	☐	Will the project involve removal of commercial forest products/salvageable timber? If "yes", indicate the acres of impact: Temporary Permanent
☐	☐	Will the project involve vegetation preservation (retention of buffers)?

☐ ☐ Does the proposed location of the project conflict with any SOPs or BMPs developed in conjunction with DNR or ADF&G?

☐ ☐ Could impacts to vegetation resulting from the project be greater than described in Section 3.5, Vegetation, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?

☐ ☐ Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for vegetation removal and preservation measures.*

Comments:_____
_____
_____

Wildlife and Fisheries

Yes **No**

☐ ☐ Will the project involve vegetation clearing during the USFWS Region 7 guidelines for South-central and Interior Alaska (1 May through 15 July) as described in the 2007-2011 INRMP?

☐ ☐ If "yes", does the project fall outside of the definition of a "military readiness activity" as defined by the DoD Migratory Bird Treaty Act (MBTA) Final Rule (30 March 2007) and further defined in the 2007-2011 USAG Alaska Integrated Natural Resources Management Plan (INRMP) Cooperative Agreement between USAG Alaska and the U.S. Fish and Wildlife Service (USFWS)?

☐ ☐ Could the project affect any essential fish habitat or managed species under the Magnuson-Stevens Fishery Conservation and Management Act?
If "yes" coordination with the National Marine Fisheries Service will be required.

☐ ☐ Would the project use, divert, obstruct, change, or pollute the natural flow or beds of any anadromous streams, or place or remove any objects or equipment therein?
If "yes", coordination with the Alaska Department of Fish and Game, Division of Habitat will be necessary and the project may require a Fish Habitat Permit.

☐ ☐ Would the project result in terrestrial habitat degradation or fragmentation or result in a decline in surface water quality to fisheries?

☐ ☐ [FRA only] Could the project affect the marine environment (i.e., water quality impairment, loss of habitat)?

☐ ☐ [FRA only] Could the project affect any resources of a designated Coastal Zone?
If "yes", coordination with the ADNR Division of Coastal and Ocean Management will be necessary and the project may require a Coastal Zone Consistency Determination

☐ ☐ [FRA only] Does the project have any potential to adversely affect the Federally-endangered Cook Inlet beluga whale?

☐ ☐ Does the proposed location of the project conflict with any SOPs or BMPs developed in conjunction with DNR or ADF&G?

☐ ☐ Could impacts to wildlife and fisheries resulting from the project be greater than those described in Section 3.6, Wildlife and Fisheries, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?

☐ ☐ Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D –Environmental Stewardship Range Construction Guidelines for wildlife and fisheries protection measures.*

Comments:_____
_____
_____

Land Use, Energy and Utilities

Yes	No	
☐	☐	Would the project pose a conflict to land use or adjacent land uses?
☐	☐	Would the project require the need for additional utilities to operate, including electrical, sewer, fiber optics, gas, water?
☐	☐	Would the project require any new stationary sources such as generators? *If "yes", a General Conformity Analysis may be required [FWA only].*
☐	☐	Could impacts to land use, energy and utilities resulting from the project be greater than those described in Section 3.7, Land Use, Energy and Utilities, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?
☐	☐	Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for impact avoidance and conservation measures.*

Comments:_____
_____
_____

Public Access, Recreation and Subsistence

Yes	No	
☐	☐	Will the project significantly hinder compliance with the Sikes Act?
☐	☐	Would the project reduce public access, recreation or subsistence activities?
☐	☐	Would the project adversely impact resources important to hunting, fishing or subsistence?
☐	☐	Could impacts to public access, recreation, or subsistence resulting from the project be greater than those described in Section 3.8 Public Access, Recreation and Subsistence, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?
☐	☐	Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for public access, recreation and subsistence measures.*

Comments:_____
_____
_____

Fire Management

Yes	No	
☐	☐	Could the project interfere with Alaska Fire Service or military firefighting efforts?
☐	☐	Could the project increase the chance of unintentional fire starts?
☐	☐	Could impacts to fire management resulting from the project be greater than those described in Section 3.9, Fire Management, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?
☐	☐	Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for fire management measures.*

Comments:_____
_____
_____

Cultural Resources

Yes	No	
☐	☐	Could the project involve disturbance of previously undisturbed ground?
☐	☐	Does the area require a cultural resource survey (i.e., no previous surveys exist)?
☐	☐	Does the area contain sites or structures of cultural or Alaska Native significance (requires consultation with the USAG Alaska Cultural Resources Manager to determine the answer)?
☐	☐	Could impacts to cultural resources resulting from the project be greater than those described in Section 3.10, Cultural Resources, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA*?
☐	☐	Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for cultural resource protection measures.*

Comments:_____
_____
_____

Noise

Yes	No	
☐	☐	Are there sensitive noise receptors (residences, communities, hospitals, etc.) within the area?
☐	☐	Would the project produce noise levels which would affect wildlife population movements or behaviors?
☐	☐	Could the project generate adverse short-term or long-term noise impacts?
☐	☐	Could impacts to noise resulting from the project be greater than described in Section 3.11, Noise, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA?*
☐	☐	Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for noise reduction and prevention measures.*

Comments:_____
_____
_____

Human Health & Safety

Yes	No	
☐	☐	Has the project site been determined by Range Control to need UXO clearance?
☐	☐	Does the area contain contamination concerns (requires consultation with the USAG Alaska DERA Staff to determine the answer)?
☐	☐	Would the project result in an increased risk to the health and safety of Soldiers, USAG Alaska personnel or contractors?
☐	☐	Would the project operations result in an increased risk to the health and safety of the general public including USAG recreation users or surrounding communities?
☐	☐	Does the project involve the modification of facilities or excavation of any kind? If so, work shall be coordinated via the USAG FWA or FRA "Work Clearance Permit" a minimum of five working days prior to mobilization to the site.

☐ ☐ Could impacts to human health and safety resulting from the project be greater than those described in Section 3.12, Human Health & Safety, of the *USAG Alaska's Range Complex and Training Land Upgrades PEA?*

☐ ☐ Was "yes" answered to any of the above questions? *If "yes", refer to the USAG Alaska's Range Complex and Training Land Upgrades PEA, Appendix D – Environmental Stewardship Range Construction Guidelines for human health and safety SOPs and BMPs.*

Comments:_____
_____
_____

Cumulative Effects

Yes **No**

☐ ☐ Would this project, in combination with past projects tiered off this PEA, cause any resource-specific significance threshold to be exceed?

Comments:_____
_____
_____

Other Considerations

Yes* **No**

☐ ☐ Is a procedure, method, practice, or technique being used for this project that is not listed in Appendix G (Environmental Stewardship Range Construction Guidelines) of the *USAG Alaska's Range Complex and Training Land Upgrades PEA?*

☐ ☐ Would the project lead to training impacts beyond what is analyzed in the *2004 Transformation of U.S. Army Alaska Final Environmental Impact Statement,* the *2006 Conversion of the Airborne Task Force to an Airborne Brigade Combat Team EA,* the *2006 Battle Area Complex/Combined Arms Collective Training Facility Final EIS,* the *2008 USAG Alaska Grow the Army Force Structure Realignment EA,* and the *EIS for the Stationing and Training of Increased Aviation Assets with USARAK*?

☐ ☐ Is the project or its potential impacts considered environmentally controversial?

☐ ☐ Could the project result in high or uncertain environmental risks?

Comments:_____
_____
_____

Note: A "Yes" to any of the Other Considerations (above) may warrant further NEPA analysis and USAG Alaska NEPA staff should be consulted.

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Appendix D – Environmental Stewardship Range Construction Guidelines

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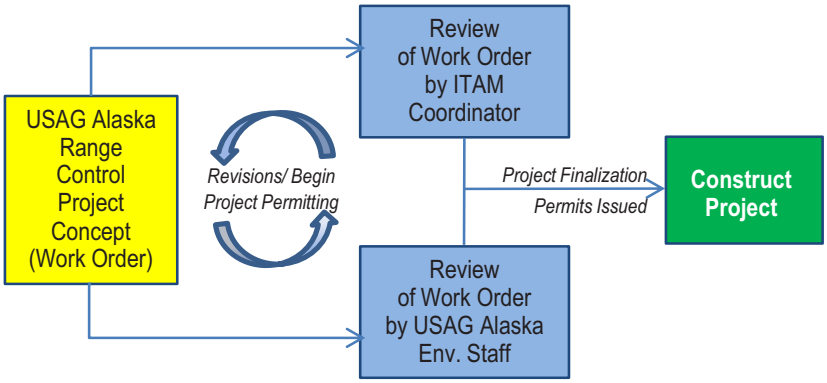
The following is a list of standard operating procedures (SOPs) and best management practices (BMPs) being considered under Proposed Action 3. This list is a combination of existing SOPs and BMPs used by U.S. Army Alaska (USARAK) garrisons, along SOPs and BMPs identified during the Agency scoping and draft review process for this Environmental Assessment (EA). SOPs and BMPs have been grouped by general management principles which govern numerous resource areas and by resource-specific topics.

Additional SOPs and BMPs related to the overall management of USARAK garrisons' lands can be found within the 2007-2011 Integrated Natural Resource Management Plan (INRMP) and 2006-2010 Integrated Training Area Management (ITAM) Plan. The INRMP, Volume III Supplements, contains further information regarding standard procedures and practices for the monitoring and management of natural resources in the areas of watershed management (soils, vegetation, wetlands, water resources), forestry and wildfire management, fish and wildlife management and outdoor recreation management. In addition, the ITAM Plan (Appendix C), contains further information regarding land rehabilitation standard practices and management practices and the 2006-2010 Integrated Cultural Resource Management Plan (ICRMP) contains standard procedures for management of cultural resources.

General Resource Management	Overall resource management at the project planning phase considers of a broad spectrum of USARAK garrisons' resources and chains of communication.

SOPs used during the project planning process and implementation of proposed projects includes:

- USARAK garrisons will continue implementing INRMP principles during design, construction and operation of range projects to help maintain natural resource sustainability.
- USARAK garrisons will continue using environmental limitations overlays to protect vulnerable habitats when siting range projects to avoid construction in sensitive areas and to indicate areas where maneuver training is and is not allowed.
- USARAK garrisons would continue to follow existing chain of command procedures regarding range project development. The standard procedures would be modified to include the Routine Range Project National Environmental Policy Act (NEPA) Assessment Checklist (Appendix D):



- If the checklist indicates that the project may not fall within the scope of this PEA, USAG FRA and USAG FWA Environmental (NEPA) staff would determine what appropriate level of NEPA analysis should be performed prior to funds being spent on construction.
- USARAK garrisons' contractors would continue to be supplied the *Environmental Concerns for Construction and Renovation Projects Package* upon contract award. This package outlines

environmental guidelines and construction site management issues that the contractor must adhere to during project construction and requires contractors to prepare an Environmental Protection Plan (see Appendix F).
- USARAK garrisons will continue management and monitoring of its rangelands including natural and cultural resources as outlined in the INRMP, ITAM program and ICRMP.
- For those projects involving range construction and rangeland use, USARAK garrisons will continue to coordinate with local Soil and Water Conservation districts for siting of range projects in regards to soil suitability for proposed uses and for determining appropriate soil retention measures.

BMPs used during the project planning process and implementation of proposed projects include:

- To the extent possible, alignment of new roads, access trails or utility corridors would take advantage of existing roads and pathways.
- Site fingerprinting, which involves clearing and grading only those areas necessary for building activities and equipment traffic could be used during site planning.
- BMPs for construction site waste management, control of allowable non-storm water discharges, education and awareness training, material management, minimize offsite vehicle tracking of sediments, sanitary/septic disposal, waste disposal, site stabilization, and structural controls to prevent erosion contained within Appendix C3 of the *USARAK Integrated Training Area Management Five Year Management Plan and Range and Training Land Assessment Protocol FY2006-2010*.

Soil Resources	Soil stability is important for maintaining sustainable range use for Soldier training and for protecting surface water resources, wetlands, fisheries, vegetative cover and wildlife habitat. Soil stability can be managed through project design and construction staging, site restoration and ongoing monitoring of operations.

SOPs to avoid soil erosion include:

- During the range project planning phase, USARAK garrisons review project site soil types to determine: 1) constructability and suitability of soils for intended uses, 2) presence of permafrost or highly erodible soils, 3) the potential need for structures or practices to prevent erosion (i.e., grading or reshaping the ground to lessen steep slopes, shoring excavated areas).
- USARAK garrisons would continue to implement Dust Control Plans which includes BMPs for reducing wind erosion and promoting site stabilization during and after demolition, construction, earthmoving, excavating, stockpiling and transport activities.

BMPs to prevent or control soil erosion include:

Project Design
- Avoid permafrost and highly erodible soils whenever possible.
- Maximize footprint disturbances within areas of existing or previously disturbed soils.

Construction Staging
- Control dust emissions during construction on site per Garrison Dust Control Plans to include: pre-grading planning, pre-grading watering, pre-grading watering, chemical stabilizers, wind fencing/sheltering, wind awareness, cover haul vehicles, reduced speed limits/vehicular trips during construction.
- When working in permafrost, minimize the footprint of the disturbed area, and in areas of temporary disturbance provide vegetative cover as soon as possible following disturbance.

- Tree and vegetation removal activities would preferably occur during winter months when soils are frozen. Hand clearing or use of hydro-axe to clear vegetation located within sensitive soils during non-winter months.

Site Restoration

- Seed and fertilize, as necessary, the area immediately following construction to aid in the establishment of protective vegetative cover. Manual planting or geotextiles, as necessary, would be used in areas susceptible to higher wind erosion to aid in the establishment of protective vegetative cover.
- Restoration of disturbed areas by implementing industry standard BMPs and techniques as detailed in the ITAM program.
- Monitoring and rehabilitation efforts of Range and Training Land Assessment (RTLA) and Land Rehabilitation and Maintenance (LRAM) components of the ITAM Program to determine effects of training on soils and adjust training use.

Operations

- Minimize impacts caused by off-road vehicle use by timing, as much as is practical, and schedule training activities to coincide with the times of the year during which the lands are more resilient. For example, snow-pack would minimize the impacts to soils and permafrost compared to spring break-up when soils are more susceptible to erosion.
- Improve existing trails and roadways to increase the resiliency and capacity for the land to absorb traffic. Improvements would include stormwater management control such as incorporation of vegetated swales adjacent to improved trails and roadways to manage sediments and runoff.

Surface Water and Floodplains	Section 404 of the Clean Water Act (CWA) regulates activities which directly affect surface water resources and National Pollution Discharge Elimination System (NPDES) regulates activities affecting surface water quality. Surface water quality and floodplain integrity can be managed through project design. Buffer zones reduce the velocity of storm water runoff, provide an area for the runoff to permeate the soil, contribute to ground water recharge, and act as filters to catch sediment both during construction and from ongoing operations.

SOPs to be used for activities within or adjacent to surface waters and floodplains during project design and construction include:

- USARAK garrisons will comply with Executive Order (EO) 11988 *Protection of Floodplains* to minimize adverse Section 404 resources and floodplains impacts during project siting and range operations. For future projects not identified in this PEA, the Army will prepare a supplement to this programmatic document in the event of a proposal to locate the project within a floodplain or a wetland. The supplemental document will include a Finding of No Practicable Alternative (FNPA).
- USARAK garrisons will maintain natural or established vegetation riparian buffers for projects located near surface water and floodplains to protect the water quality.
- USARAK garrisons will prepare and adhere to Storm Water Prevention Plans per Code of Federal Regulations (CFR) 40 Part 122 *National Pollutant Discharge Elimination System*.
- USARAK garrisons will prepare grading plans for projects involving earthmoving and grading activities that establish drainage patterns and how runoff velocities affect receiving waters. Components of this plan will be used to manage runoff and sedimentation from construction sites by identifying proximity to surface water resources and erosion and sediment control measures to prevent runoff and sediments from reaching receiving waterbodies.

BMPs activities to be used within or adjacent to surface waters and floodplains include**:**

Project Design

- Preserve natural vegetation as a permanent control measure to minimize erosion potential and protect water quality especially in areas characterized by floodplain, wetland, stream banks, steep slopes, and other areas where erosion controls would be difficult to establish, install, or maintain.
- Avoid designing roads and trails in the general direction of preferential water and maintain raised trailbeds to minimize concentrated surface water flows during flooding events.
- Design drainage to accommodate snowmelt runoff and rainfall potential to prevent erosion and formation of gullies.
- Design, construct and maintain bridges to allow unrestricted flow.
- Maintain natural drainage patterns by the installation of culverts of adequate number and size (to prevent ponding or concentrating surface runoff waters).
- Use trenchless utility crossing technology (i.e., directional drilling) below streams and set back from the stream bank by at least 100 feet.

Construction Staging

- Avoid placing litter, construction materials and debris, and construction chemicals within proximity (typically 75 feet) to surface waters or flood-prone areas to prevent pollutant discharges.
- Keep all construction staging, fueling, and servicing operations at a minimum of 100 feet from surface waters to prevent unintentional contamination and keep spill kits on hand in case of spills to reduce response time.
- Avoid placement of temporary material storage piles within the 100-year floodplain during the rainy season unless the following conditions are met: (1) storage does not occur when flooding is imminent; and (2) if storage piles consist of erosive material, they would be covered with plastic tarps (or something similar) and surrounded with compost berms or other erosion control devices.
- Work excavation equipment from an upland site (e.g., the top of the bridge or culverted road crossing) to minimize adding fill into waters of the U.S.
- Install culverts during low flow periods. Where significant flow is present, acceptable techniques to isolate the construction site from stream flow include channel bypasses, temporary flumes, sheet pile or sandbag walls, water filled coffer dams, or pumping the stream flow around the work site.
- For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.
- Spoil, debris, piling, cofferdams, construction materials, and any other obstructions resulting from or used during construction shall be removed upon project completion.

Sediment Management

- Control sediment transport and prevent sedimentation into surface waters during construction through slope stabilization, maintaining 75-foot vegetative buffers, revegetation, use effective filters or barriers such as filter fabric fences and straw bales, fiber matting, stormwater retention/detention basins and settling ponds, drainage control, trenches and water bars, waterproof covers over material piles and exposed soils, avoiding work during heavy precipitation, use of fill free from fine material, and other appropriate measures.
- Pump sediment laden water resulting from construction activities into a settling basin or an area where it can be naturally filtered, before it reenters the stream.
- Closely monitor all construction sites to evaluate sediment control and stormwater and pollution management practices, inspect for potential damage, and to detect and correct future changes in drainage patterns to prevent impairment of surface waters and alternation of surface hydrology.
- If sediment escapes the construction site, off-site accumulations of sediment would be removed at a frequency sufficient to minimize off-site impacts.

- Construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner).

Stormwater/Surface Water Flow Management

- Place velocity dissipation devices at discharge locations and along outfall channels to provide a non-erosive flow velocity and maintain the hydrological regime of the receiving water.
- Structures, pipes, or associated fill should not impede flood or surface water flows.

Post Construction Riparian Restoration

- Restored stream bank, lake shore, or coastline affected by the work to pre-existing contours and stabilize.
- Restoration and revegetation of streambank and shoreline habitat should utilize the most up-to-date bioengineering techniques and use of biodegradable materials when feasible and practicable (i.e., Streambank Revegetation and Protection: A Guide for Alaska (Muhlberg and Moore 1998)). Techniques may include, but are not limited to, brush layering, brush mattressing, live siltation, and use of jute matting and coir logs to stabilize soil and re-establish native vegetation.

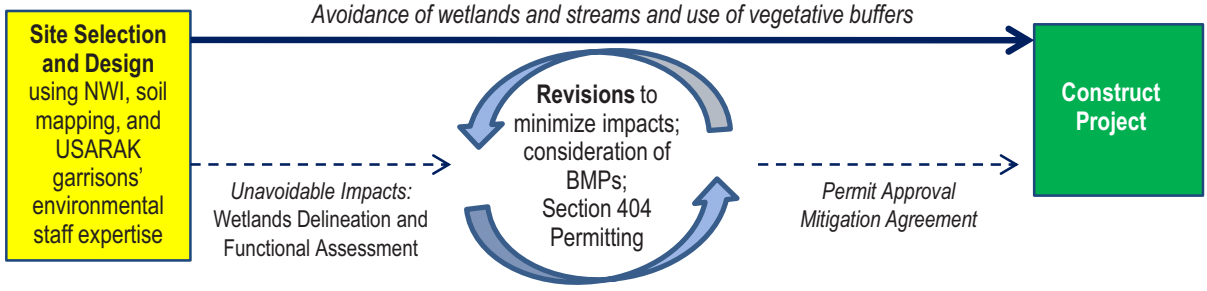
Operations

- Employ Spill Pollution Prevention and Countermeasure Plan (SPPCP) measures including proper handling and disposal of substances to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources by measures such as keeping spill kits nearby sites using these substances.
- Follow BMP guidance contained within the Army Small Arms Training Range Environmental Best Management Practices (BMPs) Manual to support the selection and implementation of management methods for erosion or lead migration issues from munitions (bullets) based on site-specific use and environmental characteristics to improve the environmental quality and insure the long-term sustainability of essential training areas.

Wetland Resources	Wetlands resources occur throughout USARAK garrisons' rangelands and are vital in maintaining water quality, aid in flood control, and provide wildlife habitat. These resources are also regulated by Section 404 of the Clean Water Act. Wetland impacts can be avoided through project design, during construction staging and from ongoing monitoring of operations. Temporary impacts to wetlands can be addressed through site restoration.

SOPs to be used for activities involving wetlands during project design and construction include:

- Preparation of a FNPA to justify unavoidable impacts to wetland resources and submitted with the Section 404 permit.
- Project planning and the Section 404 permitting process:



BMPs to be used for activities involving wetlands include:

Project Design

- Narrow/confine trail widths in sensitive wetland habitats or when possible, widen trails to the upland direction to avoid wetland impact.
- Maintain natural drainage patterns by the installation of culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.
- Use trenchless utility crossing technology (i.e., directional drilling) below wetlands.
- Conduct a functional assessment of wetlands within the project study area to provide a means of rating wetlands and to facilitate the prioritization of impact avoidance and minimization measures. The functional assessment would be used to identify appropriate mitigation during the Section 404 permitting process to replace wetland functions lost from unavoidable impacts.

Construction Staging

- Clearly identify project limits in the field (e.g., staking, flagging, silt fencing, use of buoys, existing footprint for maintenance activities, etc.) prior to clearing and construction to ensure avoidance of impacts to waters of the U.S. (including wetlands) beyond project footprints.
- Limit construction staging and extra work areas at least 50 feet away from wetlands.
- Conduct vegetation clearing activities during the winter months within wetland areas when soils are frozen to avoid impacts to sensitive wetland soils.
- Use of a hydro-ax during vegetation clearing within wetlands to reduce impacts to hydric soils and low-lying vegetation.
- Place temporary fill in wetlands on geotextile fabric laid on top the existing wetland grade, especially during non-frozen conditions.
- Separately stockpile wetland topsoil and organic surface material such as root mats from overburden and return material to the surface of restored wetland sites.
- Disperse load of heavy equipment by working in frozen or dry ground conditions, employing mats when working in wetlands or mudflats, and using tracked rather than wheeled vehicles, so that the bearing strength of the soil is not exceeded.
- In peat wetlands, systematically removing the natural vegetative mat (with root masses intact) prior to construction, storing it in a manner to retain viability (usually frozen or hydrated), then replacing it after re-contouring the ground following construction, with final contours within 1 foot of adjacent undisturbed soil surfaces after 1 growing season and 1 freeze/thaw cycle. For minor utility projects where no imported bedding or backfill material is used (e.g., "plowed in" cables or small utility lines installed with ditch-witches), simple restoration to pre-work contours and appropriate revegetation shall suffice.

Post Construction Riparian Restoration

- Stabilizing of all disturbed areas resulting from project construction using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.
- Restore temporarily disturbed wetlands to original grades using stockpiled wetland topsoils and plant native vegetation.

Operations

- Avoid training and maneuver activities in wetlands, especially during non winter months.

Vegetation	Vegetation provides erosion control, stormwater detention, biofiltration, habitat for wildlife and aesthetic values to a site during and after construction activities. Areas of preserved vegetation can also process higher quantities of storm water runoff than newly seeded areas, does not require time to establish, has a higher filtering capacity than newly planted vegetation, reduces storm water runoff by intercepting rainfall, promotes infiltration, lowers the water table through transpiration, provides buffers and screens against noise and visual disturbance, provides a fully developed habitat for wildlife and usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation. Retention of vegetation can be managed through project design and during construction staging. Monitoring of ongoing operations and site restoration helps maintain vegetative cover and overall health.

SOPs to be used for activities regarding vegetative cover during project design and construction include:

- USARAK garrisons will continue vegetation management within its ranges, including invasive species monitoring and management per the INRMP and ITAM. This will help prevent the spread of invasive species from routine maintenance, upgrade, and construction activities, and would serve to manage existing timber resources.
- To the extent possible, USARAK garrisons will continue to preserve natural vegetation (protection of desirable trees, bushes, and grasses) from damage during project development.
- For those projects affecting salvageable timber, USARAK garrisons will continue to make available usable timber salvaged from range projects that cannot be sold in a timber sale to the public at no cost.
- Use site fingerprinting, which involves clearing and grading only those areas necessary for building activities and equipment traffic could be used during site planning and concentrate development in areas where past development has occurred.

BMPs to be used to help mitigate impacts:

Project Design

- Consideration of vegetation preservation during project planning to maintain ecological functions described above, particularly in floodplains, wetlands, stream banks, steep slopes, and other areas where erosion controls would be difficult to establish, install, or maintain.
- Review ecotype mapping within the project area to determine if the project has the potential to be located within the preferred habitat of a rare plant species.
- Utilize previously disturbed areas before open meadow and open meadow before forested areas to reduce possibility of elimination of regional native plant species.
- Clear only land needed for building activities, range operations and vehicle traffic needs.
- Retain as much vegetation as possible to provide cover, concealment, and realism for training.
- Retain 75-foot vegetation buffer areas along either side of ephemeral and intermittent streams or other specifically designated areas and a 100-foot buffer along Essential Fish Habitat (EFH) streams to prevent surface water quality impairment.

Construction Staging

- Clearly mark trees and areas for preservation and protect from ground (root) disturbances around the base of the tree.
- Restrict nailing of objects (signage) to trees during building operations.
- Avoid placement of fill dirt within the limit of preserved areas and during final site cleanup, barriers around preserved areas and trees should be removed.

- Implement invasive species prevention measures during construction activities such as washing of construction equipment prior to on-site construction activities and require gravel pits to be free of invasive species to prevent introduction and spread of invasive species.

Vegetation Preservation Considerations

- Tree vigor: Preserve healthy trees that will be less susceptible to damage, disease, and insects.
- Tree age: Older trees are more aesthetically pleasing as long as they are healthy.
- Tree species: Preserve tree species well-suited to present and future site conditions. Preserving a mixture of evergreens and hardwoods can help to conserve energy when evergreens are preserved on the northern side of the site to protect against cold winter winds and deciduous trees are preserved on the southern side to provide shade in the summer and sunshine in the winter.
- Wildlife benefits: Choose tree species that are preferred by wildlife for food, cover, and nesting.
- Drainage patterns: Following natural contours and maintaining preconstruction drainage patterns would prevent alteration of hydrology and the potential die-off of preserved vegetation.

Site Restoration

- Revegetate areas disturbed during project construction as soon as possible with native grass or other appropriate vegetation, preferably in the same growing season as the disturbance to prevent erosion and maintain habitat integrity.
- Revegetate areas that are not recovering naturally through the LRAM Program to prevent erosion and maintain habitat integrity.
- Monitor mitigation efforts to ensure goals are reached, and initiate additional measures required to meet restoration goals.
- Monitor to determine extent of invasive species presence on Army lands in Alaska and continue collaborative invasive species management efforts with local area agencies and entities.

Operations

- Restrict vehicle traffic trails and roads as practical and still meet training mission requirements.

Wildlife and Fisheries	Wildlife and fishery resources are abundant within USARAK garrison range lands. These resources are essential to subsistence and recreational hunting and fishing and are also regulated through the Migratory Bird Treaty Act (MBTA), Endangered Species Act (ESA), the Fish and Wildlife Coordination Act, Bald and Golden Eagle Protection Act, Magnuson-Stevens Fishery Conservation and Management Act, and the State Anadromous Fish Act. Wildlife and fisheries management can be considered during project design and during the timing of construction staging. Monitoring of ongoing operations and site restoration helps maintain overall sustainability and health of these resources.

SOPs to be used to maintain biodiversity and local wildlife and fisheries populations during project design, construction, and operations include:

- For those projects affecting or adjacent to surface waters, USARAK garrisons will refer to the State Anadromous Fish Catalogue to determine presence of anadromous streams near construction areas and all projects will conform to any conditions required by State officials, such as vegetation buffers or other appropriate measures.
- In the event that a Proposed Action could adversely affect Essential Fish Habitat, appropriate consultation with the National Marine Fisheries Service would occur, and projects will conform with all conditions imposed by National Marine Fisheries Service (NMFS) officials.
- For those projects affecting anadromous streams, all design and unavoidable construction activities affecting anadromous waters will be accomplished in accordance with Alaska Statutes AS 16.05.871 - AS 16.05.901.

- For those projects involving vegetation removal, to the extent possible, USARAK garrisons will obtain permission from the USFWS when necessary to remove bird nests, including partially completed bird nests. In addition, construction activities will avoid clearing of grass, scrub land, and forested areas between 1 May to 15 July to minimize impacts on migratory birds. Prior to initiating any project, construction sites will be surveyed to determine the presence of eagle nests. Should any be found, USFWS officials will be consulted as to whether construction may occur on the intended site, and whether measures are required to minimize adverse impacts to eagles.
- For those activities involving firing or Soldier training activities, continue to limit firing within 4,921 feet (1,500 meters) of bison and prohibition of disturbance to bison by Soldiers during training events (Donnelly Training Area [DTA] only).
- Avoid siting projects in higher functioning habitats such as riparian areas or those containing rare or sensitive species.

BMPs to be used to maintain biodiversity and local wildlife and fisheries populations include:

Project Design

- Culverts installed in fish bearing streams would have a width that is at least 120 percent of the ordinary high water width of the stream and should be bedded 20 percent of the diameter.
- Sufficient depth of flow and appropriate water velocities for fish passage would be provided in culvert installations. A minimum of 8 inches (200 mm) of depth would be maintained. Depending upon the grade of the culvert and/or its length, downstream set pool or install baffles within the culvert to achieve the 8 inches 200 mm minimum depth throughout the culvert may be necessary.
- The natural contour of the stream should be followed for culvert installation.
- Activities that include the construction and maintenance of intake structures must include adequate fish screening devices to prevent the entrainment or capture of fish.
- Directional boring vaults/junction boxes or pads will be provided further than 100 feet (30.5 meters) (measured from ordinary high water [OHW]) of anadromous fish streams.
- Restrict activities in breeding areas for migratory waterfowl, spawning areas, or areas of concentrated shellfish populations.

Construction Sequencing

- Avoid vegetation clearing during the USFWS Region 7 guidelines for South-central and Interior Alaska (1 May through 15 July) as described in the 2007-2011 INRMP to avoid impacts to migratory birds.
- Where required, obtain State permits to erect a fish barrier of netting, both upstream and downstream of the crossing, to prevent fish from entering the work area.
- Move stranded fish found in the dewatered channel downstream.

Site Restoration

- To the maximum extent practicable backfill material shall consist of the excavated material and shall be returned to the hole in the same place on the vertical stratum from which it was excavated. As a contingency, use clean gravel or native cobbles for the upper 1-foot of trench backfill in all waterbodies that contain fisheries.

Operations

- Continue to cooperatively manage the Delta Bison Herd with ADF&G according to conditions outlined in the 2007 MOA and within the INRMP to ensure sustainment of the military mission and the health of the bison population.
- Continue planting of blue grass in designated areas south of DTA's training areas to help bison move away from training areas in a safe, non-harassing manor.
- Continue monitoring of effects of military training on select wildlife species (especially herd animals and waterfowl) and fisheries during vital seasons such as breeding, rearing of young, and migration.

- Continue annual moose, bison, and caribou surveys in partnership with ADF&G and swan surveys with the U.S. Fish and Wildlife Service.
- Continue development and implementation of an information and education program for personnel using USARAK lands.
- Continue compliance with Federal and state laws and regulations relating to fish and wildlife conservation or management.
- Use of bear-proof containers and bear-resistant dumpsters to reduce incidence of bear-human interaction area (live fire training disruption and Soldier safety) on the small arms ranges.

Land Use, Energy and Utilities	Army Regulation (AR) 210-21, *Army Ranges and Training Land Program*, and the associated *Generic Methodology for the Range and Training Land Program*, dated September 1998, guide overall range planning for establishing current requirements and utilization levels for available training assets and provides a near- and long-term project plan for training, public works, and environmental planners. Land use compatibility and availability of existing energy and utilities should be considered during project site selection and project design.

SOPs to be used during project design to avoid land use conflicts and consider energy and utility aspects of proposed projects include:

- Planning of proposed new facilities and upgrades should follow AR 210-20 (*Real Property Master Planning for Army Installations*).
- Siting of facilities and activities (including ground maneuver) to avoid sensitive areas as much as possible. This includes activities that generate noise, dust, and other nuisance factors.
- Areas open to the public would be separated from active mission areas (using appropriate buffers, fencing, designated access restrictions or recreational use tracking procedures).
- Project planners will avoid placing permanent facilities or ground disturbing activities in sensitive habitats or ecological areas, when practicable.
- Project planners will site facilities in a manner that maximizes the use of existing utility infrastructure.
- Completion of the USAG Alaska Range Project Checklist to determine increases of energy and utility requirements on a project-by-project basis. Where increases of energy demand is likely, have project planners incorporate measures to reduce or offset emissions during project planning, construction and operations in compliance with EO 13423.

BMPs to be used during project design to avoid land use conflicts and consider energy and utility aspects of proposed projects include:

- Encourage sustainable building and development practices (e.g., implementation of the Leadership in Energy and Environmental Design rating system as a guide for projects).
- Should incorporate stormwater management retention devices in the development of parking lots, plazas, and walkways to decrease amount of runoff and to filter out oil and other potential hazardous substances which could occur within parking runoff.
- Prior to new construction, project planners should coordinate with other construction managers of new projects and notify users and operators of existing utilities if an existing utility system needs to be temporarily out of service during construction activities.
- During construction, limit the shut-off of existing utilities to off-peak usage period.

Public Access, Recreation and Subsistence	The Sikes Act has opened numerous military lands to recreation, including portions of USARAK garrisons' rangeland. In addition, subsistence activities occur throughout USARAK garrisons' rangeland as protected through the Alaskan National Interest Lands Conservation Act. Public access, recreation, and subsistence can be considered during project design and operations to manage project affects to USARAK land users.

SOPs to be used to avoid impacts to public access, recreation and subsistence activities during operations include:

- Continued assessment and management of subsistence resources for all users per guidelines outlined in the INRMP.
- Continued establishment of government-to-government relationships with Alaska Native tribes whose interests may be significantly affected by USARAK activities. This would ensure efficient and effective communication between both leadership and staff members of tribal governments and USARAK.
- Continued implementation of the U.S. Army Alaska Recreation Tracking System (USARTRAK) automated check-in phone system. This would provide information regarding daily closures and should greatly simplify the public access process.

BMPs to be used to avoid impacts to public access, recreation and subsistence activities include:

Project Design

- Determine the placement of access gates to allow for maximum continued recreational use and to maximize public safety.
- Determine the placement of bridges in areas that will not inhibit existing publically-used low-water crossings.

Operations

- Continued implementation of recreational vehicle use policies, per the INRMP. The INRMP outlines specific actions to maintain and improve public access and recreation opportunities on USARAK lands.
- Continued monitoring of recreational usage of each training area through the USARTRAK phone system. This would inform USARAK and ADF&G regarding use patterns, which should improve management for public access and recreation.
- Continued maintenance of kiosks at all primary entrances to recreational areas on USARAK lands and provision of visitor maps and information. Information kiosks can help users quickly identify areas designated for recreational use, as well as the times and locations of military activities.
- Increased use of signs and other public notification measures to increase public awareness of dangers of military training.
- Continued use of advanced public notification of military training activities likely to restrict the use of Alaska Army lands for recreational, subsistence, and other uses.

Wildfire Management	Range projects and operations have the potential to cause unintentional wildfire starts. Wildfire prevention can be administrated during operations through adherence to existing management plans and agreements and management of the landscape.

SOPs to be used which avoid unintentional wildfire starts include:

- Compliance with training exercise regulations and wildfire prevention as stipulated by USARAK Range Regulation 350-2, *Training*, and continued update and implementation of Integrated Wildfire Management Plans developed by USARAK.

BMPs to be used to avoid unintentional wildfire starts include:

- Continue on-going actions to prepare the landscape for potential wildland fires (i.e., prescribed burns and thinning to restore ecosystem functions to fire and to reduce future fire severity).
- Continue to utilize the fire danger rating system to reduce the likelihood of a fire by limiting military activities when certain thresholds of wildfire risk are reached.
- Have available an Initial Attack Response Team during military training activities during high and extreme fire danger to provide a rapid initial response to potential wildfires in the area.
- Continue to implement INRMP and IWFMP.
- Prepare a burn plan and detailed parameters for when burning can take place.

Cultural Resource Management	USARAK garrisons contain a variety of resources protected under Section 106 of the National Historic Preservation Act.

SOPs to be used which avoid impacts to cultural resources include:

- Continued implementation of ICRMPs which help maintain cultural resource sustainability and provides guidance on the best methods for compliance with cultural resources management responsibilities.
- Further development of Army Alternate Procedures to further identify methods of maintaining cultural resource sustainability into the future.
- Exempted Undertakings and Categorical Exclusions – Undertakings involving cultural resources that fall under the following Programmatic Agreements or Program Alternatives are considered exempt or categorical exclusions, requiring no further review from USARAK CRM or SHPO and include:
  - Program Comment for Capehart Wherry Era (1949-1962) Army Family Housing.
  - Program Comment for Army Cold War Era Unaccompanied Personnel Housing (1946-1974).
  - Program Comment for World War II and Cold War Era Ammunition Storage Facilities (1939-1974).
  - Program Comment for World War II and Cold War Era (1939*1974) Army Ammunition and Production Facilities and Plants.
  - Nationwide Programmatic Agreement for World War II Temporary Buildings.
- Continue to curate discovered artifacts with Federally-certified museums in accordance with the NHPA.

Project Design

- Continued coordination with the USAG Alaska Cultural Resources program during site planning.
- USARAK CRM continued coordination and consultation with the Alaska SHPO to identify any adverse impacts and mitigation requirements.

Construction

- Continue notifications to the USAG Alaska Cultural staff in the event of inadvertent discovery of cultural resources (artifacts, etc.) during range construction.

Operations

- Continued coordination with the USAG Alaska Cultural Resources program during changes of range operations.
- Continue notifications to the USAG Alaska Cultural staff in the event of inadvertent discovery of cultural resources (artifacts, etc.) during range operations.
- Conduct systematic monitoring of archaeological sites that are eligible for listing on the NRHP.
- USARAK CRM staff would review all repairs and other projects planned for historic structures and buildings.

BMPs to be used to avoid impacts to cultural resources during project design, construction and operation includes:

- Initiate and continue consultations with Alaska Native tribes to identify and evaluate Traditional Cultural Properties (TCPs) that may be present on military managed lands in Interior Alaska.
- Survey unsurveyed areas and evaluate resources identified during survey. Those resources determined to be National Register of Historic Places (NRHP) eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska state standards for archaeology. This would not apply in areas that have not been previously surveyed, except in those areas which fall under Army-wide exemptions for undertakings due to an imminent threat to human health and safety as presented in the Army Alternative Procedures (AAP; Section 4.1, Army Wide Exempted Undertakings) which include:
  - In-place disposal of unexploded ordinance.
  - Disposal of ordinance in existing open burning/open detonation units.
  - Emergency response to releases of hazardous substances, pollutants, and contaminants.
  - Military activities in existing designated SDZs.
- Sites that are currently identified, but have not been evaluated for NRHP eligibility will be treated as NRHP eligible sites; until such time that they are evaluated for NRHP eligibility. Once evaluated, sites determined to be NRHP eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as Alaska state standards for archaeology.
- Avoid cultural sites during design utilizing information gathered from on-the-ground surveys.
- Curation of archaeological material recovered per Memorandum of Agreement between USARAK and the University of Alaska Museum.
- Continued development and implementation of an information and education program for personnel using USARAK lands and the public. This would enhance the conservation of cultural resources on USARAK lands.
- Continued evaluation of NRHP eligibility of archaeological sites potentially impacted by placing ranges in use.

Noise	Noise control is regulated under the Noise Control Act of 1972. To assess military-related noise effects, the U.S. Army Center for Health Promotion and Preventive Medicine has developed noise zones which consider noise levels along with sociological considerations and compatible land uses. Noise control can be considered during both the planning and construction phases for range activities.

SOPs to be used which avoid impacts from noise during project design and planning include:

- Noise generation of the planned use of any given project would consider siting based on the Installation Noise Management Plan noise contours and compatible noise zones.
- Any activity generating a new type of noise source (i.e., new equipment or technologies) which could change existing noise contours or be in conflict with Installation Noise Management Plans would undergo CHPPM noise modeling to detect any potential changes to existing noise conditions.
- Continue to maintain an active noise management program to protect present and future operational capabilities of range land training. This includes continual evaluation of noise impacts that may be produced by ongoing and proposed Army actions/activities, maintenance of a noise complaint management program and minimization of noise impacts and annoyance to the greatest extent practicable.

BMPs to be used to avoid impacts from noise during construction include:

- Adjust construction schedules within areas of sensitive noise receptors to reduce impacts.
- Ensure construction equipment with internal combustion engines have mufflers which are well maintained.
- Operate construction equipment at lower speeds and increase spaces between equipment.
- Set-up noise barriers or enclosures such as plywood or lead-vinyl curtains for particularly noisy operations near very sensitive receptors.

Human Health and Safety	USARAK garrisons have a proactive system to address human health and safety issues and to prevent injury or harm to Soldiers and civilians resulting from range construction projects and range operations.

SOPs to be used which avoid impacts to human health and safety include:

Project Design

- As necessary, at the earliest time after the project planning charrette, USARAK garrisons perform a UXO site survey to determine the extent of the ordnance contamination to aid in the design of the range and minimize intrusive work in portions of the range which are highly contaminated with ordnance and to determine the correct ordnance response actions.
- During predesign site studies and investigations, if ordnance contamination is suspected, UXO safety support for UXO avoidance becomes mandatory during topographic surveying, geotechnical investigation, and other on-site operations that require gathering design data.
- Hazardous waste generation associated with building demolition should be identified in advance, and proper abatement planned as part of the project. These hazards include, but are not necessarily limited to asbestos, lead (primarily in paint), PCBs and glycol.
- Due to the nature and type of training conducted in the past (especially prior to 1986), unidentified contamination could be found on Army lands. All work involving the modification of facilities or excavation of any kind shall be coordinated via the USAG FWA or FRA "Work Clearance Permit" a minimum of five working days prior to mobilization to the site. Coordination requirements are outlined on the permit. Any potentially contaminated soil or

groundwater encountered during this action shall be segregated, sampled, analyzed, and containerized in approved containers (specified in 49 CFR 178.500). Soil and groundwater shall not be removed from any part of the installation or transported off the installation, regardless of whether it is clean or contaminated, without written authorization from an appointed USAG FWA or FRA representative.

- If unidentified contaminated soils, drums, or unusual debris (i.e., unexploded ordnance, discarded military munitions, or munitions debris) are encountered at any time on or around the work site, the agency or contractor shall stop work immediately and notify the Public Works Environmental Office. Contaminated soils or groundwater shall be segregated, sampled, analyzed, and containerized for transportation, and taken off-site for disposal within 90 days of final lab results being received. If soil or groundwater is scheduled for remediation off-post, it shall be returned to the installation after treatment and certified laboratory analyses, conducted by the treatment facility, to confirm the material does not exceed a regulatory cleanup level.
- All military units using the sites will be required to possess and have available appropriate spill response materials for the types and quantities of hazardous materials they may transport and use within proximity to this work area. All spills / releases will be reported to Fort Wainwright's or Fort Richardson's Fire Department and DPW- Environmental, Spill Prevention and Response (SPAR). All appropriate remediation measures will be accomplished.
- HAZWOPER certified workers may be needed if clean-up and disposal of hazardous materials is necessary. All materials should be handled, stored and disposed of in accordance with applicable laws and regulations, including USAG FWA or FRA Department of Public Works Environmental Institutional Controls. The potential for encountering hazardous materials/substances exists, including but not limited to petroleum, oils, and lubricants (POL), POL degradation by-products, asbestos, lead based paint, PCBs and mercury. Contaminated groundwater, soils, and debris shall be segregated, sampled, analyzed, and containerized for proper disposal according to the type of contamination identified.
- Project proponents will utilize the installation's Institutional Control map to avoid known contamination when siting facilities. If known contamination cannot be avoided, established BMPs/SOPs will be followed. Project proponents will coordinate with installation Environmental Clean Up personnel in a timely fashion prior to project contract award and construction start in order to gain proper regulatory approval of work in a contaminated site, if applicable.

Construction

- During the range construction, ordnance may be found in the area. Inert practice ordnance may also be encountered. If UXO contamination is encountered, work within the immediate area will cease and Range Control will notify the Installation's Explosive Ordnance Disposal (EOD) team.
- If there is a probability of UXO contamination, only UXO-qualified personnel can conduct any type of ordnance handling or disturbance work.
- All hazardous material spills would be reported to the Directorate of Public Works Environmental Office as well as the U.S. Army Corps of Engineers or DPW project manager using the DPW Oil and Hazardous Substances Spill Notification form.
- Any project that involves excavation or movement of soils must include field screening for petroleum (plus any other identified contaminants). Soils registering less than field screening levels indicated in Army policy are considered clean and may be reused on site or transported to the Post landfill for cover. Soils screening levels higher than amounts indicated in Army policy must follow USARAK contaminated soil policies.
- Each project would be evaluated to determine whether an Air Quality Control Permit (AQCP) is required prior to commencing construction. An AQCP is typically required for projects that involve the addition of new air emission sources (e.g., boilers, generators, fire pumps, painting & degreasing operations, fuel storage & loading) and for projects that involve the modification of existing air emission sources (e.g., landfill expansion and non-routine maintenance at the power

plant). The evaluation includes determining if the project conforms to the requirements and emission caps established by USARAK garrisons' current Title V operating permits and assesses the need to obtain a permit modification.

Operations

- All hazardous material spills would be reported to the DPW Environmental Office as well as the COE or DPW project manager using the DPW Oil and Hazardous Substances Spill Notification form.

BMPs to be used to avoid impacts to human health and safety during construction and operation include:

- Store and use all hazardous materials (e.g., paint, solvents, fuel, etc.) in such a manner as to prevent spills and releases. Storage areas are subject to inspection by DPW Environmental Office.
- All underground storage tanks (USTs) installed within USARAK garrisons will conform to 40 CFR 280, 18 Alaska Administrative Code (AAC) 78 and applicable Army guidance. USTs will be double wall steel with cathodic protection (anodic, not impressed), provided with spill and overfill protection, and interstitial leak detection. Fuel lines will be double wall Enviroflex, or equal.
- All aboveground storage tanks (ASTs) installed on Army property will conform to 40 CFR 112, as well as applicable ADEC and Army guidance. In general, all ASTs will be either double wall or vaulted tanks, with containment on all four sides. All tanks will be tapped on the top only, and be provided with spill and overfill prevention and leak detection.
- Noise generation of the planned use of any given project would consider siting based on The Installation Noise Management Plan noise contours and compatible noise zones.

Appendix E – Description of U.S. Army Alaska (USARAK) Garrisons' Routine Range Projects (non-site specific)

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Project Index

Berm Creation & Maintenance: Berms consist of compacted piles of fill material shaped for a specific performance objective and are installed as impact structures, firing platforms, target platforms and safety buffers. Berm shape and size is usage dependant. Impact berms are faced with 12 inches to 18 feet of overburden material to cover coarse aggregates and reduce ricochet.

The berm footprint is cleared of vegetation and overburden and loose material is deposited in 1-to-2-foot layers and shaped and compacted into a defined hill with a 2:1 maximum side slope and a flat or slightly sloping (-4 percent) top ranging from a 1-to-10 foot in width. Berms are installed with dozers (CAT D4-D9) or an excavator (CAT 320). Finished berms are vertically track-walked by a dozer then seeded and fertilized.

Bleacher Enclosure: Covered bleachers required for after-action review with units. Bleachers keep rain, snow and sun off Soldiers, but use is less in winter due to cold temps. Typical dimensions are 45 feet by 21 feet with a concrete slab or hardened gravel pad (must be classified fill material) foundation. Steel columns on concrete footers are placed at each corner and center of the 2 longer sides. Metal siding is placed on 3 sides, with the front open. Metal roll-up doors are placed on the back for ventilation and access to underneath bleachers. The roof is metal and sloped at 1:4.5 which includes a 2.25-foot overhang in the front and 3-foot overhang in back. The height of the enclosure at the back is 15 feet and 20 feet at the front.

Bridge Installation: Bridge installation is periodically required to provide stable and safe access to ranges.

Concrete Abutments:

- Concrete must rate 4,000 pounds per square inch (psi) and meet Natural Resource Conservation Service (NRCS) structural concrete specification #31.
- Concrete can be pre-cast or poured in place.
- Each 12-by-6-by-6-foot abutment will contain 4 curtains of #10 steel spaced on 10-inch centers in both directions.
- Steel curtains are to be placed on 14-inch centers with 3 inches of concrete on all sides exposed to the ground.
- Top of abutments are to have 2 inches of concrete between steel curtains and the exposed top surface.
- Six counter sunk lifting eyes, fabricated from half-inch rebar, will be installed in sets of 3 between the inside and outside curtains of steel.
- Two abutments are to be placed side by side 15 feet back from the top of each bank.
- Abutments must set 5 feet below ground surface with 1foot of the abutment above ground.

Gravel Approaches:

- The gravel surfaces will be widened 20 feet to the existing height of the road surface for a length of 60 feet on each side of the bridge. Compact to 95percent.
- Gravel approaches (30-by-5-foot) of compacted pitrun material will be installed from the existing road surface to the 1-foot rise of the bridge abutments. Compact to 95 percent.

Rip-Rap:

- Install non-woven geotextile (18 inch overlap) and bullrock at a depth of 2 feet in marked areas (50 feet upstream and downstream from abutments). Install a 2-by-3-foot cutoff wall on the slope and bottom of the upstream sides.

Building Construction (General Instruction/Warm-up Building): The purpose of these buildings is to provide a place for Soldiers to gather out of the weather for briefings, after action reviews, planning, etc. A large gravel parking area is often needed (150 square feet) along with access if the site is not directly adjacent to a road. Total site disturbance could be up to 1.5 acres, including parking, but is usually in the 1-acre range at most. Water and sewer are not included; outdoor waterless latrines are usually installed nearby. The open floor plan and the flexibility of installation locations will allow for a large number of different utilization scenarios. The typical dimensions are as follows:

Size:	Up to 3,200 square feet
Occupancy:	200
Foundation:	Concrete slab-on-grade with individual spread footings up to 6,000 square feet
Shell:	Structural steel frame with metal siding
Roof:	Un-Insulated Standing Seam Metal Roof (SSMR) system
Doors:	At least 1 large roll-up style door, plus 2 or more man doors spaced around the outer walls
Windows:	None
Interior Finishes:	Metal siding, can be insulated for arctic conditions
HVAC:	None
Lighting:	If the building is needed at a location not connected to the electrical power grid, a generator would also be included
Special Switching:	See Night Operations Lighting paragraph
Receptacles:	General Purpose ground-fault circuit interrupter (GFCI), 120 volt (V), 20 amps (A) duplex receptacles mounted a minimum of 18 inches above the finished floor
Lightning Protection:	Mast-style safe cover for personnel
Misc:	2 10-row aluminum bleachers 15 feet long
Power:	120 V
Communications:	None

Control Tower: Range control towers enable on-site direct visual control of range operations utilizing radio communications with Soldiers being trained. They can also include video feeds from cameras observing the training. In addition, downrange targets can be controlled by operators in the tower. Typical dimensions are as follows:

Size:	248 square feet
Occupancy:	3
Foundation:	Concrete spread footings with grade beam
Shell:	Structural steel frame with insulated metal sandwich panels
Roof:	Insulated SSMR system
Doors:	Insulated hollow metal
Windows:	Aluminum frame with polycarbonate glazing
Interior Finishes:	Metal liner panel

HVAC:	Site adapt
Lighting:	Fluorescent
Special Lighting:	Red lens or red lamps
Lightning Protection:	Mast equipment protection
Telephone:	Standard Voice Cable (optional)
Power:	120/240 V, single phase, 3-wire secondary
Misc:	Built-in work table

The following is an example Technical Specification:

1. ALL STEEL SHALL BE GALVANIZED STEEL.
2. FINISHED FLOOR ELEVATION OF THE BOOTH SHALL BE 35 FEET ABOVE FINISHED GRADE.
3. BOOTH SHALL BE 12 FEET x 12 FEET AND SHALL BE OF WELDED DURASTEEL CONSTRUCTION. ACCESS TO THE BOOTH SHALL BE VIA A GALVANIZED STEEL STAIRCASE.
4. BOOTH SHALL HAVE ONE ENTRANCE, AN INSULATED 36 INCH WIDE METAL (STEEL) HALF GLAZED SWING DOOR, WEATHERSTRIPPED ALL AROUND AND FURNISHED WITH A HASP FOR A PADLOCK ON THE EXTERIOR. LOCKSET SHALL BE HEAVY DUTY AND WILL BE COMPATIBLE WITH BEST .
5. THE BOOTH SHALL HAVE OPERABLE SLIDING WINDOWS ON ALL FOUR SIDES. WINDOWS SHALL BE INSULATED DOUBLE PANE. THE OPERABLE WINDOWS SHALL BE SLIDERS. SLIDERS SHALL BE FITTED WITH THE WINDOW MANUFACTURERS STANDARD LOCKING/ CLOSING MECHANISM TO ENSURE A TIGHT SEAL. GLAZING SHALL BE CLEAR TEMPERED SAFETY GLASS. BALLISTIC RESISTANT GLASS NOT REQUIRED.
6. BOOTH SHALL HAVE A COVERED METAL WALKWAY, 4 FEET WIDE, ON ALL 4 SIDES. COVERED WALKWAY AND COVERED STAIRCASE SHALL NOT BE SUPPORTED BY THE TOWER LEGS. FOUNDATION DESIGN FOR STAIRS BY OTHERS. STEEL USED IN WALKWAY FRAMING AND OPEN GRATING SHALL BE GALVANIZED.
7. BOOTH ROOF SHALL BE A HOT, SHED ROOF AND SHALL BE EITHER A STANDING SEAM METAL ROOF OR THROUGH FASTENERS ; OVER EPDM SINGLE PLY ROOFING MEMBRANE; OVER RIGID BOARD R-19 FIBERGLASS INSULATION; OVER METAL ROOF DECK OVER APPROPRIATE ROOF FRAMING. THE ROOF SHALL SLOPE TO DRAIN. MINIMUM SLOPE SHALL BE 1 INCH PER FOOT. MINIMUM OVERHANG ON 3 SIDES SHALL BE A MINIMUM 3 INCHES FOR DRAINING RAINWATER. OVERHANG ON THE BACKSIDE SHALL BE A MINIMUM OF 4 FEET. METAL ROOF COLOR SHALL BE MANUFACTURERS STANDARD AND SHALL BE SELECTED AT A LATER DATE.
8. FLOOR CONSTRUCTION SHALL BE THE MANUFACTURERS STANDARD; 2 LAYERS OF ¾ INCH THICK O.S.B. ON A 12 GAUGE STEEL DECK. THE FLOOR INSULATION BETWEEN THE OSB AND THE STEEL DECK SHALL PROVIDE AN R VALUE OF R 17. STANDARD TREADBRITE ALUMINUM FLOOR WILL BE FURNISHED.
9. WALL CONSTRUCTION SHALL BE THE MANUFACTURERS STANDARD, WITH AN R 10 INSULATION. EXTERIOR SIDING SHALL BE STEEL. COLOR SHALL BE MANUFACTURERS STANDARD AND SHALL BE SELECTED AT A LATER DATE.
10. STRUCTURAL DESIGN CRITERIA SHOULD BE AS FOLLOWS. THE LEGS, THE BOOTH, AND THE WALKWAY WILL BE DESIGNED IN ACCORDANCE WITH THE LATEST EDITION OF THE IBC. THERE ARE 3 LOCATIONS WITHIN ALASKA WHERE THESE TOWERS COULD POSSIBLY

BE ERECTED AND OPERATED NOW AND IN FUTURE PROCUREMENTS. (NOTE THAT THIS PROJECT IS FOR 1 TOWER TO BE CONSTRUCTED AT FORT RICHARDSON, ALASKA.) THE CRITERIA LISTED BELOW IS A COMBINATION OF THE WORST CASE CONDITIONS AT EACH OF THE 3 LOCATIONS. (THESE LOCATIONS ARE FORT RICHARDSON/ ANCHORAGE, ALASKA…..FORT WAINWRIGHT/ FAIRBANKS, ALASKA….AND FORT GREELY/DONNELLY TRAINING AREA/ BIG DELTA ALASKA.) GROUND SNOW LOAD…60. psf., EXPOSURE FACTOR FOR SNOW LOAD 0.9, THERMAL FACTOR 1.2 for an unheated building. USE 110. mph FOR 3 SECOND GUST WIND SPEED. FOR SEISMIC DESIGN, USE THE ANCHORAGE CRITERIA WITH SITE CLASS E.

11. SCALED AND STAMPED DRAWINGS SHALL BE PROVIDED. FOUNDATION DESIGN WILL BE BY OTHERS. SCALED AND STAMPED DRAWINGS AND CALCULATIONS SHALL INCLUDE THE INFORMATION NECESSARY (REACTIONS/ FORCES) FOR OTHERS TO DESIGN AN APPROPRIATE FOUNDATION FOR THE BOOTH AND THE STAIRS/WALKWAY BASED UPON SITE/ SOIL CONDITIONS. (SOIL CONDITIONS AT FORT RICHARDSON ARE GENERALLY CLASSIFIED AS GP, OR GW.)

12. ADDITIONAL ITEMS TO BE INCLUDED ARE 144 INCH x 22 INCH PLASTIC LAMINATE FRONT COUNTER, 100 AMPERE LOAD CENTER WITH MAIN BREAKER, , 115v DUPLEX OUTLET AND WALL SWITCH, T8 FLUORESCENT LIGHT FIXTURE, UL LABEL FOR NEC COMPLIANCE, AND ONE 4800W (16,380 BTU) WALL MOUNTED HEATER.
13. FOB DESTINATIONS WILL BE AS FOLLOWS, (2) TO FORT WAINWRIGHT/FAIRBANKS, ALASKA AND (2) TO FORT GREELY/DELTA JUNCTION, ALASKA.
14. ELECTRICAL CONSTRUCTION SHALL COMPLY WITH THE LATEST EDITION OF THE NEC.

OBSERVATION TOWER INSTALLATION/ERECTION WILL BE BY OTHERS. EXTERIOR ELECTRICAL WORK (IE METER BASE, DISCONNECT ETC.) BY OTHERS.

Covered Hall: The structure provides an area for troop messing at the range site. This facility is also used as a weapons cleaning facility by the troops using the range.

Size:	Up to 700 square feet
Occupancy:	62 or 120 (Training and Doctrine Command [TRADOC] Ranges) down edges
Foundation:	Concrete slab-on-grade with turned
Shell:	None
Roof:	SSMR on wood or steel trusses
Doors:	None
Windows:	None
HVAC:	None

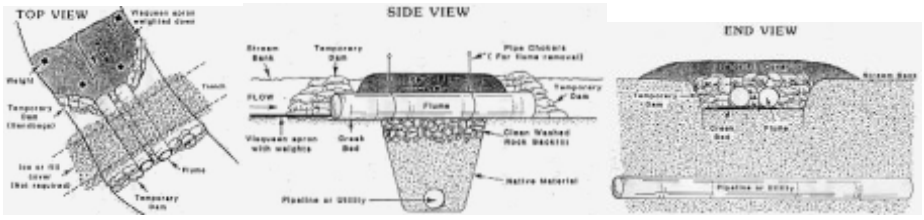
Lighting:	Main breaker power distribution panel that has separate circuits for the lighting and convenience outlets
Grounding:	Grounding is required for safety. Building electrical system grounding will consist of 1 or more ground rods connected to the service panel in accordance with National Fire Protection Association 70 and all other applicable codes
Special Lighting:	Red Lens or Red lamps
Night Operations Lighting:	To prevent interference with specialized equipment used during night operations, red lenses or red lamps must be provided in addition to standard lighting if the following conditions exist
Lightning Protection:	Mast-style system
Receptacles:	GFCI weatherproof, 120V, 20A duplex mounted e finished floor
Power:	120/240V, Single Phase, 3-wire Secondary Receptacles: GFCI weatherproof, 120V, 20A duplex mounted e finished floor
Misc:	Stainless steel tables

Culvert Installation: Culverts are used to maintain and facilitate natural drainage patterns and are often associated with trails and roads. Typical types of culverts used include:

Channel Bypass: This technique involves creating a temporary channel to divert the current or flow of water within the work area for dewatering purposes.

Temporary Flumes: This technique involves temporary diversion of flows within the work area for dewatering purposes.

a. Ductile iron pipe(s) are placed in the stream
b. The entire stream flow is diverted through the pipes by means of temporary dams composed of sandbags, jersey barriers and visqueen, or any other means which does not expose erodible fill to stream flow. (Excavation and berming of native streambed material is not an acceptable technique for diverting streams).
c. Place a temporary dam at the downstream end of the flume to prevent backflow and to totally isolate the work area.
d. Install a utility line or pipeline by digging under the flume and pulling the line under the flume.
e. Water from the trench should not be pumped directly into the stream, but rather to a settling basin or an area where it can be naturally filtered, such as a wetland, before it reenters the stream.
f. Sumps can also be dug adjacent to the trench to dewater the trench.
g. After the utility line or pipeline is installed, the trench should be backfilled, and the top 2 feet should be filled with clean, washed 1-to-6-inch rock.
h. The flume is then removed along with all other material foreign to the stream.
i. Stream banks are restored to pre-project contours and revegetated.



Fluming enables a utility or pipeline trench to be isolated from the stream flow, which reduces stream pollution. Vehicular access across a stream is also provided. Flumes (temporary pipes) can be used in streams up to 100 cubic feet per second (cfs). Timing should coincide with the low flow period, unless sensitive life stages or the presence of ice are more critical. Fluming procedures may vary according to site-specific conditions. Pipes must be large and strong enough to handle the maximum flow of the streams. Except for the smallest streams, corrugated metal pipes (cmp) must not be used because they will not support the weight of the water. Ductile iron or other heavy metal pipes must be used. The length of the flume is dependent on the stability of the trench, the more unstable the walls or deeper the trench, the longer the pipes. Flumes can be used in the winter, when ice can be placed on top, or in the summer when clean fill can be placed on top, but cover is not required.

Sheet Pile: Sheet piling is a manufactured construction product with a mechanical connection "interlock" at both ends of the section. These mechanical connections interlock with one another to form a continuous wall of sheeting. Sheet pile applications are typically designed to create a rigid barrier for earth and water, while resisting the lateral pressures of those bending forces. The shape or geometry of a section lends to the structural strength. In addition, the soil in which the section is driven has numerous mechanical properties that can affect the performance. Sheet piling is classified in two construction applications, permanent and temporary. A permanent application is "stay-in-place" where the sheetpile wall is driven and remains in the ground. A temporary application provides access and safety for construction in a confined area. Once the work is completed, the sheets are removed.

Sandbag Walls: These are temporary walls that are created by filling sandbags with sand or other earth material in order to create a barrier or wall to divert the stream flow for dewatering purposes.

Water Filled Coffer Dams: These are temporary dewatering devices that are filled with water and strategically placed within the current to divert the flow of water away from the work area.

Pumping Stream Flow: This technique involved pumping water around the work area during the construction phase.

Jersey Barriers: These are pre-cast cement barriers that can be temporarily emplaced in the current to divert the flow of water around the work area.

*Wetland or Drainage Culverts***:** This corrugated metal pipe (culvert) is installed in areas where drainage requires passage under a road or access surface and are associated with ditching and other hydraulic features that enhance or maintain area hydrology.

Size: Corrugated metal pipe (CMP) is installed in a variety of lengths and diameters, ranging from 10-to-40-foot length and variable diameters. Long runs of CMP (+30 feet) require the use of connecting bands. Generally, the width of the stream will designate the diameter of the culvert and if a bridge would be more appropriate than a culvert. CMPs footprints are excavated approximately 3-to-4-foot wide and 4-to-6 inches below sub-base elevation and backfilled with D1 (Road Surfacing Aggregate) or equivalent bedding material. CMPs are installed with pipe inverts at road or pad sub-base elevation with a slight (-2 percent) slope from inlet to outlet. CMPs are covered with a minimum of 1 foot of compacted fill material.

CMPs are installed with and without ends, depending on flow rates and soil stability. Flared ends are installed in areas prone to sloughing, erosive flows and unstable soils. Flared ends are typically set on a constructed gravel inlets and spillways to prevent erosion. Road and pad CMP installations are marked with carsonite reflective posts at both ends.

*"Fish Friendly" Culverts***:** This is an arched, corrugated, flat bottom metal pipe (culvert) that is installed in a variety of lengths and diameters. These culverts are designed to be emplaced in streams under a road or access surface to allow passage of fish. The flat bottoms of these culverts create a more natural velocity flow of water that is better suited for small fish fry traveling up or down the streambed. Culverts installed in fish bearing streams should have a width that is at least 120 percent of the ordinary high water width of the stream and should be bedded 20 percent of the diameter. Installed culverts should follow, as best possible, the natural contour of the stream. Sufficient depth of flow and appropriate water velocities for fish passage should be provided in

culvert installations. A minimum of 8 inches of depth should be maintained. Depending upon the grade of the culvert and/or its length, it may be necessary to construct a downstream step pool or install baffles within the culvert to achieve the 8-inch minimum depth throughout the culvert. Culverts should be installed during low flow periods whenever possible. Where significant flow is present, generally acceptable techniques to isolate the construction site from stream flow include, but are not limited to channel bypasses, temporary flumes, sheet pile or sandbag walls, water filled coffer dams, or pumping the stream flow around the work site.

Fencing: Guard rails are installed at bridge crossings, roads will adverse shoulder slopes and along water courses. Guard rails are installed with a backhoe (Case 235) and include 8-inch square posts set 4 feet into the ground with D1 gravel backfill

Gates, fencing and posts are used to close down an area for the purposes of rehabilitating or repairing an area. The intent is to keep military training and recreationalists out of the area while it is being rehabilitated. Sometime these are used in conjunction with one another, other times posts are use in the middle of a trail or road and act as barriers to entry.

Firing Lane Creation & Maintenance: Firing lanes are the cleared areas between the firing line and the targets down range. The width depends on the weapons and ammunition that will be fired on that range. They are defined by the firing point or position at the base line (firing line) and the targets at the down range end. Lanes are created adjacent to each other, usually without anything in between them. In other words, in a forested environment, the entire area will be cleared between the left and right limits of the range, and the number of lanes will be determined by the number of firing positions and targets. Range designs are usually flexible enough to accommodate local throughput needs, terrain, surface danger zone (SDZ) requirements and environmental considerations. Firing lanes need to be flat enough to not obstruct a direct view of the target (usually no more than +/- 1 percent). The preferred vegetation is grasses and forbs that can be easily maintained by mowing. Removal of woody vegetation is key. Topsoil may need to be added to facilitate growth of grasses.

Firing Line Creation & Maintenance: Firing lines are the base line for a firing range and consist of firing points or positions. Depending on the purpose of the range, a firing line can be defined by a small berm, foxholes, sandbags, or bench rests, which can be open or covered (pole-barn style) for protection from the elements. Standard construction methods would be employed.

Linear fixed positions used by Soldiers to safely engage down range targetry. Firing lines are typically created by building a gravel or earthen berm, creating a gravel hardstand, or by leveling and re-seeding an area. Firing lines do not generally encompass more than 2 acres in size. Firing lines can have up to 20 individual points and be up to 1,500 feet long.

To reduce construction costs and land disturbance, bermed firing lines are typically constructed on ranges greater than 300 feet in length (e.g., Multi Purpose Machine Gun, Modified Record Fire, and Known Distance Ranges). Soldiers can utilize bermed firing lines by firing from the top of the berm or from walk-in timber or concrete fox holes which are open to the back. The width of berms with a recommended 2:1 side slope and minimum 15-foot top surface is approximately 50 feet wide at the base. Sometimes a gravel access road roughly 18 feet with side slope is constructed at the base of the berm for construction and maintenance. Metal or wooden stairways may be established at each firing location to access the top of the berm.

Firing lines can also be created by constructing a gravel hardstand approximately 24 feet wide at the base. In essence, the firing line is merely an extension of a gravel road used to access the range. Sometimes firing lines are simply created by using heavy equipment to level and reseed an area to provide a flat and relatively soft platform from which to perform firing operations.

Firing line maintenance includes period mowing, revegetation, recontouring, and adding addition earth or gravel material. Concrete and wooded supported walk-in fox holes may need to be replaced. Sometimes firing line berms will need to be resurfaced and widened.

These projects will improve access, aid in snow removal, and control erosion by improving drainage through grading, establishing ditches, installing culverts, low water crossing, geotextile, and fill material and confining activities to hardened surfaces.

Forward Operating Base (FOB) Creation and Maintenance: In its most basic form, a FOB consists of a ring of barbed wire around a position with a fortified entry control point (ECP). More advanced FOBs would include an assembly of earthen dams, concrete barriers, gates, watchtowers, bunkers and other force protection infrastructure. The project will expand the existing hardened areas and provide permanent support structures such as living quarters, mess areas, latrines and maintenance areas. The area will be fenced and power and communications will be provided. Work will include, clearing vegetation, establishing harden pads, roads and berms, repair of existing building to make them structural sound and safe, installation of latrines, power, communication lines fencing and construction of support buildings. A typical FOB will encompass no more than 7 acres. These projects will improve access, snow removal, and control erosion by improving drainage through grading, establishing ditches, installing culverts, low water crossing, geotextile, and fill material and confining activities to hardened surfaces.

Grading/Shaping: Land grading involves reshaping the ground surface to planned grades as determined by an engineering survey, evaluation, and layout. Land grading provides more suitable topography for buildings, facilities, and other land uses and helps to control surface runoff, soil erosion, and sedimentation during and after construction.

Land grading is applicable to sites with uneven or steep topography or easily erodible soils, because it stabilizes slopes and decreases runoff velocity. Grading activities should maintain existing drainage patterns as much as possible.

Before grading activities begin, decisions must be made regarding the steepness of cut-and-fill slopes and how the slopes will be protected from runoff, stabilized and maintained. A grading plan would be prepared that establishes which areas of the site will be graded, how drainage patterns will be directed, and how runoff velocities will affect receiving waters. The grading plan also includes information regarding when earthwork will start and stop, establishes the degree and length of finished slopes, and dictates where and how excess material will be disposed of (or where borrow materials will be obtained if needed). Berms, diversions, and other storm water practices that require excavation and filling also should be incorporated into the grading plan.

A low-impact development best management practice that can be incorporated into a grading plan is site fingerprinting, which involves clearing and grading only those areas necessary for building activities and equipment traffic. Maintaining undisturbed temporary or permanent buffer zones in the grading operation provides a low-cost sediment control measure that will help reduce runoff and off-site sedimentation. The lowest elevation of the site should remain undisturbed to provide a protected storm water outlet before storm drains or other construction outlets are installed.

Improper grading practices that disrupt natural storm water patterns might lead to poor drainage, high runoff velocities, and increased peak flows during storm events. Clearing and grading of the entire site without vegetated buffers promotes off-site transport of sediments and other pollutants. The grading plan must be designed with erosion and sediment control and storm water management goals in mind; grading crews must be carefully supervised to ensure that the plan is implemented as intended.

All graded areas and supporting erosion and sediment control practices would be periodically checked, especially after heavy rainfall. All sediment should be removed from diversions or other storm water conveyances promptly. If washouts or breaks occur, they should be repaired immediately. Prompt maintenance of small-scale eroded areas is essential to prevent these areas from becoming significant gullies.

Land grading is an effective means of reducing steep slopes and stabilizing highly erodible soils when properly implemented with storm water management and erosion and sediment control practices. Land grading is not effective when drainage patterns are altered or when vegetated areas on the perimeter of the site are destroyed.

Land grading is practiced at virtually all construction sites. Additional site planning to incorporate storm water and erosion and sediment controls in the grading plan can require several hours of planning by a certified engineer or landscape architect. Extra time might be required to excavate diversions and construct berms, and fill materials might be needed to build up low-lying areas or fill depressions.

Gravel Pits: Pits sites are typically between 0.5 to 4.9 acres in size and require access upgrades. The pit extraction of gravel material is categorized into three activities: vertical, horizontal and pond. Pit boundaries are established and include extraction areas, overburden dumps and stockpile areas. Pits are developed to maintain adequate

drainage through the strategic placement of berms, ditches and culverts. In addition, pits are developed and operated to provide for efficient and effective reclamation.

Approximately 5,000-12,000 cubic yards (cys) of gravel material are extracted from project specific pits, such as hilltops and small (>0.5 acre) gravel deposits. These pits remain in operation during a 1-2 year project cycle and are typically located adjacent to improved roads. Large material sites (<2 acres) are developed to provide a minimum of 100,000 cy of material and are typically located off of a hardened 20-foot wide single lane spur road with a minimum of 4, 10-foot-wide by 50-foot-long turn outs, 2 on each side of road spaced evenly along entire road length. The average footprint of a large material pit site is 4 – 4.9 acres.

The two types of gravel material sites used on U.S. Army Alaska (USARAK) land are formal pits and meandering side barrow. These material sites are typically developed within 3 miles of proposed construction activity sites and are chosen based on soils maps, ground truthing and sample testing. Sample tests include soil and aggregate typing, sieve analysis and compaction proctors. Overburden should be stockpiled and kept separated from mining activities as it can be a valuable tool when used for reclamation once the material site has been exhausted.

Once the overburden is removed and piled, gravel aggregate is excavated by three methods. The most common method is large dozers (CAT D7 – D9) pushing at least 12-inch layers of gravel material into loose piles. The second method involves tracked excavators (CAT 320/245) that dig down at least 20 feet into gravel deposit and loose pile the material on the surface. The third method of gravel excavation requires the use of scrapers (CAT 627/631). Scrapers peel 6-inch layers of gravel material into the scraper box and then spread the material on a large sloping stockpile or directly at the project site. Stockpiles typically do not exceed 30 feet in height. Stockpiled material is loaded into end dumps and semi rock trailers (i.e., belly and side dumps) by loaders (CAT 266/288) or excavators (CAT 320/245) and transported to the project site.

The following are example extraction methods:

Vertical Extraction: Vertical extraction requires the exposure of gravel aggregates by removing and stockpiling surface vegetation and overburden, which is typically 6-36 inches in depth and comprised of organics and silts. This activity is accomplished with a medium to large size, CAT D7 - D9 or equivalent, dozer (crawler tractor) with a straight "bull" blade. The overburden and vegetation material is rolled to the outer edges of the pit footprint and piled to an average height of 10-15 feet. Overburden piles are placed and notched to facilitate adequate drainage.

Horizontal Extraction: Horizontal extraction requires the exposure of hillside gravel aggregates by removing and stockpiling surface vegetation and overburden, which is typically 3-24 inches in depth and comprised of organics and silts. This activity is accomplished with a medium to large size, CAT D6 - D9 or equivalent, crawler tractor (dozer) with a straight "bull" blade. The hillside overburden and vegetation material is push to the outer sides of the pit. Care is taken to avoid overburden deposits uphill and downhill of the excavation activity. A 100-by-50-foot (minimum) pad at the base of the hill is also cleared of overburden and leveled to provide a pad for stockpiling and loading activities. Overburden piles average a height of 8-10 feet and are placed to facilitate adequate drainage.

Pond Extraction: Pond extraction of gravel materials requires the use of a dragline. This equipment utilizes 0.75- 3cy cabled buckets to dredge gravel material 15-40 feet deep from the pond bank and bed. A 100-by-100-foot pad is hardened adjacent to the pond and the dragline casts dredged material into loose stockpiles on the pad. Stockpiles can reach 30 feet in height.

The gravel materials excavated from pit operations can used "as is" or modified depending on aggregate size and percentages. Gravels are categorized as pitrun or side barrow:

Pitrun: The most commonly used gravel material on USARAK lands is excavated gravel material that contains the appropriate aggregate sizes and percentages required for hardening activities and do not require modification or mixing. Pitrun quality is variable and may contain large aggregates or excessive fines. Pitrun is used directly from excavated stockpiles and is typically installed as a base and capping material for roads and pads that do not require a uniform finished surface.

Side Barrow: Side barrow material is typically associated with road upgrade and meander within an established road footprint. Gravel materials are excavated along the sides of road footprints in areas where appropriate gravel material deposits exist. Side barrow activities result in wide concave ditches.

Side barrow extraction requires the removal and stockpiling of overburden within a 10 feet to 20 feet wide section of ground immediately adjacent to a road base. This is accomplished with a backhoe (Case 235) or excavator (CAT 320). The bucket is extended to the outside reach of the side barrow area and a 6 inch layer of material scraped inward to load the bucket. Overburden layers are loosely piled outside of the clearing limits. Exposed gravel material is excavated and deposited on the road surface. Once the deposit has been depleted or sufficient gravel has been installed in the immediate section of road, the overburden is spread on top of the excavated area. The overburden is shaped, smoothed and compacted into a wide concave ditch to provide for effective site drainage.

Side barrow deposits are also loaded into end dumps and rock trailers for installation outside of the reach of the backhoe or excavator.

Pits that are no longer in service are reclaimed by shaping and smoothing exposed areas and spreading and compacting stockpiled overburden will be reclaimed. Slopes within a reclaimed pit do not exceed 2:1 and are track walked (parallel to the pit) for re-seeding and/or fertilizing.

Hardened Target Creation & Maintenance: Standard in place target (SIT) emplacement utilizes a concrete emplacement with a geotextile/gravel drainage layer, a treated railroad tie front wall protection, and a protective earthen berm. Low rounds are normally captured by the compacted earthen berm. All SIT emplacements use permanent electrical and communication boxes mounted on the front wall of the emplacement; these boxes shall be mounted no higher than 2 inches from the top of the emplacement wall. This mounting height should protect them from rounds that might skim over the top lip of the emplacement. The target mechanism will be located on the floor of the concrete emplacement as far forward as practical to minimize its potential to be hit by a low round, yet still allow access to the electrical/data boxes. SITs can be placed above or below grade.

*Below-Grade Emplacement***:** The utilization of below-grade emplacements is optimal. They blend with the natural terrain, and do not present an anthill profile to the soldier/firer. Unfortunately, below-grade emplacements present several design issues:

a. Drainage: On flat or down-slope emplacements, a lower elevation to drain the emplacement must be available nearby; on up-slope emplacements, provisions must be made to prevent natural slope drainage from entering the emplacement. It is difficult with below-grade emplacements to achieve positive drainage.

b. Unexploded Ordnance (UXO): Disturbance potential increases with the depth of excavation; while an above-grade emplacement might only require disturbing the surface to 6 inches below natural grade, a below-grade emplacement will require approximately 3.3 feet of excavation.

c. Line-of-Sight (LOS): LOS between the soldier/firer and the target emplacement may not be possible utilizing the natural terrain.

d. Other Debris: Below-grade emplacements will also gather sand, dirt, trash, and any windblown objects which can cause maintenance problems. Some installations have installed covers to help keep debris from accumulating in the emplacement. Coordinate with the installation Range Office for adjustments to the emplacement to facilitate debris accumulation prevention.

Above-Grade Emplacement: Above-grade emplacements are more common in range construction due to their ease of drainage, obtaining line-of-sight, and small disturbance to the existing grade. The disadvantage of an above-ground emplacement is the target emplacement profile easily recognized by the soldier/firer.

The following are standard design criteria for hardened targets:

Wall Height: The minimum front wall height is 18 inches. The front wall must be high enough to protect the targetry equipment while still allowing a minimum of 90 percent of the target to be visible from the firing

position. The minimum wall height of 18 inches provides target equipment protection up to a 15 degree angle of fire (the target arms and clamp are no protected above 10 degrees). It also allows 90 percent visibility down to -2 degree angle of fire.

Berm Criteria: Recommended widths for protective berms of SIT emplacements based upon weapon type, soil compactive effort, and the in-place soil density. Historical experience shows that, under normal usage, well-compacted berms designed with the recommended widths require maintenance on 6-month cycles.

Electrical/Communications: All conduits and/or cables should enter and exit from the side or rear of the emplacement. This cable routing helps to minimize damage to the cables from range operations and maintenance crews performing berm repair. All boxes and receptacles on the front wall of the emplacement should be mounted no higher than 2 inches from the top of the emplacement wall; this protects the boxes and receptacles from low rounds that might skim the top of the emplacement wall.

Grounding: Grounding is required for safety at each downrange equipment location. A 3/4 inch by 10-foot copper-clad steel ground rod will be driven to a depth of 1 foot below finished grade at each equipment location. Equipment will be connected to the emplacement's single ground rod with a #6 American Wire Gauge (AWG) bare copper conductor and exothermically welded connections. All data cable armor or shields are bonded to the ground bar in the target deployment port. The design will leave a 6-inch coil of #6 AWG bare copper that will be used to ground the target mechanism.

Target Outlets: All target power and target data receptacles shall be water-proof regardless of whether the outlet is in use.

Maintenance involves: mowing/brush-hogging when the nearby vegetation gets tall enough to interfere with operations (over 5-6 feet tall), pot-hole repair for the hardened areas, placement of additional classified material, and snow removal.

Hardstands Creation and Maintenance: Hardstands are created to provide a stable ground surface for Soldier training activities and allow for sustainable repeated use. They are also periodically created to allow for suitable staging areas of equipment. The following activities are commonly associated with hardstands:

Bivouac Area Creation & Maintenance: Bivouac areas are typically a group of hardened pads interconnected by an access trail. These can be large (70 acres) or small (2-5 acres) and can be hardened with gravel (more typical) or wood chips from the vegetation clearing operation. Site design and pad size is determined by the type of unit expected to use the site. The most often used design is a one-way loop road with spurs and pads radiating off the center road.

Typical bivouac construction involves clearing of vegetation for pads and access, leaving perimeter buffers and islands between pads. Standard gravel hardening methods includes: cut and fill site for a level base; lay out geo-textile material or utilize a layer of wood chips; add pitrun gravel to an average depth of 18 inches, compact in 6 inch lifts to 95 percent; maintain a slight slope (-2 percent) for drainage off the pads; and use a 2:1 shoulder. If the bivouac is designed for a small, platoon-sized area (2 to 5 acres), then the access loop/trail can be stabilized with just gravel and the tent pads and foot paths stabilized with wood chips. The largest bivouac area designs typically include waterless latrines.

Firing Points Creation & Maintenance: A firing point can be just a surveyed location along an existing road, an area cleared of vegetation that can be dug up (digging in the artillery), or a hardened pad between 1-18 acres on an access trail, typically with a loop for turning around. They can be a series of smaller pads on the access trail with cleared areas for digging in adjacent to the pads. Often, the artillery is towed and any access trails/turn-around need to be large enough to accommodate vehicle-trailer combos.

Construction of firing points involve: standard site preparation, including vegetation clearing, grading/shaping, filling with pitrun gravel, and contouring to specified crown slopes, etc. Maintenance also involves mowing/brush-hogging when the nearby vegetation gets tall enough to interfere with firing operations (over 5-6 feet tall).

Staging Areas: These are typically large hardened areas created specifically for units to prepare for convoy. All the vehicles are brought to the staging area and lined up in the proper order. They can be 5-10 acres.

Typical hardstand maintenance includes: remove damaged trees in danger of falling, keep brush mowed back from the edges, grade out any ruts or potholes that develop, add additional classified material, and snow removal.

Improvised Explosive Device Defeat Lane: Improvised Explosive Device Defeat Lanes improve and create new gravel roads, traffic circles, and install gravel pads to support training scenarios within USARAK training areas. Road and pad improvements facilitate placement of training aids such as plywood villages, guard rails, culverts, and pedestrian overpasses to support non-live fire training. This type of project mostly consists of expanding existing gravel roads and creating short spur offshoots. They are typically around 10 acres.

Land Clearing & Vegetation: Tree clearing is conducted by hand and machine. Trees are removed within a specific area and cut to length and piled for personal firewood harvest; piled and burned; chipped and spread out; or buried on site.

Hand Thinning and Clearing: Hand removal is individual tree specific and results in limited residual tree damage. Trees are thinned to a determine stem per acre specification. Hand crews use chain saws and axes to remove trees. Hand thinning and clearing operations are conducted in hazardous fuel reduction and maneuver corridor projects. Hand thinning is utilized in areas with unfrozen hydric soils. The preservation of natural vegetation (existing trees, vines, brushes, and grasses) provides natural buffer zones. By preserving stabilized areas, it minimizes erosion potential, protects water quality, and provides aesthetic benefits. This practice is used as a permanent control measure. This technique is applicable to all types of sites. Areas where preserving vegetation can be particularly beneficial are floodplains, wetlands, stream banks, steep slopes, and other areas where erosion controls would be difficult to establish, install, or maintain

Mechanical Thinning and Clearing: Mechanical removal is conducted with a feller buncher (cut), an excavator (CAT 320) with a thumb attachment (pull) or a hydro-axe (grind). Specific areas of trees are removed by cutting, grinding or pulling. Mechanical clearing typically involves large areas and wide spacings. Mechanical thinning operations are conducted in hazardous fuel reduction, maneuver corridor and training facility line of sight projects.

Trees are typically cut, ground or sheared to ground level with minimal to moderate intrusion into mineral soil. Some tree thinning operations require the use of a dozer, which can results in the removal of the root balls and associated soil. Most mechanical clearing operations are conducted on frozen soil conditions. When clearing or cutting near waterbodies it is necessary to maintain a riparian buffer zone if possible.

The following are various mechanical clearing methods:

a. Land Clearing & Vegetation (Shear Blade): Shear blades (Rome KG) are fitted to the front of large dozers (CAT D8 or larger) and consist of a curved face with a flat cutting edge that rides on the ground surface. Shearblades are used to cut off trees and vegetation at the ground surface in a spiral pattern during frozen soil conditions. Sheared material is rolled into windrows. Shearblades allow for effective stem and trunk cutting with minimal root ball and soil disturbance. Shearbladed material can be left to decompose or piled and burned. Shearblading is performed on hazardous fuel reduction, fire break and wildlife food plot projects.

b. Land Clearing & Vegetation (Straight Blade): Straight blades are fitted to the front of small to large size dozers (CAT D4-D9) and are used to shear trees and surface organics into piles during clearing operations. Straight blades are used on frozen soil conditions when soil intrusion is an issue. Straight blades are also used for material piling during burning operations.

c. Land Clearing & Vegetation (Hydro-axe)

   i. *Masticating:* A masticating head hydro-axe (Fecon) is used to grind whole trees and woody vegetation into small chip-like residue. Masticating heads are rotating cylinders with offset rows of teeth and can

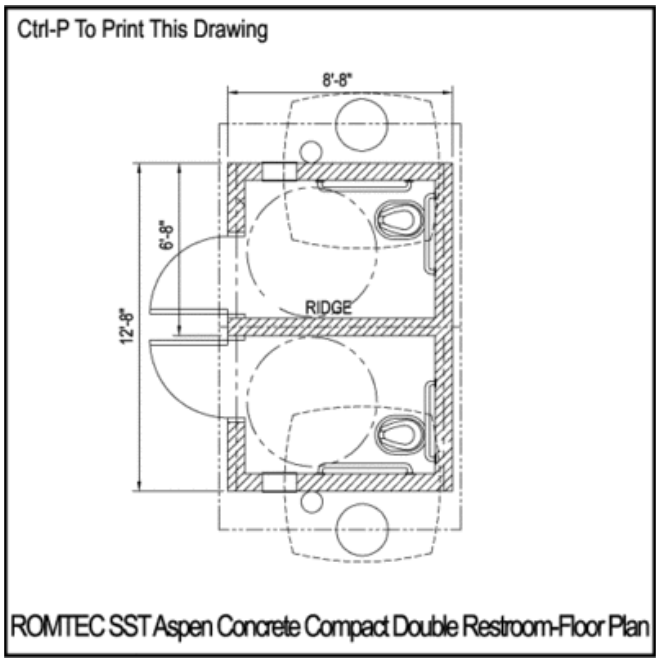
be used to grind to ground surface or deeper. Sub-surface grinding incorporates wood material into the soil. Masticating hydro-axe work is performed during frozen and non-frozen soil conditions, depending on soil type and ground moisture. Masticating hydro-axes are used in hazardous fuel reduction, fire break, line of sight and roadside clearing projects.

ii. *Flail:* A flail head hydro-axe is an attachment on an excavator (CAT 320) body and is used to grind whole trees and woody vegetation into large chip residue. Flail heads are rotating blades attached to an articulating arm and are used to grind to ground surface level. Flail head hydro-axe work is performed during frozen and non-frozen soil conditions, depending on soil type and ground moisture. Flail head hydro-axes are used in hazardous fuel reduction, fire break, line of sight and roadside clearing projects.

Latrine: The latrine with an aerated vault provides restroom facilities for Soldiers. The latrine will accommodate a training unit of up to 190 men and 35 women based on Occupational Safety and Health Administration (OSHA) standards. An aerated vault is constructed beneath the building.

The following is an example Technical Specification:

Romtec Model 1016 | SST® Aspen Compact Double Restroom
DESCRIPTION:
12'-8" x 8'-8" floor plan.
Waterless toilet facility meets all ADA accessibility and ANSI requirements.



FEATURES: SST® odor-free vent system; Two restrooms: 5'-4" x 7'4" interior; Reinforced concrete foundation/slab; Reinforced CMU walls, 8" thick; Walls filled solid with concrete; Brown or gray exterior wall color; Split-face or smooth concrete exterior; Prefab. steel-frame insulated roof; 4/12 roof pitch, vaulted ceiling; Choice of metal or shingle roofing; Choice of roofing colors; Graffiti-proof FRP interior finish; Heavy steel doors and hardware; Heavy Lexan windows and frames; Kick-proof steel louvered wall vents; Stainless steel grab bars, 36" & 42"; 12" diam. polyethylene vent pipes; 24" diam. cleanouts for pump access; Two 18" ADA toilet risers with seat/lid; Two 1000 gallon underground vaults.

SIMILAR MODELS: Model 1001 - SST Original Single; Model 1002 - SST Traditional Single; Model 1011 - SST Aspen Single; Model 1006 - SST Traditional Double; Model 1012 - SST Aspen Double ; Model 1013 - SST Aspen Stretch Double w/Storage; Model 1016 - SST Aspen Compact Double; Model 1017 - SST Aspen Compact Double w/Storage; Model 1018 - SST Aspen Pioneer Double w/Covered Entry; Model 1019 - SST Aspen Pioneer Double w/Storage & Covered Entry; Model 1014 - SST Aspen Stretch Triple; Model 1015 - SST Aspen Stretch Quattro w/Storage.

Mowing: Mowing is performed on areas with woody vegetation less than 2 inches in diameter. Areas are mowed with a tractor pulled brush mower. Mowing allows for residue to remain on site and perform as a mulch layer. Mowing is performed on roadside clearing, drop zone, helicopter landing zone and assault strip management and wildlife food plot projects. Mowing is typically conducted on an annual to bi-annual rotation cycle.

Observation Points Creation & Maintenance: Observation points are location from which to observe the geographic impact of mortar and artillery rounds and can also serve as the location from which mortar and artillery

rounds are fired. They require a cleared area roughly 0.5 – 1 acre in size and are usually road accessible and often hardened with gravel to support vehicular traffic. Some observation points are simply small cleared areas roughly 0.25 acres in size that provide a good line of site to an area of mortar/artillery round impact. Such rudimentary observation points will have a foot trail for access and a small amount of trees cleared to facilitate movement and line of site to the impact area. Observation points include improvements to access and control erosion by improving drainage through grading, establishing ditches, installing culverts, low water crossing, geotextile, and fill material and confining activities to hardened surfaces.

Maintenance of the observation points will consist of repairing and replacing the existing erosion control structures and adding additional erosion control structures where necessary to control erosion, regrading of gravel surfaces and adding additional classified material, mechanical and hand clearing of vegetation around the observation point to maintain line of site and snow removal.

Observation points also sometimes have small heated buildings connected to the power grid that have large windows for observing. These are usually only 1-room 20-by-20 feet at most.

Pit Toilets Creation and Maintenance: Also called waterless latrines. The preferred plan is to purchase pre-fabricated units, such as Romtec SST®. These are installed over a concrete vault and cover a footprint of about 10 square feet. Depending on the expected usage, more than one can be installed adjacent to each other. Maintenance required: cleaning the interior, stocking with paper and hand sanitizer, clearing snow during winter. Also, the vaults are pumped out during the summer season on an as-needed basis by a septic contractor, who can provide some of the other cleaning and resupply services as well. Pumping is not possible during the winter.

Prescribed Fire: Prescribed burning consists of the following procedures. A burn plan is prepared and detailed parameters are identified for when burning can take place. When the burn prescription window is open, crews assemble at the burn unit. The edge of the burn unit is light using hand lighting or aerial lighting techniques. The units are surrounded by roads, trails or changes in vegetation types and these are used to burn off of. Next the interior of the unit is ignited using hand lighting or aerial lighting techniques. The interior is light using systematic girding patterns. After the entire unit is light, the mop up process starts. Mop up consists of extinguishing all hot spots within a specified distance from the burn perimeter. During mop up burning trees and shrubs are cut down and extinguished. Smoldering sites are dug up with hand tools and extinguished. Water is applied on an as needed basis during mop up either by back pack pumps, draft pumps, fire engines, or helicopter buckets. The final process involves monitoring the burn unit until the fire is completely out, this process can take anywhere from several days to several months.

Road (Trail) Creation & Maintenance: Roads and trails are required for Soldier training and movement throughout USARAK ranges and involve range access roads and service/maintenance trails. All of which also allow access for emergency and fire-fighting equipment. Hardening typically consists of base preparation, drainage modifications and installation of fill material. Soils conditions dictate whether the vegetation and overburden is removed to gravel or left intact under the constructed road surface.

Range access road can be gravel or paved road, designed to support lightly loaded, rubber-tired vehicles, and must meet site-specific soil conditions. The alignment of this road should take advantage of any existing roads. Alignment must be coordinated with range control and the installation master planner. Road widths vary from 12 feet (improved trail hardened with pitrun) to 30 feet (standard road hardened with pitrun and/or manufactured gravel) with shoulders cleared to a maximum of 25 feet. Overall widths depend on intended vehicle use and single or 2- way traffic patterns. Roads requiring 2-way Stryker traffic typically have an increased road top width to 42 feet. Roads are shaped and ditched to promote drainage and avoid ponding on road surface.

Service/maintenance trails are normally provided for access to the target emplacement. These roads will facilitate the installation and maintenance of the target mechanisms and target emplacement. Service/maintenance trails are designed as a gravel section and are designed for site-specific soil conditions. When possible, these roads should be located on the left and right side edge of the range, with target access road traversing the range behind the target emplacements. If the range has tank trails, they can be used as maintenance/service roads. The purely maintenance/service roads will be designed for light trucks and similar lightly loaded vehicles.

The following activities are associated with road and trail creation:

Vegetation Removal: Most road hardening improvements require vegetation removal. Vegetation can vary from grasses and shrubs to trees 6 inches plus in diameter. This material bladed off and piled to the outside edge of a road footprint by dozers sized from a CAT D4 to D9 depending on vegetation size. Dozers are fitted with 6 way or straight blades for this activity.

Vegetation Retention: Some hydric soils conditions result in small shrub and grass vegetation being left intact. Road hardening, in these conditions, requires a geotextile layer installed on top of the vegetation after it is has been walked down by a dozer. The fill material is placed on top of the geotextile covered vegetation.

Overburden Removal: Effective road hardening requires removal of overburden, which is typically 6-36 inches in depth and comprised of organics and silts. This activity is accomplished with a medium to large size, CAT D4 - D9 or equivalent, crawler tractor (dozer) with a straight "bull" blade. The overburden is rolled to the outer edges of the road footprint and piled with the cleared vegetation. Piles range in height from 3-8 feet. If standing water is present, 1-3 feet wide cutouts are made with an excavator or backhoe to drain the site prior to vegetation and overburden removal.

Sub-base Preparation: Once the vegetation and overburden has been removed to expose coarse material, sub-base preparation occurs. The sub-base is shaped and compacted to provide a stable platform for fill material and can be conducted through the following:

a. Cut/Fill: Overburden removal typically results in an uneven surface that follows the contours of the coarse material layer. This sub-base is leveled and smoothed by cutting humps and filling low spots with a grader (CAT 14G) or a small dozer (CAT D4 - D6). The cut and fill operation utilizes on-site material to establish the initial road dimensions, shape and elevation.

b. Compaction: A cut and fill sub-base typically requires compaction. On-site material has been redistributed within the construction footprint and has been compacted in areas by wheel or track pressure. To insure uniform compaction, a roller (Raygo Vibra) is driven across the sub-base until compaction reaches 95 percent of a modified proctor mold. Soil moisture is critical for adequate compaction and water is added when necessary.

c. Geotextile: Certain soils conditions and intended vehicle uses require the installation of woven geotextile (Amoco 2002 or equivalent). The geotextile is unrolled on top of the sub-base and is installed to a width even with the road side slope edges. Multiple widths of geotextile are installed with a 1.5-foot minimum overlap.

Cutout Install: Cutouts are installed by an excavator (CAT 320) or backhoe (Case 235) adjacent to the sides of roads to a depth even with sub-base elevation. The cutouts are installed to remove ponding water and/or water collected and transported in ditches away from the road base. Cutouts are generally 1-3 feet in width and are cut at 45 degree angle to the road. The length, location and number installed are determined by site size, slope, vegetation, and soils.

Road Fill: Fill material, ranging from unmodified pitrun to manufactured gravel, is installed in 6-inch compacted layers along the improved sub-base of the road footprint. Fill material is typically transported to the site by end dumps, belly dumps, side dumps or scrapers. The material is deposited in a linear run by controlling exit opening size and forward speed. The deposited material is then cut and spread into a 6-inch layer by dozer (CAT D4 – D9) or grader (CAT 140G). The layer is then watered and compacted. Layers are installed until the desired base depth of compacted material is obtained. The hardened base can used "as is" or receive a 6-inch layer of cap material.

Road Base: Road bases are typically installed at a minimum material depth of 1foot with constructed side slopes. Heavy equipment use (e.g., Strykers) requires a minimum of 2 feet of base fill material. Ephemeral roads (trails) typically require a minimum of 6 inches of base depth. Base material is typically comprised of gravel materials ranging from pitrun to bullrock. These materials are typically coarse and hard and are mixed with a variety of smaller size aggregates to fill voids and prevent particle shifting and settling.

a. Pitrun: Pitrun is the most typical road base fill material. On-site side barrow and off-site pits provide the unmodified gravel material. This material is variable in aggregate composition and selective excavation is required to avoid inappropriate silt and large rock content. Pitrun is occasionally screened to remove inappropriate aggregate sizes.

b. Bullrock: Bullrock typically consists of aggregates between 4 inches and 6 inches in diameter. This rock is used as a preliminary base material (minimum 1 foot) in wet areas or areas with deep silts or overburden layers that are not feasible to remove. Bullrock is transported and installed in the same manner as pitrun or manufactured gravel. Bullrock is typically overlain with smaller aggregates to fill voids and lock the material in place.

Compaction: Base fill material is compacted with vibratory and non-vibratory type rollers (Raygo 4100), depending on material. Adequate compaction requires appropriate moisture content and typically includes the application of water. Compaction requirements vary according to material specific compaction testing. Compaction to 95 percent of a modified proctor mold is the standard requirement for roads and pads. Compaction testing occurs at numerous locations within the project foot print, beginning with the first layer of installed material and finishing with the cap. Compaction testers include a Clegg Hammer and a penetrometer.

Road Cap: A cap of classified material will be installed on roads requiring additional stability support. The cap will consist of screened pitrun or manufactured gravel. Typically, cap material meets a D1 specification. Caps are installed in 6 inches compacted lifts and average 4-10 inches in depth.

Grading: Fill material installation, final shaping and drainage features are typically accomplished with a grader (CAT 140G) fitted with a 10-14 foot mould board blade.

Drainage: Design includes consideration of natural and road drainage to facilitate natural flows and road top surface water runoff to prevent ponding and erosion. The following are typical drainage components:

a. Ditching: "V" shaped ditches are cut to drainage elevation along road side slopes and approximate the same depth as the combined road base and cap. Ditches typically run to culverts, cutouts or natural spillway falls that remove water away from the road. The exception to V-ditching is the swale ditch resulting from side barrow extraction.

b. Crowning: Two way roads and single lane roads wider than 12 feet are crowned to facilitate drainage. Crowns are installed by graders (CAT 140G) fitted with a mould board blade and result in a compacted hump between the road shoulders with a (-)2 percent rise at the road centerline.

c. Out/In Slope: Roads 12 feet and less in width and all curves or corners are out/insloped to facilitate drainage. Out/inslope is installed with a graders (CAT 140G) fitted with a mould board blade and result in a compacted one way slope to the downhill or outside shoulder. Slopes typically do not exceed 4 percent

d. Side Slopes: Side slopes are cut at a 2:1 slope along the entire length of both shoulders and typically form the inside cut on a v-ditch. The side slope is cut to a positive drainage elevation, usually even or slightly below the road sub-base.

Roads and trails with minor impairments (including but not limited to intrusions, potholes, cuts, washboards or soft areas less than 6 inches in depth) should be graded and smoothed by cut and fill operations. Re-establish crown (-2 percent) on two way roads and single lane roads with widths greater than 12 feet. Re-establish inslope and outslope where appropriate. Re-establish V-ditches to drainage elevation along both sides of entire road length. Side slopes should not exceed 2:1.

Areas where grading or cut/fill operations result in a depth of 3 inches or more of loose material should be compacted by wheel attachment (i.e., "Follow-me-wobbly") or roller. Compact to 95 percent of modified proctor. Ensuring adequate moisture for compaction may require the application of water.

Areas with significant impairments (i.e., intrusions, potholes, cuts, washboards or soft areas 6 inches or greater in depth) will require fill material equivalent in specification to previously or currently installed material. Fill material will be site specific and include appropriate pitrun and classified manufactured gravel. Fill material is to be placed in compacted 6 inches lifts to meet a compaction standard of 95 percent of modified proctor. Drainage features, including crown, inslope/outslope, ditching and side slopes, must be re-established where appropriate.

Small Arms Siting: The location should be in accordance with the installation master plan. It is also likely that the site has been previously used as some sort of training range. Close coordination with the installation will be required to insure that the site has been characterized with respect to its previous usage. Small arms ranges are generally sited together, which would typically reduce the possibility of UXO or any other hazardous materials. The ideal configuration for the range is a gentle slope upward to the back for optimum line-of-sight and sloping downward to the sides of the range for drainage purposes. The following activities are involved with small arms siting:

Site Investigations: Site development of the range requires site-specific analysis and evaluation, such as topographic and planimetric surveys and geophysical investigations, in order to achieve realism with minimal site disturbance. The topographic survey shall include utility corridors. A subsurface investigation will generally only be conducted for buildings and soil borrow area locations.

Site Clearing: In general, small arms qualification ranges are cleared of all vegetation on the whole downrange footprint, since the purpose of these ranges is to instruct and qualify troops. However, some vegetation can be left between the firing lanes as long as it does not interfere with line of sight between the firing point and the target. If the tower needs to see all the down range targets, total removal of the vegetation in the down range area may be required. On small arms battle courses and techniques ranges it is desirable to leave the terrain as natural as possible to maintain training realism. The range may require thinning of dense woods and ground cover or no clearing around objectives.

Boundary Line Clearings: Mechanical and hand clearing of vegetation around boundary of impact areas and the Small Arms Complexes (SACs) to create a highly visible boundary perimeter to improve safety during training exercises and to mitigate for issues of encroachment around the impact areas and SAC. All vegetation within an approximately 21-foot corridor will be removed.

Target Emplacement: Target emplacement is the act of setting up targets for use in live fire exercises. Disturbance ranges from simply mechanically clearing the vegetation to provide sight ability. Sometime targets are flown out to remote areas and simply set down in a naturally cleared area and used as aviation gunnery or mortar fire targets. Targets are generally made out of wood, old junk cars that have been cleared of all fluids and other potentially hazardous fluids or materials, or container expresses (CONEXs). Vegetation will have to be periodically maintained via mechanical clearing. Old cars past their useful life are junked at the appropriate facilities. Old wooden targets are taken to a centralized area and burned or put in the landfill.

Utility Line Creation & Maintenance: All targetry will be controlled over Ethernet based networks. These networks will be comprised of a combination of fiber optics and copper based systems maximizing the use of Commercial off the Shelf (COTS) electronic components and standards. Lanes and targets on ranges greater than 984 feet deep from the firing line to the end of the training area will be powered from downrange power centers (PC) located on the range. Downrange infrastructure hardware (i.e., switches, routers, media converters, etc.) is avoided where possible due to extreme weather conditions, a high potential for damage due to the nature of live fire ranges and the avoidance of specialized maintenance activities. The following are standard utility requirements and activities:

Power Requirements: Electrical power distribution shall conform to the Architectural Engineering Institute (AEI) and Unified Facilities Criteria (UFC) 3-550-03FA. Voltage available to each target shall be no less than 95 percent of the target's rated operating voltage.

Burial Methods: Downrange power distribution and data cable shall be direct buried or run underground in conduit. The direct burial cables must be encased in a bed of sand or select backfill. Whenever crossing under road systems a concrete encased ductbank will be installed. The method of "plowing" cables is not recommended. The power and data cables shall also be installed in the same trench adhering to the Mandatory Center of Expertise required separation distances as listed below. UXO and environmental issues should be

considered to determine routes before trenching to minimize disturbance of affected areas. The designer should route trenches along access roads and maintenance trails as much as practical to minimize disturbance. Concrete encased duct banks must be used whenever trenching underneath road systems. Actual depth of the cables shall be deep enough to prevent damage from projectile penetration. Minimum cover requirements of National Fire Protection Association (NFPA) 70 and Institute of Electrical & Electronics Engineers C2 (IEEE C2) must be met.

a. Direct burial data cables and secondary power cables must maintain a 4 inch separation distance.

b. Direct burial data and secondary power cables and primary power cables must maintain a 11 inch separation distance.

Direct Burial Cabling Requirements:

a. Power Cable: The size of the power cables depends on the number of targets served, circuit voltage drop, and the circuit protective device rating. Operating voltage at the most distant emplacement or target should not be less than 95 percent of the supplying transformer's secondary voltage. Each cable shall be enclosed within a tight fitting, heavy, nonmetallic jacket suitable for direct burial. No splicing of cables between emplacements is allowed.

b. Data Cable: The fiber optic data cable shall be multi-strand multi-mode/single mode, Outside Plant (OSP) direct burial, Ultraviolet (UV) resistant, single armored, water-blocking, gel-filled, loose-tube, double-jacketed. Only use single-mode fiber cabling to interconnect between the Range Operations Center (ROC) and AAR and other ROC buildings and training buildings and exterior cameras. The CAT5E or better data cable shall be Shielded Twisted Pair (STP), Outside Plant (OSP) direct burial, UV resistant, rodent proof, water-blocking. The only allowable splicing of either type of cable is in the emplacement Master Target Data Panel (MTDP) or Target Data Panel (TDP). Innerduct is not required at the emplacement, but is required to be installed in the ROC entry conduits and in conduits placed in ductbank located beneath roadways and trails.

Interior Cabling Requirements:

a. Power Cable: The size of the power cables depends on the number of outlets served, circuit voltage drop, and the circuit protective device rating. The secondary power cabling shall be suitable for interior wiring.

b. Data Cable: Use CAT6 or approved interior data cable. The CAT6 cabling shall be unshielded twisted pair (UTP).

Trenching: The National Electric Code has minimum requirements for trenching depths. These minimum NEC requirements are acceptable for the ROC area. Trenching depths, greater than receiver test level point (RTLP) recommended, may be required depending upon soil composition and density of the backfill material used. The cable depths must also be below the frost depth or local utility requirements of the geographic area. Concrete encased ductbank under downrange trails is recommended. For ranges without tank trails, rigid conduit to a depth of 6 feet may be used under trails. The contractor may elect to install conductors in separate, parallel trenches as long as separation, minimum depth, and minimum cover criteria are met. Plowing in of cables is not acceptable

Range Lighting: There is not an Army standard for the lighting system, the designer will need to ensure that the customer's lighting requirements are met. Contact installation G3 for night operations range lighting requirements. Ranges required for night operations must be designed with red and white lighting in all facilities to be used at night. Protected switching must also be provided to prevent accidental illumination of white lights during night operations. Where necessary; low-level in-ground lights (similar to airfield markers) may be used for vehicle parking areas and walkways.

UXO Surveys: When designing a range for a location that potentially contains UXO, it is imperative that all efforts be made to minimize disturbance of the existing grade due to the expense of subsurface UXO detection and removal. The following are recommendations for minimizing, but not eliminating, impacts on the existing grade: 1) Whenever possible, all roads and target emplacements should be built on top of existing grade; 2) Perform clearing at the existing grade level with a minimized amount of grubbing; 3) Design trenching routes to minimize additional intrusion into UXO-contaminated areas beyond those already disturbed by other range features; and , 4) The designer will use the ordnance assessment and/or the site characterization study prepared for the range construction site. This documentation will be provided by the Government.

The following activities are associated with UXO surveys during site planning and design:

Predesign Site Studies and Investigations: If ordnance contamination is suspected, UXO safety support becomes mandatory during topographic surveying, geotechnical investigation, and other on-site operations that require gathering design data. The safety support will be for UXO avoidance only.

Site Characterization: At the earliest time after the project planning charrette, the Government will perform a UXO site survey to determine the extent of the ordnance contamination. This information can be used to aid in the design of the range and try to minimize intrusive work in portions of the range which are highly contaminated with ordnance. The ordnance survey information can also be used to determine the correct ordnance response actions for selected portions of the range and to provide a realistic budget estimate for the ordnance response work.

If UXO contamination is not expected, the construction contractor still needs to be aware that he may find military ordnance anywhere on a military installation. The correct training and notification procedures, in case something is uncovered, needs to be in-place for the construction effort. If there is a probability of UXO contamination, only UXO-qualified personnel can conduct any type of ordnance handling or disturbance work.

Clearance Activities - Surface Contamination: In the past, a surface sweep may have been performed by the installation prior to construction. This effort does not remove any subsurface ordnance items that may be present. A surface sweep may be appropriate for construction activities that do not include any ground disturbance activities.

Clearance Activities - Subsurface Contamination: Personnel who are not UXO-qualified are prohibited from conducting clearances. The U.S. Army Corps of Engineers (USACE) has established qualification requirements for UXO qualified personnel. These can be found in EP 75-1-2.

Specifications:

During the range construction contract, ordnance may be found in the area. Inert practice ordnance may also be encountered. When any ordnance material is discovered, the contractor will immediately notify the Contracting Officer's Representative and the Contracting Officer and will cease work in the vicinity of the item.

Once notified of ordnance material, the Contracting Officer's Representative will notify Range Control who will then notify the Installation's Explosive Ordnance Disposal (EOD) team.

Excavation on this project will not be allowed until each field employee attends an ordnance identification course that the EOD unit will provide. Subsequent new field employees are also required to attend the safety course.

Independent Ordnance Contamination Support: If ordnance support action is accomplished with an independent ordnance contractor the specifications paragraphs above shall be included in the specifications. In addition, to avoid conflict on the project site, the construction contractor must be instructed to coordinate their operations scheduling with the ordnance contractor.

Construction Contract Ordnance Contamination Support: If UXO contamination is expected, include the specification section 01576 in the construction contract package. This specification section is provided as a guide and may be adjusted to fit the specific project and appropriate level of UXO support. The specification

section is also available in Specifications-Kept-Intact (SPECSINTACT) Standard General Markup Language (SISGML) format and can be obtained from the RTLP movement coordination exercise (MCX).

Drawings: The contract drawings must show the extent of clearance for all UXO clearances associated with a military construction (MILCON) design. A special section in the drawing package specifically for UXO removal boundaries is the recommended format. The drawings in this section should delineate limits of UXO removal (similar to limits of construction, tree clearing, etc.) to indicate the type of clearance required in the marked area. The details, sections, and specifications should further describe the depth and limits of clearance required. For firm-fixed price bidding, include all information necessary for the contractors to estimate the cost of all UXO work in the bid package.

The objective of UXO support construction activities is to ensure the safety of construction personnel by utilizing trained UXO personnel to address UXO issues. Minimizing the risk of exposure to explosive munitions is the guiding principle of explosives safety. The following activities are associated with UXO surveys during site construction:

Safety Oversight - Required Submittal Review. When contractor personnel conduct ordnance support, the Ordnance and Explosives Center for Expertise (OE-CX) must review and provide comments and written concurrence or non-concurrence on UXO support-related submittals. This process ensures compliance with Federal, Department of Defense (DoD), Department of the Army (DA), and USACE OE safety regulations. These required submittals are listed in the construction specification found in UXO Procedures.pdf file in the Appendix of this document.

Safety Oversight - On-Site: If contract personnel in support of construction activities are conducting a subsurface clearance, a Government OE Safety Specialist must be present to provide safety oversight. The OE Safety Specialist has final on- site authority on OE safety matters. If an OE Safety Specialist is not present on-site, the Senior UXO supervisor has final on-site authority for OE matters.

Wood Pile Burning: Old wooden targetry or slash material is stockpiled in a clearing in a centralized location and periodically burned. All burning timeframes must comply with the guidelines set out by the Alaska Department of Environment Conservation for burning in respective installation jurisdictions. Burning within the Fairbanks Northstar Borough (FBNSB) must comply with the November 1 thru the end of February burn restrictions as areas of the Borough designated as Urban, Urban preferred commercial, Light or Heavy Industrial are in non-attainment area. For any questions involving open burning within these areas, call 907-459-1325. This affects pile burning on the SAC but not in the YTA because it is outside the FBNSB's non-attainment area. The appropriate installation fire departments will also be contacted prior to pile burning operations.

Urban Training Village: Temporary plywood buildings or CONEXs set-up to support both live-fire and non-live fire training. Vegetation clearing is likely. Structures typically consist of 10-15 one and two story buildings and require a hardened pad and access road be constructed. Overall training village site is up to 2 acres in size. Maintenance includes replacing plywood building, removing plywood buildings, mowing or hydro-axing vegetation and snow removal. Hardstands and roads will periodically need resurfacing with additional gravel, regarding, ditching, repair of existing erosion control structures and addition of new erosion control structures.

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Appendix F – Environmental Concerns for Construction and Renovation Projects (FWA Example)

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The U.S. Army Garrison Alaska (USAG Alaska) is firmly committed to a policy of environmental stewardship for all lands and facilities under its control. USAG Alaska has developed and implemented an Environmental Management System (EMS) based on the ISO 14001 international standard. In order for this EMS to be an effective management tool that enhances mission performance, the design and execution of contracts and projects must integrate environmental management processes into all phases of execution, from concept to final acceptance. Coordination with installation environmental program managers is therefore expected as outlined below.

The following issues are major concerns of the DPW Environmental Office and shall be considered during the design and execution of projects on Fort Wainwright (FWA), Yukon Training Area (YTA), Tanana Flats Training Area (TFTA), Donnelly Training Area (DTA), and Fort Richardson (FRA). More specific guidance may be provided in the project Scope of Work, project specifications, or through the DPW Environmental Office. The primary environmental point of contact for projects at FWA is Cliff Seibel, 361-6220, and Therese Deardorff, 384-3074 at FRA. In addition, individuals responsible for specific programs or issues are listed in the narrative.

Part of each project is the preparation of an Environmental Protection Plan by the prime contractor, which will be adhered to by all sub-contractors. This plan shall address how the contractor will comply with the issues listed below. Some items identify a specific requirement for a plan (e.g., Storm Water Pollution Prevention Plan). These can be stand alone plans, or be incorporated into one overall plan. Confirmation of what issue(s) below that may or may not be relevant to a particular project can be coordinated with Cliff Seibel, 361-6220 or Therese Deardorff 384-3074 at FRA. A copy of this Plan(s) shall be provided to DPW Environmental for review and comment prior to the start of construction.

General Compliance Programs:

1. Contaminated Soils: Any project that involves excavation or movement of soils must include field screening for petroleum (plus any other identified contaminants). Soils screening must be handled IAW Appendix A, Handling/Management of Contaminated Soil. FWA POC: Carlton Haenel, 361-6249; FRA POC: Therese Deardorff, 384-3074.

2. Storm Water: (FWA POC: Brian Adams, 361-6623; FRA POC: Don Haas, 384-0208)

a. Design: The storm water system must comply with the Fort Wainwright or Fort Richardson Storm Water Pollution Prevention Plan and NPDES permit. In general, all storm water is handled by overland flow and drainage ditches. UIC's (underground injection) are not normally approved.

b. Construction: The contractor is responsible for preparing and following a Storm Water Pollution Prevention Plan (SWPPP) for the site, as well as submitting the Notice of Intent (NOI) and Notice of Termination (NOT) to the EPA and ADEC.

3. De-Watering: De-watering refers to removal of water, from a surface or subsurface source, for construction purposes, including but not limited to activities such as dust control or clearing excavations. If de-watering is anticipated, the contractor must prepare a de-watering plan, as a standalone plan or as part of the SWPPP and, if de-watering will exceed 5,000 gallons per day, submit for a permit to ADEC. The plan and permit must conform to ADEC General Wastewater Disposal Permit No 2004DB0101, or current general permit. FWA POC: Brian Adams, 361-6623; DTA POC: James Caslin, 873-4408, FRA POC: Don Haas, 384-0208.

4. Wastewater: Use of a facility must be evaluated for need of such items as oil/water separators and applicability of floor drains in the wastewater system. The sanitary system design must be approved by ADEC, and insure that no prohibited substances can enter the drains in violation of Fort Wainwright's or Fort Richardson's wastewater permit. Also, per EPA, an oil/water separator cannot discharge to a septic system. An alternate means of containment needs to be provided for facilities without access to a wastewater system. A copy of the correspondence with ADEC shall be provided to the DPW Environmental Office. FWA POC: Carlton Haenel, 361-6249 or Brian Adams, 361-6623; FRA POC: Don Haas, 384-0208.

5. Backflow Prevention: Design of the facility potable water system must include backflow prevention devices and components IAW the applicable plumbing codes, and approved by ADEC. A copy of the correspondence with ADEC needs to be provided to the DPW Environmental Office. A Backflow Assembly Test/AG Inspection Report must be filled out by a certified Backflow Assembly Tester and submitted to the DPW Environmental Office by the Designer/Installer upon completion of the project for all backflow prevention devices installed, moved or repaired. The contractor shall also provide an electronic photograph of the device after installation, along with a detailed one-line drawing of the installation of the device. FWA POC: Carlton Haenel, 361-6249, or Joe Malen, 361-4512; FRA POC: Therese Deardorff, 384-3074.

6. Noise: Noise generation of the planned use of any given project must be considered in siting. The Installation Noise Management Plan, with maps showing the various noise contours and compatible use zones, is available in the DPW Environmental Office. FWA POC: Cliff Seibel, 361-6220; FRA POC: Therese Deardorff, 384-3074.

7. Hazardous Waste/Material:

a. All hazardous materials (e.g., paint, solvents, fuel, etc.) must be stored and used in such a manner as to prevent spills and releases. Any unused or partly used materials are the property of the contractor, and must be removed from Post and disposed of at the contractor's expense. On site refueling operations will conform to existing guidance. Storage areas are subject to inspection by DPW Environmental Office. FWA POC: Carlton Haenel, 361-6249 or Bill Snyder, 361-9195; FRA POC: Therese Deardorff, 384-3074.

b. Hazardous waste generation that is the responsibility of the Post is generally associated with projects involving demolition. These hazards should be identified in advance, and proper abatement planned as part of the project. These hazards include, but are not necessarily limited to asbestos, lead (primarily in paint), PCBs and glycol. Abatement, containerization, handling and sampling (as appropriate) are the responsibility of the contractor. Containerized fluorescent light ballasts (suspect PCB) must also be accompanied by a contractor's statement that none were leaking when placed in the container. Guidance is provided in AR 200-1 Chapters 8 and 10. Additional guidance is provided in USAG Alaska Pam 200-1, available through the DPW Environmental Office. Disposal will be accomplished through the DPW Environmental Office waste contract (asbestos will be disposed of at the FWA or FRA landfill). FWA POC: asbestos/lead: Brian Adams, 361-6623; PCB: Cliff Seibel, 361-6220; disposal: Bob Gray, 361-9949 or Bill Snyder, 361-9195.; FRA POC: Therese Deardorff, 384-3074. The Environmental Office does not handle radioactive waste/materials (e.g., smoke detectors, exit signs, etc). Contact Post Safety for guidance in handling these items.

c. All hazardous material spills must be reported to the DPW Environmental Office as well as the COE or DPW project manager using the DPW Oil and Hazardous Substances Spill Notification form. Reporting to ADEC will be accomplished by the DPW Environmental Office. Clean up of the spill and associated clearance sampling is the responsibility of the contractor. FWA POC: Lee Griffin, 361-6489 or Bill Snyder, 361-9195; FRA POC: Therese Deardorff, 384-3074.

8. Solid Waste: The Fort Wainwright and Fort Richardson landfills are to be used for construction debris only. Municipal solid waste is to be collected separately and disposed of by the contractor. Recycling of debris (concrete, asphalt, metal, etc.) should be addressed in the contract specifications or Scope Of Work, and required where practical. FWA POC: Brian Adams, 361-6623; FRA POC: Therese Deardorff, 384-3074.

9. Air Issues:

a. Dust Control: Fugitive emissions, primarily dust, need to be controlled on each construction site, 24 hours a day, 7 days a week. This includes cleaning of soil tracked out onto Post roadways daily. FWA POC: Eric Dick, 361-3006; FRA POC: Therese Deardorff, 384-3074.

b. Head Bolt Outlets: Fort Wainwright is subject to Borough air pollution ordinances. One such ordinance requires installation of head bolt outlets in any new or renovated parking lot in

which patrons can be expected to park for at least 2 hours. This requirement applies to nearly every existing and proposed parking area on Post. FWA POC: Cliff Seibel, 361-6220.

c. Air Quality Construction Permit (AQCP): Each project must be evaluated to determine whether an AQCP is required prior to commencing construction. An AQCP is typically required for projects that involve the addition of new air emission sources (e.g., boilers, generators, fire pumps, painting & degreasing operations, fuel storage & loading) and for projects that involve the modification of existing air emission sources (e.g., landfill expansion and non-routine maintenance at the power plant). The evaluation includes determining if the project conforms to the requirements and emission caps established by Fort Wainwright's current Title V operating permit and assesses the need to obtain a permit modification. FWA POC: Eric Dick, 361-3006; FRA POC: Therese Deardorff, 384-3074.

d. General Conformity: Each project on FWA Main Post must be evaluated for impacts to the Fairbanks North Star Borough Carbon Monoxide Maintenance Area. This evaluation includes assessing both direct and indirect emissions. Direct emissions include emissions resulting from the installation of new air emission sources, including generators, incinerators, boilers, paint booths, fuel tanks and parts washers. Indirect emissions include emissions resulting from increased vehicle traffic, heat & power demand from the CHPP, cooling, water and wastewater loads. An inventory of these sources will come from the designer and/or end user, and must be provided to the DPW Environmental Office as early into the design process as possible to facilitate this review and the need for a more detailed general conformity determination. FWA POC: Eric Dick, 361-3006.

e. New Source Performance Standards (NSPS): Designers must insure any stationary diesel engines (generators, fire pumps, etc) comply with the new EPA NSPS standards for nitrogen oxides, particulate matter, sulfur dioxide, carbon monoxide, and hydrocarbons. The new standards will apply to any stationary diesel engine manufactured after April 2006. The latest standards can be accessed through the EPA website. FWA POC: Eric Dick, 361-3006; FRA POC: Therese Deardorff, 384-3074.

10. Fuel Storage Tanks:

a. Underground Storage Tanks (USTs): All USTs installed on Army property will conform to 40CFR280, 18AAC78 and applicable Army guidance. While the EPA and ADEC generally exempt heating oil tanks, the Army requires all USTs to be installed to the same standard. USTs will be double wall steel with cathodic protection (anodic, not impressed), provided with spill and overfill protection, and interstitial leak detection. Fuel lines will be double wall Enviroflex, or equal. Other requirements will be identified based on specific use and installation requirements. FWA POC: Cliff Seibel, 361-6220; FRA POC: Therese Deardorff, 384-3074.

b. Aboveground Storage Tanks (ASTs): All ASTs installed on Army property will conform to 40CFR112, as well as applicable ADEC and Army guidance (to include the most current version of the Fort Wainwright and Fort Richardson Spill Prevention, Control and Countermeasures Plan). In general, all ASTs will be either double wall or vaulted tanks, with containment on ALL four sides. Tanks with double steel on one end will not be accepted. Single wall tanks with alternate secondary containment will generally not be approved, but will be considered on a case-by-case basis. All tanks will be tapped on the top only, and be provided with spill and overfill prevention and leak detection. Other requirements will be identified based on specific use and installation requirements. FWA POC: Carlton Haenel, 361-6249; or Cliff Seibel, 361-6220; FRA POC: Therese Deardorff, 384-3074.

11. Restoration/Contaminated Sites: All projects on or near a current or past restoration site need to comply with the FWA or FRA Institutional Control Policy. In addition, some of these sites contain monitoring wells, recording sensors and remediation systems. If the site contains any of these items, the contractor shall coordinate all staging and construction activities through the DPW Environmental Office. Restoration personnel will determine which items can be removed or must be saved or must be moved and protected from damage. FWA POC: Joe Malen, 361-4512; FRA POC: Therese Deardorff, 384-3074.

12. National Environmental Policy Act (NEPA): A NEPA document (REC, EA, EIS) must be prepared for each project prior to funds being spent on design or construction. Preparation of this document is to be funded by the project proponent, and be reviewed and approved by the DPW Environmental Office. FWA POC: Carrie McEnteer, 361-9507 or Dan Thompson, 361-3001; FRA POC: Therese Deardorff, 384-3074.

13. Natural Resources:

a. Wetlands: An initial survey of each site must be made by DPW Environmental personnel to determine the potential of wetlands. If wetland conditions exist, delineation will need to be completed by DPW Environmental staff. Once wetland boundaries are delineated, a determination must be requested of, and made by, COE Regulatory office, at which time they may require a permit application be filed. Prior to the start of the project, this permit must be approved. The designer must provide the DPW Environmental Office a drawing showing the project limits before COE Regulatory can be contacted. If a permit is required, additional information will be requested. FWA POC: Lee Griffin (FWA-Cantonment), 353-6489; Sarah Runck, (YTA, DTA, TFTA), 361-9687; FRA POC: Therese Deardorff, 384-3074.

b. Timber Policy: Once a project siting is established, the DPW Environmental Office forester will evaluate the site for salvageable timber. Based on the estimate, timber can be purchased by the contractor, with the funds being deposited in the DA Budget Clearing Account, or cut and stacked for individual firewood sales. FWA POC: Dan Rees, 361-9318 or Adam Davis, 361-1168; FRA POC: Therese Deardorff, 384-3074.

c. Fish Habitat: There are several rivers and streams within FWA and FRA. All design and construction activities affecting anadromous waters shall be accomplished in accordance with Alaska Statutes AS 41.14.870 – AS 41.14.900.

d. Migratory Birds: All migratory birds are of concern, as stated in the Migratory Bird Treaty Act; however, cliff swallows and mew gulls tend to be more visible. Cliff swallows build mud nests on facilities and mew gulls build nests on vehicles and other equipment. Raptors also build nests on power poles. Once a nest has been established and eggs layed, it is against Federal law to disturb the nest or annoy the birds in an attempt to get them to abandon the nest. The contractor should make every attempt to remove partially completed nests daily from 1 May to 15 July. It is also recommended that clearing of grass and scrub land, as well as forested areas occur before 1 May or after 15 July to minimize impacts on ground and tree nesting birds. Design and construction shall also comply with the Bald and Golden Eagle Protection Act. In general, laws regarding birds are relevant to each new season. The non-observance or apparent absence of birds or their nests earlier in the process does not mean that an area is free of birds or their nests just prior to construction. The area must be cleared prior to construction and, if necessary, permits must be obtained prior to construction. FWA POC: John Haddix, 361-4213; FRA POC: Therese Deardorff, 384-3074.

14. Cultural Resources: Cultural resources include (but are not limited to) archaeological sites, historic buildings or structures, and properties of traditional religious and cultural importance. All projects require review for potential conflicts with cultural resources under Section 106 of the National Historic Preservation Act. This review must be coordinated in advance through the USAG Alaska Cultural Resources Program. The contractor must also have a policy in place for notifications and actions by workers in the event of inadvertent discovery of cultural resources (artifacts, etc.). Within the FWA cantonment area, potential impacts to the Ladd AFB Historic District and the Ladd Field National Historic Landmark in particular, must be considered. The FWA and FRA POC for historic buildings and structures and for archaeological sites and properties of traditional religious and cultural significance is Lisa Graham, 361-3002.

Appendix G – Final Programmatic Finding of No Practicable Alternative

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Final Finding of No Practicable Alternative – U.S. Army Garrison Fort Richardson

Pursuant to Executive Orders (EOs) 11988 (*Floodplain Management*) and 11990 (*Protection of Wetlands*), in order for the Army to construct any proposed activity in a floodplain or wetlands, it must find that there are no practicable alternatives to doing so and that all practicable measures have been taken to minimize harm to the floodplain and wetlands. The practicability of a given alternative or measure is evaluated by considering such pertinent factors as community welfare, cost, environmental impact, and technological feasibility in light of the overall project purposes. This Finding of No Practicable Alternative incorporates the *U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades Programmatic Environmental Assessment (PEA)* and its findings with respect to the Proposed Actions.

Proposed Action 1 – *Streamline Site-specific Range Projects in Support of Soldier Training***.** Construction of new facilities would be located away from wetland and known floodplain resources. Other projects involving upgrades or repair-by-replacement which are adjacent to wetland or floodplain resources would first look to expand or upgrade to the direction away from wetland resources, however, if wetland or floodplain impacts are unavoidable, minimization measures would be considered to reduce extent of impacts. For these types of expansion and upgrade projects, no other reasonable alternative (i.e., alternative site) exists as the proposed activities involve modifications of existing infrastructure and range training facilities. Consideration of a new site for construction of a new facility as opposed to upgrade or expansion of an existing facility would be cost prohibitive and could pose additional adverse impacts to the local community by reducing the amount of land available for public access and use. Section 3.3.2 of the PEA discusses which projects have the potential to impact floodplain resources and Section 3.4.2 discusses which projects would likely have the potential to impact wetland resources. Utilization of best management practices (BMPs) and environmentally sound design principals would aid in the reduction or avoid impacts to floodplain and wetland resources (see Appendix D). In addition, mitigation required by the Section 404 permitting process would help to mitigate for any unavoidable impacts to wetlands.

Proposed Action 2 – *Sustainable Range Planning for Small Arms Complex Ranges Using Adaptable Use Zones.* As stated in Section 2.4, creation of new small arms complex (SAC) ranges either within or off Installation lands would likely result in a greater magnitude of environmental impacts compared to focusing future development and range activities around existing SAC range complexes. This conclusion would also apply to the magnitude of both wetland and floodplain impacts and would allow for preservation of wetland resources located outside the proposed adaptable use zones. In addition, consideration of an entirely new site for a SAC range not within proximity to existing ranges would be cost prohibitive and could pose additional adverse impacts to the local community by reducing the amount of land available for public access and use. Although this Proposed Action investigates a "worst case scenario" involving impacts to all resources within the proposed adaptable use zones, as stated in Section 3.1, the likelihood of this type of development would be unlikely as Soldier training requires varying degrees of natural overhead protection and concealment (trees/bushes) for maneuvers, inherently requiring the retention/protection of some resources within the proposed adaptable use zone and areas within existing SDZs would likely have limited construction.

In addition, as stated in Sections 3.3.2 and 3.4.2, floodplain impact and wetland loss within the proposed adaptable use zones would occur over time; as areas become developed, range planners would still be required to exhibit avoidance and minimization measures for future projects as required under Section 404 of the Clean Water Act and by EOs 11998 and 11990. Any site-specific future project within the proposed adaptable use boundary would have to demonstrate avoidance and minimization measures and any project demonstrating unavoidable impacts to wetlands would require Section 404 permitting.

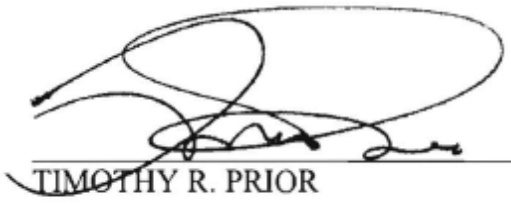
Proposed Action 3 – *Environmental Stewardship Range Construction Guidelines*. Through adoption of standard operation procedures (SOPs) and BMPs including avoidance and reduction of impacts to floodplain and wetland resources, U.S. Army Garrison Fort Richardson (USAG FRA) would be compliant with EOs 11998 and 11990. This Proposed Action would likely save project planning and permitting costs by incorporating environmental stewardship range construction guidelines early in the planning process. Additionally, these measures would serve to protect the environment, benefiting both Soldiers and other public users of USAG FRA's training lands. This FNPA outlines the programmatic approach used for avoidance and minimization measures of routine range projects. Any site-specific routine range project analyzed as a part of this Proposed Action would be reviewed using the NEPA Assessment Checklist to determine the likelihood of wetland or floodplain impacts. If impacts are likely, BMPs and SOPs as part of this Proposed Action would be reviewed to determine impact avoidance and minimization measures. Unavoidable impacts would require Section 404 permitting.

Conclusions: In some cases, implementation of the Proposed Actions would require a Clean Water Act Section 404 permit. Pursuant to EOs 11988 and 11990, the Army would take all practicable measures to minimize potential harm to or within the floodplain and wetlands as further described below.

Impacts to floodplains and wetlands could be avoided by siting projects away from these resources. Mitigation measures to reduce impacts beyond what is required by the Section 404 permitting process could include restricting project footprint dimensions in locations where wetlands are present or locating projects away from wetlands or floodplains. In addition, BMPs including minimizing the extent of fill and construction equipment through site-specific design, limiting construction staging to upland and non-floodplain areas, and maintaining natural drainage patterns, would be used to minimize impacts to wetlands and floodplains.

Based on the pertinent considerations discussed herein, the Army hereby finds that there are no practicable alternatives to implementing the Proposed Actions analyzed within the *U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades PEA*. Furthermore, pursuant to Executive Orders 11988 and 11990, the Army will take all practicable measures to minimize potential harm to or within the floodplain and wetlands for all projects associated with the Proposed Actions.

APPROVED BY:



TIMOTHY R. PRIOR
Colonel, U.S. Army
Commanding

6 APR 2010
Date

Final Finding of No Practicable Alternative – U.S. Army Garrison Fort Wainwright

Pursuant to Executive Orders (EOs) 11988 (*Floodplain Management*) and 11990 (*Protection of Wetlands*), in order for the Army to construct any proposed activity in a floodplain or wetlands, it must find that there are no practicable alternatives to doing so and that all practicable measures have been taken to minimize harm to the floodplain and wetlands. The practicability of a given alternative or measure is evaluated by considering such pertinent factors as community welfare, cost, environmental impact, and technological feasibility in light of the overall project purposes. This Finding of No Practicable Alternative incorporates the *U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades Programmatic Environmental Assessment (PEA)* and its findings with respect to the Proposed Actions.

Proposed Action 1 – *Streamline Site-specific Range Projects in Support of Soldier Training***.** Construction of new facilities would be located away from wetland and known floodplain resources. Other projects involving upgrades or repair-by-replacement which are adjacent to wetland or floodplain resources would first look to expand or upgrade to the direction away from wetland resources, however, if wetland or floodplain impacts are unavoidable, minimization measures would be considered to reduce extent of impacts. For these types of expansion and upgrade projects, no other reasonable alternative (i.e., alternative site) exists as the proposed activities involve modifications of existing infrastructure and range training facilities. Consideration of a new site for construction of a new facility as opposed to upgrade or expansion of an existing facility would be cost prohibitive and could pose additional adverse impacts to the local community by reducing the amount of land available for public access and use. Section 3.3.2 of the PEA discusses which projects have the potential to impact floodplain resources and Section 3.4.2 discusses which projects would likely have the potential to impact wetland resources. Utilization of best management practices (BMPs) and environmentally sound design principals would aid in the reduction or avoid impacts to floodplain and wetland resources (see Appendix D). In addition, mitigation required by the Section 404 permitting process would help to mitigate for any unavoidable impacts to wetlands.

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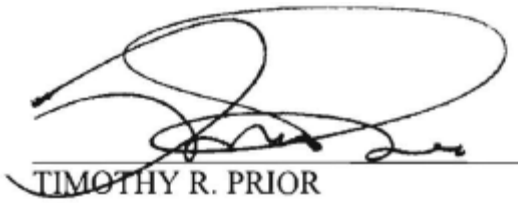
Conclusions: In some cases, implementation of the Proposed Actions would require a Clean Water Act Section 404 permit. Pursuant to EOs 11988 and 11990, the Army would take all practicable measures to minimize potential harm to or within the floodplain and wetlands as further described below.

Impacts to floodplains and wetlands could be avoided by siting projects away from these resources. Mitigation measures to reduce impacts beyond what is required by the Section 404 permitting process could include restricting project footprint dimensions in locations where wetlands are present or locating projects away from wetlands or floodplains. In addition, BMPs including minimizing the extent of fill and construction equipment through site-specific design, limiting construction staging to upland and non-floodplain areas, and maintaining natural drainage patterns, would be used to minimize impacts to wetlands and floodplains.

Based on the pertinent considerations discussed herein, the Army hereby finds that there are no practicable alternatives to implementing the Proposed Actions analyzed within the *U.S. Army Garrison Alaska's Range Complex and Training Land Upgrades PEA*. Furthermore, pursuant to Executive Orders 11988 and 11990, the Army will take all practicable measures to minimize potential harm to or within the floodplain and wetlands for all projects associated with the Proposed Actions.

APPROVED BY:



TIMOTHY R. PRIOR
Colonel, U.S. Army
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6 APR 2010
Date