



**DEPARTMENT OF THE ARMY
UNITED STATES ARMY COLD REGIONS TEST CENTER**

**FINAL FINDINGS OF NO SIGNIFICANT IMPACT AND
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT**

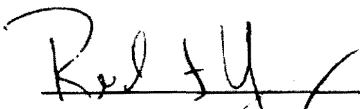
**ARMY TESTING, INFRASTRUCTURE IMPROVEMENT AND
ENHANCED ENVIRONMENTAL PROCEDURES**

**DONNELLY TRAINING AREA
FORT WAINWRIGHT, ALASKA
AND
FORT GREELY, ALASKA**

February 2012

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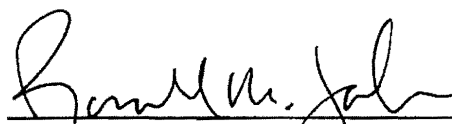


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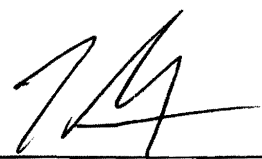


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FINAL FINDING OF NO SIGNIFICANT IMPACT YUMA PROVING GROUND

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 (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 Cold Regions Test Center (CRTC) has prepared a Programmatic Environmental Assessment (PEA) to consider environmental effects of continued test operations and infrastructure improvements by the CRTC on Army lands (Fort Greely and Fort Wainwright) as well as enhanced procedures for reviewing environmental impacts.

Description of Proposed Action: CRTC will continue operations within Donnelly Training Area (DTA), Fort Wainwright, and Fort Greely. Over the next ten years, the amount of testing activity will be similar to that performed by CRTC over the previous ten years. CRTC will, however, pursue a course of action focused upon modernizing and consolidating its facilities and ranges. This action consists of twenty-two site-specific projects that are either new construction (8) or upgrades to existing facilities and ranges (14). CRTC also proposes a systematic, comprehensive approach to environmental review of their actions. The purpose of this document is to streamline the NEPA analysis process, avoid duplication of efforts, and to allow CRTC to adapt to changing testing or mission requirements while still ensuring that a thorough NEPA analysis is conducted for each project or test. This programmatic review will ultimately promote CRTC's mission to conduct realistic, natural environment testing.

In order to achieve these mission requirements, CRTC needs to meet upcoming test requirements, ensure that testing of military equipment is state of the art, provide the Army maximum efficiency and cost-effectiveness in its test program, protect the safety of the center's employees and the public, and protect the environment. Programmatic impacts of CRTC's proposed action were considered in relation to needs of the Army's test and evaluation community, relative costs, and environmental impact. This PEA considers three alternatives to address the Center's long-term programmatic needs:

- No Action: This alternative maintains the status quo and continues cold regions environmental testing using current NEPA procedures. No major facilities would be constructed or upgraded. CRTC would continue its existing environmental review practices for each individual test or project.
- Action Alternative 1: CRTC would continue testing, and would conduct facility modernization through a list of site-specific infrastructure improvement projects, analyzed using current NEPA procedures
- Action Alternative 2: This is the preferred alternative, or proposed action, in which CRTC would continue testing, and would conduct facility modernization through site-specific projects, analyzed using enhanced environmental planning procedures.

CRTC considered two other options in its analysis: 1) testing nuclear, biological or chemical agents, including depleted uranium; and 2) a major facility expansion that primarily consisted of

improving infrastructure west of the Delta River. These options were found to be impracticable and were eliminated from further analysis.

Discussion of Anticipated Environmental Effects: Implementation of the Proposed Action would result in impacts to the natural, cultural, and human environment. Table A summarizes the intensity of anticipated impacts on a variety of resources. Most of the expected impacts from implementation of the Proposed Action would be minor. Moderate adverse impacts would be anticipated for soils and permafrost, surface water and floodplains, wetlands, vegetation, fire management, and wildlife and fisheries. Mitigation used to avoid significant adverse impacts is outlined below. The cumulative effects analysis determined that, provided mitigation measures are followed, the Proposed Action would not contribute to significant adverse cumulative impacts.

Table A. Potential Environmental Effects of the Proposed Actions			
Resource/Issue	No Action	Action Alternative 1	Action Alternative 2
Soils and Permafrost	Minor to Moderate	Moderate	Moderate
Air Quality and Greenhouse Gases	Minor	None to Minor	None to Minor
Surface Water and Floodplains	Minor to Moderate	Minor to Moderate	Minor to Moderate
Wetlands	Moderate	Moderate	Moderate
Vegetation	Minor	Minor to Moderate	Minor to Moderate
Fire Management	Minor	Minor to Moderate	Minor to Moderate
Wildlife & Fisheries	Minor to Moderate	Moderate	Moderate
Cultural Resources	None to Minor	Minor	Minor
Airspace Management	Minor	Minor	Minor
Public Access, Recreation and Subsistence	None to Minor	Minor	Minor
Noise	Minor	Minor	Minor
Land Use, Energy and Utilities	Minor	Minor	Minor
Human Health, Safety and Hazardous Substances	Minor	Minor	Minor and Beneficial

Mitigation: Existing mitigation measures mandated by Federal or state laws and regulations, or local USAG Fort Wainwright and Fort Greely policies designed to protect the environment are undertaken as an integral part of the Proposed Action. These have been incorporated into a comprehensive list of standard operating procedures (SOPs) and best management practices (BMPs), presented in appendix E of the *Programmatic Environmental Assessment for Army Testing, Infrastructure Improvement and Enhanced Environmental Procedures at the Cold Regions Test Center*. These help to avoid significance of impact to surface water and floodplains, wetlands, and cultural resources. There is a potential for significant impact to vegetation that is not already addressed by a mandated mitigation measure, and as a result, CRTC would undertake the following mitigation as part of the Proposed Action:

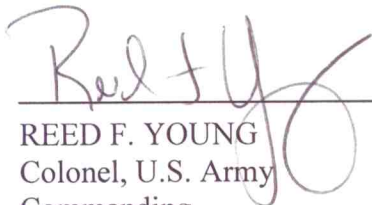
- Significant impacts to vegetation could result if local populations of rare or sensitive plant species are eliminated or if non-native, invasive plant species are introduced and allowed to propagate. When rare plant species are potentially present, CRTC will work with USAG Fort Wainwright to review existing data or conduct surveys, and then

implement resulting management recommendations to avoid significant impact.
Implement invasive species prevention measures during construction activities.

Conclusions: Based on the review of the information contained in the Programmatic Environmental Assessment, CRTC has determined through this finding of no significant impact (FNSI) that the implementation of the Proposed Action 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 Mr. Michael Nuckols, U.S. Army Cold Regions Test Center, Environmental and Safety Manager, (907) 873-1245, P.O. Box 31350, Fort Greely, AK 99731. The EA and FNSI are available at http://www.yuma.army.mil/mhub_documents.shtml.

Approved by:



REED F. YOUNG
Colonel, U.S. Army
Commanding

5 March 2012

Date

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 (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 Cold Regions Test Center (CRTC) has prepared a Programmatic Environmental Assessment (PEA) to consider environmental effects of continued test operations and infrastructure improvements by the CRTC on Army lands (Fort Greely and Fort Wainwright) as well as enhanced procedures for reviewing environmental impacts. This finding of no significant impact (FNSI) applies only to Fort Wainwright lands.

Description of Proposed Action: CRTC will continue operations within Donnelly Training Area (DTA), Fort Wainwright, and Fort Greely. Over the next ten years, the amount of testing activity will be similar to that performed by CRTC over the previous ten years. CRTC will, however, pursue a course of action focused upon modernizing and consolidating its facilities and ranges. This action consists of twenty-two site-specific projects that are either new construction (8) or upgrades to existing facilities and ranges (14), and are proposed on DTA. CRTC also proposes a systematic, comprehensive approach to environmental review of their actions. The purpose of this document is to streamline the NEPA analysis process, avoid duplication of efforts, and to allow CRTC to adapt to changing testing or mission requirements while still ensuring that a thorough NEPA analysis is conducted for each project or test. This programmatic review will ultimately promote CRTC's mission to conduct realistic, natural environment testing.

In order to achieve these mission requirements, CRTC needs to meet upcoming test requirements, ensure that testing of military equipment is state of the art, provide the Army maximum efficiency and cost-effectiveness in its test program, protect the safety of the center's employees and the public, and protect the environment. Programmatic impacts of CRTC's proposed action were considered in relation to needs of the Army's test and evaluation community, relative costs, and environmental impact. This PEA considers three alternatives to address the Center's long-term programmatic needs:

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CRTC considered two other options in its analysis: 1) testing nuclear, biological or chemical agents, including depleted uranium; and 2) a major facility expansion that primarily consisted of improving infrastructure west of the Delta River. These options were found to be impracticable and were eliminated from further analysis.

Discussion of Anticipated Environmental Effects: Implementation of the Proposed Action would result in impacts to the natural, cultural, and human environment of DTA. Table A summarizes the intensity of anticipated impacts on a variety of resources. Most of the expected impacts from implementation of the Proposed Action would be minor. Moderate adverse impacts would be anticipated for soils and permafrost, surface water and floodplains, wetlands, vegetation, fire management, and wildlife and fisheries. Mitigation used to avoid significant adverse impacts is outlined below. The cumulative effects analysis determined that, provided mitigation measures are followed, the Proposed Action would not contribute to significant adverse cumulative impacts.

Table A. Potential Environmental Effects of the Proposed Actions at Donnelly Training Area, Fort Wainwright			
Resource/Issue	No Action	Action Alternative 1	Action Alternative 2
Soils and Permafrost	Minor to Moderate	Moderate	Moderate
Air Quality and Greenhouse Gases	Minor	None to Minor	None to Minor
Surface Water and Floodplains	Minor to Moderate	Minor to Moderate	Minor to Moderate
Wetlands	Moderate	Moderate	Moderate
Vegetation	Minor	Minor to Moderate	Minor to Moderate
Fire Management	Minor	Minor to Moderate	Minor to Moderate
Wildlife & Fisheries	Minor to Moderate	Moderate	Moderate
Cultural Resources	None to Minor	Minor	Minor
Airspace Management	Minor	Minor	Minor
Public Access, Recreation and Subsistence	None to Minor	Minor	Minor
Noise	Minor	Minor	Minor
Land Use, Energy and Utilities	Minor	Minor	Minor
Human Health, Safety and Hazardous Substances	Minor	Minor	Minor and Beneficial

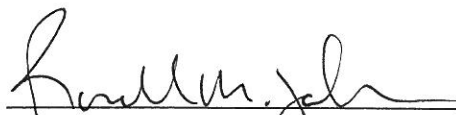
Mitigation: Existing mitigation measures mandated by Federal or state laws and regulations, or local USAG Fort Wainwright policies designed to protect the environment are undertaken as an integral part of the Proposed Action. These have been incorporated into a comprehensive list of standard operating procedures (SOPs) and best management practices (BMPs), presented in appendix E of the *Programmatic Environmental Assessment for Army Testing, Infrastructure Improvement and Enhanced Environmental Procedures at the Cold Regions Test Center*. These help to avoid significance of impact to surface water and floodplains, wetlands, and cultural resources. There is a potential for significant impact to vegetation that is not already addressed by a mandated mitigation measure, and as a result, CRTC would undertake the following mitigation as part of the Proposed Action:

- Significant impacts to vegetation could result if local populations of rare or sensitive plant species are eliminated or if non-native, invasive plant species are introduced and allowed to propagate. When rare plant species are potentially present, CRTC will work with USAG Fort Wainwright to review existing data or conduct surveys, and then implement resulting management recommendations to avoid significant impact. Implement invasive species prevention measures during construction activities.

Conclusions: Based on the review of the information contained in the Programmatic Environmental Assessment, CRTC has determined through this FNSI that the implementation of the Proposed Action 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.

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Approved by:



RONALD M. JOHNSON
Colonel, U.S. Army
Commanding

13 Apr 12

Date

FINAL FINDING OF NO SIGNIFICANT IMPACT UNITED STATES ARMY GARRISON FORT GREELY

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 (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 Cold Regions Test Center (CRTC) has prepared a Programmatic Environmental Assessment (PEA) to consider environmental effects of continued test operations and infrastructure improvements by the CRTC on Army lands (Fort Greely and Fort Wainwright) as well as enhanced procedures for reviewing environmental impacts. This finding of no significant impact (FNSI) applies only to Fort Greely lands.

Description of Proposed Action: CRTC will continue operations within Donnelly Training Area (DTA), Fort Wainwright, and Fort Greely. Over the next ten years, the amount of testing activity will be similar to that performed by CRTC over the previous ten years. CRTC will, however, pursue a course of action focused upon modernizing and consolidating its facilities and ranges. This action consists of twenty-two site-specific projects that are either new construction (8) or upgrades to existing facilities and ranges (14), none of which are proposed for Fort Greely. CRTC also proposes a systematic, comprehensive approach to environmental review of their actions. The purpose of this document is to streamline the NEPA analysis process, avoid duplication of efforts, and to allow CRTC to adapt to changing testing or mission requirements while still ensuring that a thorough NEPA analysis is conducted for each project or test. This programmatic review will ultimately promote CRTC's mission to conduct realistic, natural environment testing.

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Table A. Potential Environmental Effects of the Proposed Actions at Fort Greely			
Resource/Issue	No Action	Action Alternative 1	Action Alternative 2
Soils and Permafrost	None	None	None
Air Quality and Greenhouse Gases	Minor	None to Minor	None to Minor
Surface Water and Floodplains	None	None	None
Wetlands	None	None	None
Vegetation	None	None	None
Fire Management	None	None	None
Wildlife & Fisheries	None	None	None
Cultural Resources	Minor	Minor	Minor
Airspace Management	Minor	Minor	Minor
Public Access, Recreation and Subsistence	None	None	None
Noise	Minor	Minor	Minor
Land Use, Energy and Utilities	None	None	None
Human Health, Safety and Hazardous Substances	Minor	Minor	Minor

Mitigation: Existing mitigation measures mandated by Federal or state laws and regulations, or local USAG Fort Greely policies designed to protect the environment are undertaken as an integral part of the Proposed Action. These have been incorporated into a comprehensive list of standard operating procedures (SOPs) and best management practices (BMPs), presented in appendix E of the *Programmatic Environmental Assessment for Army Testing, Infrastructure Improvement and Enhanced Environmental Procedures at the Cold Regions Test Center*. These help to avoid significance of impact to surface water and floodplains, wetlands, and cultural resources. There are no other potential significant impacts to Fort Greely that are not already addressed by a mandated mitigation measure.

Conclusions: Based on the review of the information contained in the Programmatic Environmental Assessment, CRTC has determined through this FNSI that the implementation of the Proposed Action 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 Mr. Michael Nuckols, U.S. Army Cold Regions Test Center, Environmental and Safety Manager, (907) 873-1245, P.O. Box 31350, Fort Greely, AK 99731. The EA and FNSI are available at http://www.yuma.army.mil/mhub_documents.shtml.

Approved by:



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Lieutenant Colonel, U.S. Army
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SECTION 1. PURPOSE & NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The Cold Regions Test Center (CRTC) proposes to continue its test mission, improve and consolidate their facilities at Donnelly Training Area (DTA), Alaska, and implement enhanced environmental review procedures for these activities. These enhanced procedures will allow the Center to implement a sustainable land management approach while enhancing its mission of cold regions environment testing of military equipment. These actions cover potential projects and testing that would occur over the next ten years (2011-2020) on DTA, Fort Wainwright, Alaska and on Fort Greely, Alaska. Modernization and consolidation of CRTC's facilities is required to ensure the most effective testing of new defense systems. Soldiers need assurance that future military technology has been field tested for proper performance, safety, and dependability.

The mission of the U.S. Army Cold Regions Test Center is to plan and conduct realistic, natural environment testing with emphasis on extreme cold and sub-arctic conditions in order to provide acquisition decision makers timely, accurate, and relevant information.

CRTC has its headquarters at Fort Greely, Alaska. Test operations occur at nearby DTA, Fort Wainwright (formerly a portion of Fort Greely). Fort Greely and DTA are located in central Alaska approximately 100 miles southeast of Fairbanks in the Tanana River Valley, and just south of the Alaska Highway's intersection with the Richardson Highway at Delta Junction.

The testing of U.S. Army equipment in the cold was first recognized as a need during World War II, and was begun in Alaska during the winters of 1946 and 1947. In 1949, several cost and efficiency considerations prompted the Department of the Army to formally organize the Arctic Test Branch at Big Delta Air Force Base, Alaska (now Fort Greely and DTA, Fort Wainwright). Over the years, CRTC had a series of different names and command structures. The 2001 realignment of Fort Greely moved CRTC's headquarters (but not test operations) to Main Post Fort Wainwright. In 2005, the headquarters was realigned back to Fort Greely. CRTC's immediate higher level of command is Yuma Proving Ground (YPG), located in Arizona. YPG falls under the Developmental Test Command (DTC), which falls under the Army Test and Evaluation Command (ATEC).

DTA has the northern continental climate of interior Alaska, which is characterized by short, moderate summers and long, cold winters. It has low precipitation and humidity. Average annual precipitation is less than 12 inches and average snowfall is 43 inches. Ice fog sometimes forms when water vapor, usually due to human activities, meets cold air (when winds are calm and temperatures are below -30°F). Average monthly temperatures range from -3°F in January to 60°F in July. The area is known for its high winds, with the greatest winds occurring during winter.



Figure 1.1 Howitzer Testing, Task Force Frigid, 1946

The focus of CRTC's operations is the Bolio Test Complex, located off Meadows Road within DTA. Other major test facilities within DTA include Texas Range, the Mississippi Test Complex, Washington Range, and the Mobility Test Complex. These facilities are all operated directly by CRTC. The remaining range and training areas on DTA are available for CRTC's use as needed and when available. DTA is often managed as two parcels that receive different uses and impacts from the military mission and are referred to as DTA East and DTA West. The eastern bank of the Delta River is the natural dividing line between DTA East and West since it poses a major barrier to access of the western areas.

CRTC has three other major facilities on Main Post Fort Greely. Building 612 houses CRTC's command offices along with the center's Allied Trades' shop (which includes carpentry, metal working, and glass shops). Building 608 houses the center's instrumentation offices and a cold chamber. CRTC's consolidated maintenance and supply sections are located in Building 605. This building houses vehicle maintenance, a wash rack, a battery shop, offices, a supply warehouse, and equipment warm storage.



Figure 1.2 Bolio Lake Complex, DTA

CRTC is a tenant organization on both Fort Greely and DTA. DTA is controlled by U.S. Army Garrison (USAG), Fort Wainwright. Both USAG Fort Wainwright and USAG Fort Greely are under the Installation Management Command Pacific Region (IMCOM-Pacific). The following information describes land management and land stewardship considerations that apply to USAG Fort Wainwright. As a user of these lands, CRTC incurs related land stewardship responsibilities. Almost all of USAG Alaska lands are withdrawn from the public domain for military use. The Bureau of Land Management partners with USAG Alaska to jointly manage these withdrawn lands. Joint management refers to Congressionally-directed shared responsibility by the Bureau of Land Management and the Department of Defense for organizing, controlling, and supervising activities on certain withdrawn federal lands. Joint use may or may not involve joint management. Both joint use and joint management require joint stewardship.

Joint stewardship refers to the working relationship entered into between USAG Fort Wainwright and Bureau of Land Management for the care of withdrawn federal lands in Alaska and associated resources used by U.S. Army Alaska for military mission requirements. The United States has adopted an international political and military strategy that requires the nation's military forces to be ready to deploy on short notice for engagement anywhere in the world. The American people rightly expect these forces to be highly trained and equipped with the highest-performance materiel and technology available. Ready, capable forces result from repetitive training. New or modified weaponry and other equipment must be field-tested before being placed with the using units.

Because of the speed and maneuverability of modern armaments, today's and tomorrow's armed forces require large tracts of land for training and weapons testing. Changes in tactical doctrine and weapons technology, designed to dissuade any would-be-aggressor, to win battles and minimize casualties to American and allied forces in the event of armed conflict, are

increasing the need for such land despite reductions in the size of the U.S. military since the Cold War and the closure of some military installations.

The majority of the land currently used by USAG Fort Wainwright is on long-term withdrawal from public domain lands originally assigned to the Bureau of Land Management. Provisions for management of these lands are generally specified in each of the public laws, public land orders, executive orders, and other enabling documents. Whenever the military uses withdrawn public land, it incurs legal and moral responsibilities for the stewardship of the land and its resources. Residual responsibility for USAG Fort Wainwright withdrawn lands remains with Bureau of Land Management, which retains interest in the stewardship of the transferred parcel, even though the land is under Department of Defense's long-term management.

The reason USAG Fort Wainwright land is withdrawn from other public use to the military is to enhance military readiness in the interest of national defense. If the land was intended to be managed primarily for multiple uses, it would not be managed by a military service. Under USAG Fort Wainwright management, land is used primarily for national security purposes (e.g., training and testing) but will also be managed to accommodate additional uses as long as they do not impinge on the primary military readiness mission.

Multiple-use of the lands it manages is an integral part of the mission of the Bureau of Land Management. As defined by Federal Land Policy and Management Act, multiple-use implies that each authorized use of the land has an equal level of priority. Department of Defense, on the other hand, is a single mission agency. As such, it has a single, mission-oriented use for the land it manages: military readiness for national defense. The quality of life of Department of Defense's personnel is also an important component of Department of Defense's national defense mission. In support of their specific missions, Department of Defense's services and agencies implement a variety of land management practices on their installations that support military readiness and quality of life programs. For Department of Defense multiple-use is an approach to land management rather than an element of its mission. A variety of land management tools such as hunting, fishing, nature trail maintenance, watchable wildlife programs, and the maintenance of groomed open spaces may be used in the Integrated Natural Resources Management Plan in support of both quality of life programs and military training and testing requirements. By using a mix of these land management tools, Department of Defense undertakes a multiple-use approach to land management while still meeting the single mission use of the land (military readiness for national defense). An important aspect of this type of multiple-use approach to land management, however, is that it is employed only to the extent that it does not conflict with the military training and testing components of the overall national defense/readiness mission of the agency. For instance, USAG Fort Wainwright manages lands with many of the same protections as wilderness land or wild and scenic rivers. However, a Wilderness Designation or Wild and Scenic Rivers Designation are incompatible with the intent of the military land withdrawals and the military training mission.

As noted earlier, where withdrawal legislation specifies joint management, collaboration between the Bureau of Land Management and Department of Defense is essential. Stewardship, however, is an inherent responsibility of anyone who has activities on the land regardless of legislated land management responsibilities. Stewardship implies acting responsibly in the public

interest in the use and, as appropriate, restoration, improvement, preservation, and protection of federal lands and their associated resources. Good stewardship is a fundamental policy of all land management agencies and a mandate for all users of the land.

The principle mission of CRTC is to test military equipment in cold climate conditions. CRTC plans, conducts, analyzes, and reports results of cold regions materiel tests; reviews plans and monitors testing conducted by developers, producers, and contractors; and provides technical support, guidance, and services to Federal agencies and branches of the military. CRTC tests all types of equipment ranging from boots to tactical vehicles to night vision goggles to weapons. This testing is conducted in the natural cold regions environment in order to determine if various environmental factors (snow, ice, wind-chill, darkness, etc) effect equipment performance. Routine support actions include facilities and equipment maintenance, to include test preparation, which primarily consists of administrative and office activities, range maintenance and set-up of test ranges.

Many of the activities necessary to support and conduct testing are routine in nature, involving similar actions occurring at a limited number of locations. These actions include certain routine, frequently occurring tests, periodic maintenance activities, and infrastructure improvement projects. These actions have yet to receive a specific comprehensive analysis under the National Environmental Policy Act (NEPA). The Army's list of categorical exclusions, contained in appendix B of 32 CFR Part 651, does not specifically address Army testing missions. CRTC is planning for infrastructure improvement projects several years into the future, which means the exact parameters are not all known or are subject to change. For instance we may have a defined project at an as-yet undecided location, or the location is set, but the project details are too uncertain to fully analyze. It is also possible that some new testing item or requirement might generate unforeseen projects at previously unconsidered locations.

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 (32 CFR 651.5(d)(3)). 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.

The purpose of this document is to streamline the NEPA analysis process, avoid unnecessary cost-wasting duplication of efforts, and to allow CRTC to adapt to changing testing or mission requirements while still ensuring that a thorough NEPA analysis is conducted for each project or test. Under NEPA regulations, a broad, programmatic EA that covers an entire program or policy allows for the "tiering" of future NEPA documentation in cases where future decisions or unknown future conditions preclude complete NEPA analysis in one step (32 CFR 651.27). The subsequent tiered NEPA need only summarize issues discussed in the broader statement and concentrate on the issues specific to the subsequent action (32 CFR 651.14(c)).

This PEA considers three alternatives to address the Center's long-term programmatic needs:

- No Action: This alternative maintains the status quo and continues cold regions environmental testing using current NEPA procedures. No major facilities would be

constructed or upgraded. CRTC would continue its existing environmental review practices for each individual test or project.

- Action Alternative 1: CRTC would continue testing, and would conduct facility modernization through a list of site-specific infrastructure improvement projects, analyzed using current NEPA procedures
- Action Alternative 2: This is the preferred alternative, or proposed action, in which CRTC would continue testing, and would conduct facility modernization through site-specific projects, analyzed using enhanced environmental planning procedures.

This PEA describes the purpose and need for this programmatic approach and the three Alternatives. This document will analyze the environmental consequences of each alternative. Ultimately, this document will provide the decision-maker with the option of continuing under the status quo, or adopting one of the other alternatives.

The enhanced environmental planning procedures of Alternative 2 provide a methodology to evaluate specific future projects and tests. Under this approach, CRTC would consult a standard checklist and, where appropriate, implement a series of standard best management practices and operating procedures. This programmatic approach would alleviate much of the time and costs associated with analyzing projects on an individual basis, translating into more time and money going towards the actual testing mission. By analyzing the impacts of these actions within the programmatic framework, more thorough analysis of cumulative effects can be achieved. A programmatic approach offers more flexibility in the future, and will simplify coordination of the NEPA process between the proponent (CRTC) and the land managers (USAG Fort Wainwright and USAG Fort Greely).

1.2 PURPOSE AND NEED

A programmatic review of CRTC's testing program has never been completed. In order to meet statutory requirements as well as achieve day-to-day practical efficiencies, CRTC decided to initiate this analysis. This analysis looks at the environmental effects of continued cold regions environmental testing, efforts to modernize and consolidate facilities, as well as proposed enhanced environmental procedures aimed at increasing efficiency. The following are CRTC's three primary goals:

1.2.1 Continue Cold Regions Environmental Testing

Testing future military technology is required for ensuring that equipment that Soldiers use in the field performs properly, is safe, and operates dependably. Testing of materiel and equipment in a real world, cold regions environment is an important part of the overall testing program for many items. Test preparation and set-up is required for each specific test, necessitating test range and facility maintenance and/or reconfiguration.

1.2.2 Modernize and Consolidate Facilities

Testing of defense systems and equipment requires modern, large, specialized test facilities with advanced data acquisition capabilities. To ensure that its facilities are state-of-the-art and are most effective at testing future military technology, CRTC has developed a list of site-specific infrastructure improvements to its facilities. Construction of new buildings within DTA to replace outdated or unsafe facilities, installation of additional fiber optic lines, power line extensions, and associated infrastructure upgrades are planned. Consolidation of facilities from Main Post Fort Greely to the training ranges near the Bolio Test Complex and the Mobility Test Complex will help streamline and modernize CRTC's operations.

1.2.3 Streamline NEPA Review

CRTC currently analyzes each test and/or construction project individually. CRTC needs a readily accessible NEPA compliant tool that provides a rapid and streamlined response to ever changing test requirements and normal wear-and-tear on ranges and facilities. Currently, all actions require individual review – even if they are virtually identical in scope and environmental impact. Repetitive review results in increased costs and man-hours associated with document preparation.

CRTC would benefit from a more organized and systematic approach to the way environmental review is conducted. The Army is emphasizing comprehensive environmental stewardship through the Environmental Management System (EMS) process, to include the promotion of sustainable land use. This philosophy is being adopted by CRTC. Although USAG Fort Wainwright has overall responsibility for land management on DTA and USAG Fort Greely has responsibility on Main Post, CRTC is responsible for how tests are conducted and supported, how test ranges are used and maintained, solicitation of funding, and what test infrastructure is developed.

1.3 PROJECT OBJECTIVES

In order to meet the purpose and need discussed in section 1.2, CRTC has established the following objectives:

Objective 1: Enable the continuation of cold regions testing. Analyze test types and their cumulative impact on the environment. Analyze test support actions and their environmental impacts.

Objective 2: Provide state of the art testing facilities. Replace outdated buildings with new facilities near the ranges where testing occurs. Co-locate test support functions with test operations wherever feasible.

Objective 3: Develop a programmatic and streamlined approach to environmental review. Ensure that testing and infrastructure improvements are planned in a coordinated manner within CRTC, and with USAG Fort Wainwright and USAG Fort Greely. Create a streamlined programmatic NEPA review process to enhance CRTC's knowledge and decision-making while avoiding or mitigating detrimental impacts to the environment.

1.4 DECISIONS TO BE MADE

This PEA considers the direct, indirect, and cumulative effects of two Action Alternatives and the No Action Alternative. It was prepared in accordance with the National Environmental Policy Act 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, Environmental Analysis of Army Actions 32 CFR Part 651, and the *NEPA Analysis Guidance Manual* (USAEC, 2007).

The Commander of CRTC's parent command, Yuma Proving Ground, has final authority in deciding which proposed alternative to pursue. The U.S. Army Garrison, Fort Wainwright Garrison Commander must concur with actions that take place on Fort Wainwright. DTA, along with the Yukon, Tanana Flats, Black Rapids, and Gerstle River training areas are all part of Fort Wainwright. Although Fort Greely's primary tenant is now the Missile Defense Agency, real property management of the Main Post portion of Fort Greely rests with the Fort Greely Garrison Commander, as it is on other IMCOM lands. The Fort Greely Garrison Command must concur with CRTC actions that take place on Fort Greely. Each Garrison Commander has authority over the lands associated with his or her respective installation. This PEA would inform the decision-maker and the concurring officers of the potential environmental consequences of the No Action Alternative and of the Proposed Actions in the Preferred Alternative. Each of these Army officials 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.

The Yuma Proving Grounds Commander, with concurrence from the two Garrison Commanders, will decide which of the alternatives will be implemented. After reviewing the analysis contained within this PEA, the decision-makers may choose to prepare either a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for implementation of the preferred alternative.

1.5 SCOPE OF ENVIRONMENTAL ANALYSIS (ISSUES OF CONCERN)

Section 3 of this PEA provides a description of the affected environment and section 4 provides an analysis of the potential impacts (direct, indirect, and cumulative) to physical and biological resources. 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 regard to each Proposed Action as well as the No Action Alternative:

- Soils and Permafrost
- Air Quality and Greenhouse Gases
- Surface Water and Floodplains
- Wetlands
- Vegetation
- Fire Management
- Wildlife & Fisheries
- Cultural Resources
- Airspace Management
- Public Access, Recreation and Subsistence
- Noise
- Land Use, Energy and Utilities
- Human Health, Safety and Hazardous Substances

CRTC has determined that various resources would not be impacted by the Proposed Actions. The resources and reasons for exclusion from additional study are listed below. Further evaluation and analysis are not necessary and will not be addressed in section 3 and 4.

Groundwater: Any potential impact to local or regional groundwater quality or availability under the Proposed Actions would be insignificant. Construction activities analyzed within the PEA would result in minor surficial soil disturbances and would not be anticipated to adversely affect groundwater. Proposed hardening with gravel would cover approximately 51 acres, scattered across thousands of acres of undisturbed terrain. Gravel pads and trails would be graded to drain water rather than letting it pond, which would allow for groundwater recharge. Finally, areas covered by buildings would be defined in terms of square footage and total less than 4 acres, also scattered among CRTC's operational areas. Scientists with the Cold Regions Research and Engineering Laboratory installed fourteen groundwater monitoring wells at Washington Range in 2001. Due to concerns about the potential impact from testing and training on groundwater supplies, groundwater samples have been collected and analyzed periodically since 2001, with no explosives-residues detected (CRREL 2001c, 2010). At Washington Range, CRTC is planning one project that includes the installation of a well that would be used on an occasional basis (there is no full-time occupation of the building). The rate of groundwater flow in this area is high (Wilcox estimated 1500 gallons per minute in her 1980 publication), meaning that any additional water used from the proposed project will not have an effect on overall groundwater availability. Substances (i.e., fuels, oils, and other lubricants) associated with construction equipment and operations have the potential for leaking into soils and entering groundwater aquifers. Impacts would be avoided through the use of BMPs to prevent spills or leaks as defined in each Garrison's Spill Pollution Prevention and Countermeasure Plan, AR 200-1 and USARAK Pamphlet (PAM) 200-1. The proposed alternatives would not affect overall surface water patterns (see section 4.4); 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 PEA (section 4.2).

Threatened and Endangered Species: No Federally listed rare, threatened, or endangered species, or their habitats, occur within DTA or Fort Greely. The Proposed Actions would not affect threatened or endangered species; therefore, no consultation under Section 7 of the Endangered Species Act would be required (also see section 1.7.1).

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.

Environmental Justice: The EPA defines Environmental Justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies”. The Proposed Actions would not disproportionately affect minority or low-income groups in the regions surrounding the installation. The Proposed Actions would result in an equal, non-significant impact on all individuals living with the region.

Traffic and Transportation Systems: All construction activities would be confined to DTA and utilize existing roads and trails for access. Equipment required for construction projects would likely use existing state highways for access to DTA. Such use would be minor and temporary in nature and would not cause a noticeable impact to the local populace. All transportation associated with test 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.

1.6 RELATED ENVIRONMENTAL DOCUMENTATION

U.S. Army Garrisons Fort Wainwright and Greely have in recent years produced a variety of NEPA analyses evaluating several actions affecting Army lands. The Department of the Army has completed programmatic documents on a variety of weapons and vehicles tested at CRTC. CRTC and the U.S. Air Force have also completed NEPA documentation for actions on Army lands.

The focus of the bulk of these documents is primarily military training and construction, to include the addition of Soldiers and new vehicles, a general increased use of Army training lands, and range development projects. CRTC and its testing mission have been included in some of these documents, but not analyzed in detail. More importantly, these documents provide a detailed description of the baseline conditions for local resources and the environmental effects of military use of DTA. The EISs in particular, provide a level of detail not reproduced in this environmental assessment.

Army Test and Evaluation Command also conducts environmental analysis on significant additions to the Army equipment inventory. Furthermore, testing of this equipment has been documented through environmental analysis at other test centers including Aberdeen Proving Ground and Yuma Proving Ground.

The following documents are therefore incorporated by reference:

Army

U.S. Army Garrison Fort Richardson and Fort Wainwright, Alaska, Range Complex and Training Land Upgrades Final Finding of No Significant Impact and Programmatic EA, March 2010. This PEA analyzes the environmental impacts of a group of site-specific range improvement projects, develops the small arms complexes at each installation as adaptable use zones, and establishes and analyzes environmental stewardship range construction guidelines. This PEA will serve as a foundational reference source for CRTTC's PEA in regards to DTA.

Stationing and Training of Increased Aviation Assets within U.S. Army Alaska EIS, August 2009. This EIS evaluates the environmental effects of the U.S. Army proposal to station and train a new aviation unit in Alaska. This EIS will serve as a reference for cumulative impacts analysis, particularly increases in infrastructure and training requirements.

DTA East Mobility and Maneuver Enhancement EA, May 2008. This EA analyzes three range projects in portions of DTA east of the Richardson Highway. This PEA will serve as a foundational references source for DTA resources that are similar between areas east and west of the Richardson Highway.

U.S. Army Garrison Alaska Integrated Natural Resource Management Plan (INRMP) 2007-2011 and INRMP EA, December 2006 and January 2007, respectively. These documents and any successors describe standard policies and procedures for managing natural resources to ensure sustainability of Army lands.

BAX/CACTF Final EIS, June 2006. The focus of this EIS is a new combat training facility at DTA East. This document provides an environmental analysis of construction and operation of the range facility. This EIS focused on the existing environment at DTA East, and provides a relatively up-to-date and comprehensive description of existing resources. This EIS will serve as a foundational reference source for this PEA.

Integrated Training Area Management Plan (ITAM) and ITAM EA, October 2005 and June 2005, respectively. These documents focus on managing sustainable use of training areas at DTA and provide recommended measures to achieve sustainability and rehabilitation of lands impacted by training. The BMPs and standard practices outlined in the ITAM Plan will as a valuable reference for the BMPs and SOPs contained in this PEA.

Conversion of the Airborne Task Force (ATF) to a 4-25th BCT Final EA, September 2005. This document analyzes the impacts to USAG Fort Richardson and USAG Fort Wainwright lands (including DTA) and surrounding communities and land users associated with the conversion of the ATF to a 4-25th BCT at Fort Richardson.

Transformation of U.S. Army Alaska Final EIS, May 2004. This document analyzes the impacts to USAG Fort Richardson and USAG Fort Wainwright lands (including DTA) and surrounding communities and land users associated with the transformation of the 172nd Infantry Brigade (Separate) at forts Wainwright and Richardson into a 1-25th SBCT. This EIS will serve as a reference for this PEA.

Integrated Cultural Resource Management Plan (ICRMP), 2001-2005, Fort Wainwright and Fort Greely, Alaska, May 2000. This document outlines treatment for and management of cultural resources.

National Missile Defense (NMD) Deployment Final Environmental Impact Statement, Ballistic Missile Defense Organization, July 2000, and *Record of Decision for Site Preparation Activities at the Missile Defense System (MDS) Test Bed at Fort Greely, Alaska, Ballistic Missile Defense Organization*, August 9, 2001, and *Record of Decision To Establish a Ground-Based Midcourse Defense Initial Defensive Operations Capability at Fort Greely, A, Missile Defense Agency*, 25 April 2003. This EIS and subsequent Records of Decision references deployment of the Missile Defense Test Bed at Fort Greely. These documents will serve as general references for this PEA.

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 DTA and other portions of Fort Wainwright from public use for military purposes until November 6, 2026. The authors of this EIS include military testing in the analysis of military use of these BLM withdrawn lands and will serve as a reference for this PEA.

Air Force

Establish the Delta Military Operations Area, Alaska, Final EA, 2010. This document details many aspects of airspace and related military use of the airspace in the DTA, and Fort Greely areas. The descriptions of types of airspace and use will be incorporated into this PEA.

Joint Advanced Weapons Scoring System EA, 2008. This document discusses a USAF project to improve the electronic scoring system used in Oklahoma Impact Area. The descriptions of resources in the general vicinity of Oklahoma Impact Area and DTA West will be used in evaluating the expected impacts from the Proposed Actions in DTA West.

C-17 Flight Training Areas EA, September 2005. This document justifies the United States Air Force (USAF) need for C-17 aircraft and analyzes the impacts to USAG Fort Richardson and USAG Fort Wainwright drop zones and Allen Army Airfield at Fort Greely. This EA also analyzes C-17 aircraft operations and aircrew training in Alaskan airspace. The C-17 EA serves as a reference for this PEA.

Cold Regions Test Center

CRTC Records of Environmental Consideration, 2005-2009. During this 5-year period, CRTC wrote 37 RECs evaluating impacts of cold weather tests. In addition, CRTC wrote two RECs for summer tests. CRTC also wrote ten RECs analyzing minor construction or maintenance projects. This archive will serve as one basis for evaluating testing at CRTC throughout this PEA.

CRTC Mobility Test Complex EA, January 2004. This EA looked at the construction and operation of a Cold Weather Mobility Test Complex with DTA. A subsequent Supplemental EA

was published in December 2005 that analyzes the construction of a security fence around the complex. This EA will serve as a reference for this PEA.

Environmental Assessment of Cold-Weather Testing of the M56 Smoke Generator System (SGS) (Millimeter Wave Modifications) at DTA 2004, CRTC, 2004. This EA analyzed testing of equipment that generates fog oil smoke containing tiny graphite fibers that can disrupt millimeter wave radar otherwise capable of seeing through the smoke. This EA will serve as a reference for this PEA.

Final Range Wide Environmental Impact Statement, July 2001, U.S. Army Yuma Proving Ground. This Environmental Impact Statement discusses testing activities at CRTC's parent command - Yuma Proving Ground. Desert environmental testing occurs at Yuma Proving Ground and is conducted in a fashion similar to CRTC's test activities. Desert testing usually occurs prior to cold climate testing. This EIS will serve as a foundational reference source for this PEA.

U.S. Army Environmental Command and Others

Programmatic Environmental Assessment, Unmanned Aerial Systems: Training and Testing at U.S. Army Installations (Draft), May 2010, U.S. Army Environmental Command. This EA will serve as a reference for Unmanned Aerial Systems testing at CRTC.

Final Programmatic Environmental Assessment for Fielding and Use of Mine-Resistant Ambush Protected Vehicles at Army Installations in the United States, HQ Dept of the Army, Deputy Chief of Staff G-3, Directorate of Training, Prepared by Environmental Planning Support Branch, U.S. Army Environmental Command, Aberdeen Proving Ground, MD 21010, September 2009. This EA will serve as a reference for Mine-Resistant Ambush Protected Vehicle testing at CRTC.

Final Environmental Impact State, STB Finance Docket No. 34658, Alaska Railroad Corporation Construction and Operation of a Rail Line Between North Pole and Delta Junction, Alaska, Surface Transportation Board, September 18, 2009. This EIS analyzes the environmental effects of building a railroad, including several sections that would be built on military lands. The descriptions of resources and analysis provide current information for parts of DTA West. This EIS will serve as a general reference for this PEA.

Programmatic Environmental Assessment for Use of the M1117 Armored Security Vehicle at Army installations in the United States, Environmental Planning Support Branch, U.S. Army Environmental Command, Aberdeen Proving Ground, MD 21010, February 2008. This EA will serve as a reference for M1117 Armored Security Vehicle testing at CRTC.

Programmatic Environmental Assessment for Standard Targetry Replacement, HQ Dept of the Army, Deputy Chief of Staff G-3, Directorate of Training, Prepared by Environmental Planning Support Branch, U.S. Army Environmental Command, Aberdeen Proving Ground, MD 21010, April 2006. This document discusses replacement of targetry on ranges on installations throughout the United States, to include Alaska.

Final Stryker Family of Vehicles, Programmatic Environmental Assessment, Full Rate Production Phase, Environmental Planning Support Branch, U.S. Army Environmental Command, Aberdeen Proving Ground, MD 21010, March 2004. This EA will serve as a reference for Stryker testing at CRTC.

Abrams Tank System Life Cycle Environmental Assessment, Revision 2, December 2001. U.S. Army Tank Automotive and Armament Command. This EA will serve as a reference for Abrams tank testing at CRTC.

1.7 INTERAGENCY COORDINATION AND GOVERNMENT-TO-GOVERNMENT CONSULTATION

1.7.1 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 5 February 2010 inviting the agencies to comment on the Proposed Actions. The scoping period ended 8 March 2010. An example scoping letter and Agency responses are provided in appendix A.

- Alaska Department of Environmental Conservation (ADEC)
- Alaska Department of Fish and Game (ADFG), Division of Habitat
- ADFG, Division of Sport Fish, Delta Junction Area Office
- ADFG, Division of Wildlife Conservation, Delta Junction Area Office
- Alaska Department of Natural Resources (ADNR), Division of Forestry, Delta Area Office
- ADNR, State Historic Preservation Office
- Bureau of Land Management (BLM), Northern Field Office
- BLM, Alaska Fire Service
- City of Delta Junction
- Salcha-Delta Soil and Water Conservation District
- U.S. Air Force
- U.S. Army Corps of Engineers, Regulatory Branch
- U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service submitted comments regarding informal consultation under the Endangered Species Act and recommended periods for avoiding vegetation clearing. This EA incorporates the submitted comments.

1.7.2 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 the National Environmental Policy Act.

In accordance with the Army’s 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 200-1, *Environmental Protection and Enhancement*, government-to-government consultation regarding this PEA has been initiated with the following Native tribes: Village of Dot Lake, Healy Lake Village, Northway Village, Native Village of Tanacross, and the Native Village of Tetlin. CRTC’s Environmental staff is working directly with tribal representatives to ensure there is sufficient opportunity for their meaningful and effective participation. No responses have been received to date from any tribe. Government-to-Government consultation was completed concurrent to public review.

1.8 PUBLIC REVIEW PROCESS

Section 1.7.1 provided a summary of the agency scoping period. A notice of Availability of this Draft PEA was published in the Fairbanks Daily News-Miner and the Delta Wind, and on the Delta News Web (<http://www.deltanewsweb.com>), beginning a 30-day comment period on January 12, 2012 and ending on February 11, 2012. Copies of this Draft PEA were made available on Yuma Proving Ground website (http://www.yuma.army.mil/mhub_documents.shtml) and on the USAG Fort Wainwright NEPA website (http://www.wainwright.army.mil/env/NEPA/NEPA_Home.html). A hard copy was also placed at the Delta Junction Community Library.

One agency comment was received during the comment period from the U.S. Fish and Wildlife Service. While they do not object to the FNSI, they requested that a discussion of sandhill cranes be included in section 4.8 due to the presence of a crane special interest management area on DTA. This discussion has been incorporated into the Final EA document. No comments from the general public were received.

1.9 LISTS OF FEDERAL PERMITS, LICENSES, OR ENTITLEMENTS

Table 1.1 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 1.1 Laws, Regulations, and Associated Consultations and Permits	
Law or Regulation	Description
ADNR 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 ADNR “to construct a hydraulic project or use, divert, obstruct, pollute, or change natural flow or bed” of a specified anadromous water body.
ADNR Fishway Act AS 16.05.841	The Fishway Act requires that an individual or government agency notify and obtain authorization from ADNR 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.
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.
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, and 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.
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).

Table 1.1 Laws, Regulations, and Associated Consultations and Permits (Continued)	
Law or Regulation	Description
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: <i>Floodplain Management</i> [42 FR 26951 May 24, 1977] EO 11990: <i>Protection of Wetlands</i> [42 FR 26961 May 24, 1977]	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: <i>Invasive Species</i> [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: <i>Responsibilities of Federal Agencies to Protect Migratory Birds</i> [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: <i>Indian Sacred Sites</i> [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: <i>Consultation and Coordination with Indian Tribal Governments</i> [65 FR 67249 November 9, 2000]	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. <i>Note: Testing and those projects required to achieve military readiness are exempted by the 2003 Defense Authorization Act.</i>
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.
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	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.

Table 1.1 Laws, Regulations, and Associated Consultations and Permits (Concluded)	
Law or Regulation	Description
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 Historic Preservation Act.
Sikes Act [16 USC 670a et seq.]	Provides for cooperation by the Departments of Interior and Defense with State agencies in planning, development and maintenance of fish and wildlife resources on military reservations. Also requires Garrisons to write Integrated Natural Resource Management Plans to define and implement this cooperation.

SECTION 2. DESCRIPTION OF THE NO ACTION AND ACTION ALTERNATIVES

The following sections describe three alternatives: 1) Continuation of the Status Quo using current NEPA procedures (No Action Alternative); 2) Continuation of Testing and Implementation of Facility Modernization using Current NEPA Procedures (Action Alternative 1); 3) Continuation of Testing and Implementation of Facility Modernization using Enhanced Environmental Planning Procedures (Action Alternative 2).

The Alternatives were developed in accordance with CRTC 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. A description of routine, regular cold-weather testing and support activities and a description of existing operational areas and facilities are also included. Current NEPA review procedures for test activities are provided.

Section 2.2 describes the option of continuing testing while modernizing and consolidating facilities using only existing environmental review procedures (Action Alternative 1). This section builds on the descriptions of test and support activities provided in section 2.1 by adding a description of foreseeable future construction projects, and the current NEPA review procedures for construction projects.

Section 2.3 incorporates the prior descriptions of test and support activities and foreseeable future construction projects and describes the proposed enhanced environmental review procedures (Action Alternative 2). These environmental review procedures would be used for all testing activities as well as facility modernization and consolidation efforts. Safety and environmental precautions that would be implemented are also discussed.

The preferred alternative is identified in section 2.4. Section 2.5 addresses alternatives considered and eliminated from detailed study. A summary of the potential environmental consequences of all of the alternatives is presented in section 2.6.

2.1 DESCRIPTION OF THE STATUS QUO (NO ACTION ALTERNATIVE)

Under the No Action Alternative, CRTC would continue testing using its current business and environmental review practices. No major facilities would be constructed. No major operations would be moved. Existing range areas would continue to be used and maintained at existing levels. CRTC would continue its existing environmental review practice which requires development of formal records of environmental consideration, along with best management practices and standard operating procedures, for each individual test or project.

2.1.1 Overview of Current CRTC Testing

The Army purchases billions of dollars in equipment annually. In order to ensure that items are the best value and meet Army requirements, the Army tests all of its tactical equipment prior to procurement. This testing is conducted at test centers throughout the nation. CRTC is one of these test centers and has been designated as one of the nation's Major Range and Test Facility Bases (MRTFB) by the Department of Defense.

The Army conducts two basic kinds of equipment tests: developmental and operational. Developmental testing generally occurs as items are being designed or are being selected, or, more rarely, for an existing system that requires testing for quality control (known as a production qualification test). In short, developmental testing ensures that items do not break, that they can withstand the rigors of the environment, and that they function as intended. Operational testing puts equipment in the hands of Soldiers and ensures that the item works within a larger tactical environment. Items must be practical and work within real-world scenarios, dovetailing within a larger suite of equipment and tactics. In concert with Army product managers, both types of testing allow manufacturers to collaboratively redesign items prior to large-scale procurement and manufacturing. Data from testing is delivered to Army program managers who use information to make procurement decisions.

Generally, CRTC conducts developmental testing, but will occasionally host and support operational testing. The Center conducts a specific type of development testing – cold regions environmental testing. CRTC provides Army equipment evaluators with detailed information on how equipment of all kinds performs in a cold regions environment. This testing is generally (but not always) conducted in temperatures below zero degrees Fahrenheit. A large percentage of the testing must occur at temperatures below -32°C (-25°F), with CRTC frequently testing equipment when ambient temperatures approach -45°C (-50°F). These times correspond to a test season that runs from late October through the end of March, which are the typical months of the year that testing is conducted. On occasion (twice in the last five years, for example), tests are conducted during spring, summer or fall for other reasons, not dependant on winter conditions.

CRTC also provides logistical support to operational testers wanting to determine functionality of equipment in a cold-climate operation. This generally involves hosting personnel in CRTC's barracks, providing dining facilities, scheduling ranges, providing transportation, fabricating test support items, and other associated tasks. These testers generally arrive during the winter with their equipment and conduct routine type field exercises using the test equipment.

The decision to test items at CRTC depends on many factors: the type of item being procured (e.g. snowshoes versus scuba fins), the informational needs of the procurement officials, the amount of time and funding available prior to procurement, and the suitability of existing cold chamber data performed at other test centers. Many pieces of equipment, due to their size or complexity, must be tested in a natural cold environment in order to gain information that laboratory or chamber testing cannot provide. Operational, psychological, and synergistic effects can only be gauged in a natural cold environment.

CRTC generally adheres to the Army's standardized Test Operating Procedures (TOP). These documents provide guidance on how and when to test equipment. They determine what types of testing must be completed and how this testing must be accomplished. These documents detail the types and often quantities of data that must be collected. As an example, Arctic-specific TOPs are listed in appendix G. Occasionally, test items will be fast-tracked through the Army test and evaluation system to respond to a compelling need for a piece of equipment in a combat zone. In these cases, test and evaluation procedures may be postponed until after procurement or waived altogether. For example, the Mine Resistant Ambush Protected vehicles were procured for use in Iraq and Afghanistan before being tested by CRTC. Winter testing was delayed for the immediate mission though such testing has recently started.

Certain types of data are collected for all tests; other equipment tests have special data requirements. CRTC collects weather data throughout the year. Detailed meteorological profiles for each test provide evaluators details on temperature, humidity, precipitation, amount of sunlight, snow cover, and day length during test events. The names of test participants are recorded. Sometimes, anthropometric measurements such as height and weight are recorded. Location of testing is recorded.

CRTC is asked to test equipment ranging from gloves to armored tanks. In general, equipment testing falls into the following four categories: vehicles, weapons systems, clothing, and individual equipment (small Soldier items). Some types of equipment fall into two or more categories (the Bradley Fighting Vehicle is both a vehicle and weapons platform). The types of equipment CRTC tests in a given year vary depending upon the Army's procurement cycle, available funding, and the equipment needs of troops, particularly those in active combat zones.

2.1.1.1 Types of Equipment Tested

Cold-weather environmental testing of military equipment at CRTC has been ongoing since 1949. CRTC can conceivably test any item in the Army's inventory. For the purposes of this analysis, we grouped the most common test types into four categories. Test support and maintenance activities are grouped by common type as well. From year to year or within the same category, many of these tests and support activities entail similar actions occurring in similar environments and locations.

In most cases, CRTC tests items that have already been fielded to Soldiers throughout the world, but have not been tested or approved for use in an extreme cold climate. In general, the Program Management Office for such systems will have already completed a generalized nationwide environmental analysis on that system, usually documented through a programmatic environmental assessment. It is extremely rare that CRTC is asked to test new, unique items that have not already been fielded or tested at other locations within the United States.

The following sections list four major types of equipment that CRTC tests, based on the period 2000 to 2010. CRTC frequently tests sub-systems of these four major systems; for example, a night-vision sight might be tested while fitted onto a Bradley Fighting Vehicle. On rare occasions, CRTC conducts tests on items that do not fit within the following four categories, such as unmanned aerial vehicles or helicopters. Appendix C provides additional descriptions of

these types of equipment. Appendix F provides an alternative way of describing test operations conducted at CRTC, based upon mission or functional areas.

Vehicles

CRTC identifies safety and health hazards associated with transporting, operating and maintaining a given vehicle in a cold region. When a vehicle is first received at the center, test personnel conduct a thorough inspection of the vehicle to identify any obvious safety deficiencies. Types of tests range from measurements of any combustion gases within the cab of a vehicle to inspections of walking surfaces for ice buildup.



Figure 2.1 Test Vehicle Prepared for a Cold Start Test

CRTC conducts limited human factors studies to determine if a broad variety of Soldiers (e.g. different heights, strength) can safely and effectively operate the equipment. One frequent human factors test conducted in the cold regions provides data on whether a vehicle can be safely and efficiently operated while wearing bulky cold weather clothing. Test personnel wearing winter clothing are asked to enter and exit the vehicle; their performance is timed. Personnel might be asked to press buttons or turn knobs while wearing gloves or mittens.

Environmental tests provide data on how vehicles operate in a cold climate. CRTC personnel connect special testing instruments and install data recorders in the test vehicles that can then log all kinds of performance information. Test personnel then drive the instrumented

vehicles on a variety of surfaces (hard surface roads, secondary roads, or trails). Typically, test vehicles are driven 3000 miles per test, evenly divided between each class of surfaces. Usually a test support vehicle, such as a pick-up or SUV accompanies the test vehicle. Environmental testing occurs primarily in the winter. Detailed data is collected on each vehicle. Performance tests answer basic questions such as maximum speed, fuel economy, oil consumption, power consumption, acceleration, and operating temperature. Common tests unique to the cold regions include heater and defroster performance, measurement of the time it takes for an engine to reach operating temperature in extreme cold, and traction on ice-covered surfaces.

CRTC often collects data on the reliability, availability, maintainability, and durability of test vehicles. Detailed information is collected that provides decision-makers information on how easily a vehicle is maintained in a cold climate. Examples of data collected include the number of minutes to perform routine maintenance tasks or the frequency of required oil changes.

Weapons Systems

CRTC identifies safety and health hazards associated with firing weapons systems in a cold climate. Hazards might include exposed metal triggers on small arms that could result in frostbite in extreme cold, combustion gases accumulating in vehicles after weapons are fired, or subtle performance problems associated with shrinkage of different materials in the cold. Generally, these faults are identified by visual inspection by trained personnel. Human factors are evaluated as part of the safety review. A review might determine if Soldiers of various heights might have difficulty stowing a weapon or loading ammunition into a weapon from an ice-covered surface. CRTC also collects limited data on the reliability, availability, maintainability, and durability of weapon systems. Time to clean or load a weapon might be measured.

CRTC conducts trials that evaluate functionality and, in most cases, the accuracy of a weapon system. Functionality is evaluated by following step-by-step operational procedures in the weapon's manual. [These are the same procedures that would be followed by Soldiers.] The weapon is fired repeatedly. Test personnel record the number of successful firings (and misfires). If accuracy data is needed, CRTC fires the weapon at a fixed or moving target. Fixed targets are generally made of canvas or plywood and marked with a grid system. The target is filmed during firing and the results later electronically scored. CRTC then completes a statistical summary for the project manager that details how accurate the weapon was. Project managers will then compare these results to those obtained during temperate, tropical, desert, and laboratory testing.

Another type of testing that CRTC conducts is storage testing. CRTC stores ammunition and weapon components in unheated shelters at the Fort Wainwright, Fort Greely, and Bolio Lake ammunition supply points. The equipment and ammunition is allowed to acclimate to ambient conditions throughout the year. Random samples are withdrawn each year for testing outside Alaska (e.g. firing of the weapon for accuracy or function). This provides the Army information on deterioration that might occur due to dry rot, freeze/thaw cycles, condensation, oxidation, and similar processes.

Clothing

Clothing tests are primarily human factors tests. CRTC evaluates whether the average – as well as the exceptionally large or small – Soldier can wear cold weather clothing articles. Skin temperature measurements provide data on a piece of clothing’s insulating capability. Personnel participating in durability testing might be asked to complete routine tasks (e.g. moving a drum, getting into a vehicle, etc). The amount of wear and tear is documented, and participants are asked about clothing fit and comfort. Camouflage capability against snow-covered surfaces might be evaluated. Personnel might participate in cross-country movements to determine if the garments speed up or hinder their performance.

Occasionally, CRTC conducts clothing storage tests. Items are stored for long durations of time in unheated shelters. Articles are withdrawn and tested, looking in particular for dry rot or other deterioration.

Individual Equipment

Soldier items can range from small personal items (e.g. canteens) to sophisticated equipment (e.g. guided parachutes, laser-locating and designating modules). Nonetheless, the basic test methodology remains the same for each. Upon receipt of the item(s), it is inspected for obvious flaws or shipping damage. A review of pertinent literature and procedures is conducted, with an eye to safety of use. These safety reviews provide preliminary data on likely cold weather performance. Examples of this review could include a determination of whether there is a potential for an accumulation of toxic gases or the possibility of contact frostbite due to the presence of exposed metal surfaces.

Basic functionality testing provides considerable data to item managers. Items are operated in the cold in accordance with manufacturer guidelines. Basic data is collected on the item while it is operating. Cumulative wear and tear, overall performance in a cold environment, and adherence to performance specifications are measured. Examples of data collected include measurements of core and surface temperature, energy consumption, accuracy of readings (for measuring devices), or metal stress. Generally, CRTC will test dozens of the same item to account for normal statistical error. The operation is usually repeated for multiple iterations for the same reason.

Human factors testing is usually incorporated into functionality testing. Tests are designed to gauge whether a broad range of Soldiers can use the item in a cold regions environment, particularly while wearing arctic clothing. In general, CRTC invites Soldiers from Fort Greely or Fort Wainwright to use the equipment. These Soldiers represent a random sampling of the larger Soldier population. Anthropometric data such as height, weight, and gender are collected. Soldiers are sometimes asked to complete questionnaires on the item. On occasion, CRTC will ask Soldiers to complete cognitive or physical fitness tests to determine level of mental or physical fatigue after using the item.



Figure 2.2 Rangefinder Testing

CRTC frequently conducts storage testing on Soldier items. CRTC stores components in unheated warehouses near the Bolio Test Complex. The equipment is then allowed to acclimate to ambient conditions throughout the year. Random samples are withdrawn each year for testing either at CRTC or at another test center outside Alaska. This testing provides the Army information on deterioration that might occur due to dry rot, freeze/thaw cycles, condensation, oxidation, and similar processes.

2.1.1.2 Test Planning

Test planning begins with a requirement for testing from a Project Management (PM) office. PM offices represent the United States Army in the selection, development, and procurement of equipment and materiel systems. Whether gloves or a missile, new pieces of equipment are chosen from different manufacturers as potential inventory items to be purchased by the Army. Prior to an order for a large purchase, the PM gathers performance data on the items to ensure that it meets the Army's specifications and functions as designed. This data is acquired by sending prototypes of the equipment to Army test centers for thorough real-world testing. Basic testing begins at Aberdeen Test Center (ATC). As items are redesigned and refined, they are then sent to the three environmental test centers — Yuma Test Center (desert), Tropics Test

Center, and Cold Regions Test Center — where equipment undergoes additional real world testing to ensure that it functions in these extreme environments. Data from all of these test centers is provided constantly to the PM office. Once the PM has adequate data on the item, they perform an analysis of the reliability and value of that system. PM managers can then make an informed procurement decision on behalf of the U.S. Government; either choosing to add the item to the national inventory, send the item back to the manufacturer for further refinement, or reject the item altogether.

When PMs have a requirement, they approach CRTC and request test services. CRTC usually begins National Environmental Policy Act (NEPA) review of a given test when the scope of services requested by the PM is known. The CRTC environmental staff reviews any existing programmatic NEPA documents for the system, and any NEPA documents describing testing of the item at another test center. They then draft a preliminary NEPA document, usually in the form of a Record of Environmental Consideration, which is forwarded to the USAG Fort Wainwright and/or Fort Greely environmental staff and Directorate of Public Works for concurrence and signature. Some actions to be conducted in support of testing require other environmental permits or compliance with environmental laws and regulations. The CRTC Environmental staff completes these permits and submits them directly to regulatory authorities for approval, except where Army or other regulations require that they be submitted by the landowner (USAG Fort Wainwright or Fort Greely) or their agent (often the U.S. Army Corps of Engineers).

Despite similarities between types of equipment tested, each requires individual environmental review, to include evaluations of support actions that will be needed for that test. This review may consist of either a record of environmental consideration (REC) or environmental assessment (EA). Separate review of each test can be redundant and time-consuming, causing unnecessary costs and delays to the detriment of the testing mission. It is sometimes unknown during the early planning stages which test support activities and appropriate mitigation measures will be needed for a given test.

After defining a general scope of services and providing funds, PM shops work directly with CRTC's personnel on development of a test plan. Each test is assigned a test officer, who usually writes this plan. This plan details the piece of equipment/materiel to be tested, the types of data to be collected, how the equipment will be tested, maintenance procedures, and other pertinent data.

Private industry, to include customers like Ford and General Motors, also pay CRTC for use of the Mobility Test Complex, or rarely for its test services. These private tests can only be scheduled when it will not interfere with military testing. They are dependent on the availability of facilities and personnel. CRTC would not undertake any facility construction or infrastructure improvements on behalf of private entities or to support private tests.

Navy and Air Force PM Shops sometimes request that CRTC test equipment and provide data to them. Sometimes, PM offices will conduct a "safari" test at CRTC. In these cases, the PM will have personnel experienced with a given system—usually from another test center—

conduct the test. In these cases, CRTC provides support to the testers to include the use of its facilities and personnel as needed.

Once a scope of services is established, the test officer coordinates anticipated test support needs with the larger CRTC staff. These include working with personnel ranging from instrumentation staff to the meteorologists to data collectors. Preliminary planning involves considerations for safety (personal protective equipment, risk assessments, emergency medical considerations), hazardous material/hazardous waste management, security, material supplies, ammunition, land use, radio frequency allocation, and similar issues.

Preliminary coordination with USAG Fort Wainwright offices is completed during test planning. CRTC schedules any range or training areas that might be required with DTA Range Control. The CRTC test officer may request that airspace restrictions be temporarily emplaced for certain test events. Off-post maneuver requirements, new construction, or similar real property actions are coordinated through the Fort Wainwright real property office, in accordance with Directorate of Public Works policies.

For each test, CRTC test officers submit range packets to the local DTA Range Control for coordination, review, and approval. This package includes a description of the operation in general, maps showing surface danger zones (for weapons firing) or routes to be followed (for vehicles), dates and times, airspace requirements, participating personnel and their qualifications, the types and quantities of ammunition to be used, safety risk assessments, target requirements, special communication requirements, special frequencies required (and associated approval documents), and other pertinent information. Range Control conducts a review for compliance with safety, environmental, and training regulations as described in USAG Fort Wainwright Regulation 350-1. This package is then revised to reflect changes resulting from scheduling conflicts or other issues. Once the final package is completed, it is formally approved and scheduled by Range Control. Based upon the information submitted in this package, Range Control monitors test activities as they occur for compliance. Furthermore, Range Control inspectors clear the range upon completion of any tests.

2.1.1.3 Test Preparation and Set-Up

Test preparation and set-up often begins months before the start of a test. CRTC personnel use the test plan (or draft test plan) as a guide. Because CRTC tests so many different types of equipment, the types of activities required to prepare for a given test event vary considerably from year to year. One year, CRTC might build an ice bridge to access remote parts of DTA for a missile test while another year CRTC personnel might test small robots in a parking lot. A glove test requires that participants perform various tasks requiring dexterity while testing a Stryker vehicle requires driving a vehicle over thousands of miles to determine reliability.

In spite of the differences in the types of tests conducted from year to year, there are some common activities performed as part of test preparation and execution. These activities are described in this section and are also provided in appendix C.

The Test Operation Division (TOD) is responsible for general oversight of the test. The Test Officer is part of this division. TOD personnel ensure that adequate personnel will be available to run the test. Often, this requires that additional seasonal personnel, usually data collectors and drivers, be hired. TOD personnel ensure that ranges are scheduled, that any outstanding airspace issues are resolved, and that any frequency allocations or requests have been processed through regulatory agencies such as the FAA and the FCC. TOD personnel also ensure that data collection sheets and methods be established.

TOD personnel coordinate with other CRTC shops to ensure that the numerous requirements for conducting a test are in place prior to the commencement of actual testing. These other shops are part of CRTC's Test Support Division (TSD). The Test Support Division is divided into an Allied Trades Section, a Maintenance Section, an Instrumentation Section, a Supply Section, a Meteorological Section, and an Information Management Section. Each of these sections has specific tasks and responsibilities in support of upcoming tests.

The Allied Trades section is generally tasked with fabricating items for use on the test. Items range from specialized machined parts to wooden mannequins to canvas targets. In the past, this shop has fabricated warm-up shelters for use on the ranges.

A primary duty of the Allied Trades shops is to fabricate targets. These targets can be simple wood and canvas screens or elaborate mockups of enemy vehicles. The targets can be used as stationary targets or moving targets. During the summer prior to test season, Allied Trades personnel will set up these targets on the ranges. Moving targets might then be hard wired into an existing power grid or connected to generators that will be powered during the test. Often, targets require a heat signature – so heating pads are placed into the target to simulate a vehicle engine.

Often, there is no electrical power available at test sites. The Maintenance Section of TSD maintains and emplaces portable generators that might be temporarily needed to power other equipment. During the test season, the Maintenance Section might move a single generator around multiple times to support a number of different tests and power requirements. This section also fuels these generators. Personnel will concurrently set up portable light towers that provide general ambient lighting during tests.

If a test is being run away from any existing support buildings, the Maintenance Section might be asked provide portable trailers on the test site. These are used by data collectors and other personnel during the test as either office space or a space in which to escape the cold. These buildings have diesel-powered generators that heat the building and provide electricity. Occasionally, CRTC asks the Directorate of Public Works to connect these to existing hard power supplies, if available. The Maintenance Section also ensure that vehicle parking areas and head bolt heater outlets are available at test sites (should there be a requirement to park support vehicles at a test site for longer than a few hours in frigid temperatures).

Sometimes specific routes need to be designated and followed during vehicle testing. This might require that the Maintenance Section install route signs and/or location markers, including distance markers. Spare parts, service items, and petroleum, oils, and lubricants (POLs) need to

be on hand prior to the start of the test. This requires hazardous material and hazardous waste management.

Test officers will ask CRTC's Instrumentation Staff to outfit equipment to be tested with various data-gathering instruments. Prior to testing, instrumentation staff will determine what types of data are required and select monitoring equipment to be installed on the test item. Once selected, they will ensure that equipment is properly calibrated and available. Upon arrival of test equipment at CRTC; instrumentation personnel install this equipment into or on the test item. This instrumentation will be used to automatically gather data for test officers during the conduct of the test. Types of data include temperatures within and on the surface of the equipment, mechanical stresses, chemical concentrations, electrical currents, voltage, speed, acceleration, fuel consumption, noise levels, electromagnetic field strength, and other parameters.

CRTC's instrumentation staff also collects photographic imagery during tests to include still imagery, videography, and high-speed videography. Instrumentation personnel ensure that the proper cameras and lighting are available and in good repair. Often, these camera setups can be quite involved and must be installed at test locations months in advance. High intensity lights — a necessity for high-speed videography — require that the instrumentation staff work closely with the Maintenance Staff to ensure that electrical or fuel demands will be met.

The CRTC Meteorological Section is charged with providing long and short-range forecasts to test personnel. This section is responsible for recording meteorological data during testing. This section maintains permanent meteorological stations located at the Bolio Test Complex, the Mississippi Test Complex, Texas Range, Main Post Fort Greely, and at long-term storage test sites. Often, this section must set up temporary meteorological stations at test sites, as requested by the test officer. Power is generally supplied to these temporary meteorological stations using solar installations. Occasionally, power is drawn from the electrical grid (if nearby) or more rarely, diesel powered generators.

The TSD Information Management section ensures that adequate voice and data capability exists at a given test site prior to the test. This might require that additional fiber optic or copper lines be installed at that location. Furthermore, this shop ensures that adequate computer hardware is available at the test site.

The TSD Supply Section orders any materials or equipment that might be needed by the Test Officer or other shops. This section also plans for shipping and receiving of test items.

Test Officers must also coordinate with the CRTC Command Group prior to testing. The Ammunition Manager ensures that the proper types and quantities of ammunition will be available. The Security Manager ensures that any security precautions are emplaced prior to the test to include provisions for storage of classified documents, secure communications, and review of visiting personnel's security credentials. The Bolio Test Complex barracks and dining hall are often used by troops involved in the conduct of tests. Command group personnel ensure these facilities are equipped for the numbers of personnel expected during a given test season. Finally, Resource Management personnel track all funds expended against a given test and

ensure that the center is reimbursed by the Program Manager for all direct test costs incurred prior to and during a test.

Test officers frequently rely upon outside organizations for support during tests. Training on given weapons or vehicles might be conducted by personnel from the Program Management office or by individuals from Yuma Proving Ground. Specific instrumentation, data collection, or other specialized personnel might be needed. These individuals are identified prior to the test and arrangements are made for them to visit CRTC prior to and during the test. These individuals might come from other test centers, the manufacturer, other Army support centers, academia, the National Guard, active Army troops, or private contractors.

2.1.1.4 Maintenance

The Maintenance Section of TSD is responsible for all equipment maintenance and repair for both test items and for equipment that CRTC uses throughout the year. Most maintenance activities occur in Building 605, located on Main Post Fort Greely. Bulldozers, resident tactical vehicles, and other heavy equipment are serviced at this location. Generally, maintenance is completed in the summer in preparation for winter test activities. Often, test officers will specify the need for a very specific piece of equipment that the Maintenance Section must then ensure is available and in good repair for the test.

DTA Range Control, DPW and their contractors are responsible for and provides general maintenance of all ranges, roads, trails, and building and utility maintenance. Should Range Control or DPW not have personnel available, CRTC test officers might ask TSD maintenance personnel to perform range maintenance to include grading or repairing trails, installing culverts, firing pads, and fences (temporary or permanent), removing vegetation around targets or buildings, repairing firing berms, keeping the target infrastructure (power and communications) in working order, and self-help infrastructure repairs and improvements. Any range maintenance CRTC performs is specific to test activities. To support these activities, CRTC has mined gravel from DTA borrow pits. Several individuals within CRTC are trained to perform limited UXO surveys within certain parameters specified by Range Control.

Additional maintenance activities include installation of poles for target attachment, setting up parking areas with head bolt heater plug-ins, assuring power and communications connectivity, and installing signs and location markers for vehicle driving routes. Test officers with appropriate training track the fate of test munitions and clear ranges when necessary. Professional or military EOD units sometimes clear small areas in duded impact areas prior to or after a test, including detonation of UXO. CRTC uses air space over DTA for weapons tests and the occasional test involving aircraft. Other support activities that may impact the environment include vehicle servicing, field refueling, and fabrication of targets and installation devices for cameras, lights, and data collection instruments. Some support activities are included in contracts controlled by USAG Fort Wainwright and Fort Greely. These include road grading, snow plowing, and general facilities and grounds maintenance. A full list and description of maintenance activities is given in appendix C.

2.1.1.5 Test Conduct

Once a test plan is finalized, infrastructure emplaced, and appropriate personnel made available, all that remains is for the test officer to receive the piece of equipment to be tested and conduct the test.

Receipt of the equipment begins in CRTC's Supply Section. Supply personnel receive the equipment from commercial shippers and ensure that the equipment arrives undamaged. This typically occurs on Main Post Fort Greely, though occasionally large test items such as vehicles might be delivered directly to the Bolio Test Complex or the Mobility Test Complex. The test officer further inspects the item after receipt and documents overall condition beyond shipping damage. This data is typically documented and forms a baseline condition upon which comparisons are made once the item undergoes testing.

From there, Maintenance Personnel perform basic Preventive Maintenance Checks and Services (PMCS) on the item. For vehicles, this involves replacing oils with cold weather formulations, replacing antifreeze to a type suitable to -45°C (-50°F), and inspecting the vehicle for other deficiencies. Test operations division personnel and visitors typically clean any weapons that will be tested. Software functional checks might be completed by visiting manufacturers or project managers.

CRTC is primarily a cold weather environmental test center with a focus on extreme cold conditions. For this reason, test timing is highly dependent upon the weather. Many tests cannot be conducted until the temperature drops below a certain value – typically falling between –32°C and -18°C (-25°F and 0°F) or from -45°C and -32°C (-50°F and -25°F) (depending upon the type of equipment being tested and where it will likely be fielded). For this reason, CRTC schedules ranges for several months at a time – even though the range may only be used for two or three days. This allows the Center to catch periods of extreme cold. Also, test items are typically shipped in the autumn for testing during the winter. Occasionally, items will be shipped in December so that testing can commence in what is typically the coldest part of the year – January or February. On rare occasions, test items may be stored until conditions are cold enough to conduct testing.

CRTC rarely conducts temperate (summer) testing. Items tested in the winter may be retained for summer testing as a cost efficiency to avoid transportation costs. Items may be brought to CRTC for temperate testing when other test centers cannot accommodate them. Conditions unique to testing in Alaska – such as the high latitude or long daylength – might also result in items being tested during the summer at CRTC. For example, GPS devices might be tested in Alaska to determine if their software can correctly account for the high latitude. On average, temperate testing accounts for less than 5% of CRTC's total test workload and is generally very limited in scope and duration.

Each test is comprised of a number of different subtests. These may include the following types of tests: safety, human factors, reliability, maintainability, functionality, and accuracy.

Safety reviews determine if there any unique attributes of the equipment that pose a hazard to users. In vehicles, this might include reviews of the vehicle's handling capability on ice or the presence of walking surfaces that could become ice-covered. For small equipment or weapons, testers might look for bare metal that could cause a contact frostbite injury in extreme cold if touched. Another safety issues reviewed would be visibility through windshields or sites in relation to fogging and ice buildup.

Human factors reviews determine if the equipment can be used by 95% of all Soldiers (male and female, tall or short, heavy or thin). In particular, CRTC determines whether bulky cold weather clothing and boots interferes with operation of the equipment. A key question during vehicle testing is whether the vehicle can be safely and quickly evacuated in an emergency. CRTC provides data on whether users can operate small buttons or triggers while wearing gloves and mittens.

Functional testing provides basic information about whether the equipment works in the cold, in accordance with manufacturers and PM guidelines. In short, CRTC operates the equipment and determines if it works. Should the equipment fail while it is being used, CRTC provides the PM data on the conditions surrounding the failure and, if it can be pinpointed, information on what caused the failure.

CRTC often provides accuracy data. Weapons, geo-positioning systems, detectors, speedometers, fuel gauges, and similar items all must operate accurately. CRTC collects data comparing the equipment's reading or actual performance to known or expected values.

CRTC provides extensive data on the reliability and maintainability of equipment. If equipment is serviced or repaired, CRTC records data such as the amount of time it take to complete that service and the amount of consumables used. This data provides the PM information on costs to maintain the equipment over its service life.

CRTC generally tests vehicle performance in the winter on paved roads (usually at the Mobility Test Complex, see Figure 2.3), on secondary roads (usually Meadows Road) and cross-country (usually on various frozen trails within DTA). (Note: vehicles are not driven cross-country during the summer.) Each vehicle is typically driven a total of 3000 to 5000 miles while at CRTC. Data on reliability and maintainability, ease of operation, and fuel economy are typical information collected over this mileage. Specific vehicle testing might include braking performance (particularly on ice and snow), side slope stability (again on snow and ice), heater performance, coolant performance, and similar parameters. Safety and human factors reviews range from evaluation of hydraulic door mechanisms to the presence of pinch points. Vehicle tests generally occur at the Mobility Test Complex, Meadows Road, Windy Ridge Road, Observation Point Road, the Old Richardson Highway and adjacent trails.



Figure 2.3 Testing the HMMWV Cargo Area Heater at the Mobility Test Complex

Weapons testing usually involve a functional test – the weapon is fired repeatedly to observe if any failures occur. Most weapon tests – but not all – include provisions for determination of a weapon’s accuracy. Weapons are bore-sighted to ensure they are properly aimed and then fired, usually over several days. Statistical analysis is conducted to determine if the weapon hit its intended target within acceptable parameters. Safety and human factors reviews are conducted to determine if the weapon can be fired while wearing arctic clothing. Weapons testing usually occur on Texas Range, Washington Range, or Mississippi Test Complex. Occasionally, testing will occur on the small arms ranges at the Wills Small Arms Complex on DTA or other small arms ranges throughout Fort Wainwright.

Missile and projectile tests generally involve either a storage test (storing the test item and then firing it at a later date either at CRTC or another test center) or a functional cold-weather test (firing the item outside in subfreezing conditions). Accuracy data, as with other weapons, is usually collected. Testing of projectiles usually occurs on Washington Range or Mississippi Test Complex though systems are sometimes tested in remote areas such as training areas west of the Delta River.

Tests of small Soldier items and clothing vary considerably. CRTC personnel, Fort Greely National Guardsmen, or other Army personnel are asked to use the equipment. Instrumented data might be collected as individuals use the item. Personnel might also be asked to complete questionnaires or surveys. Reliability and maintainability data might be collected. Often, CRTC is asked to store items so that they are subject to ambient environmental conditions (temperature and humidity). These items are then used after storage – either by CRTC or by another test center -- to determine if they are still functional.

Small Soldier items and clothing are tested throughout DTA and Fort Greely. MRE heaters, for example, were tested on Main Post Fort Greely and at the automotive test track. Gloves and boots are tested at the Bolio Test Complex. Night vision devices and laser targeting systems have been tested at Texas Range.

CRTC's resident photographer documents all tests as they occur. Specific failures are photographed upon occurrence. Data collectors and technical editors compile data from the test as it is occurring. Test Incident Reports (TIRs) are compiled daily and submitted into a centralized Army database. Often, CRTC will work closely with PMs and manufacturers to correct these failures through design and manufacture of replacement parts, substitution of fluids, a change in operating procedures, or similar actions.

2.1.1.6 Test Wrap-up and Data Preparation

Upon completion of testing, test items are inspected for any damage incurred during testing. Items are then prepared for shipping. This involves securing sensitive or classified equipment, replacing fluids (such as oils and lubricants), cleaning the item, and other routine maintenance actions. The Instrumentation Section removes any instrumentation, such as thermocouples or meters, from the equipment. The Supply Section of TSD then packages the item (either in a box or on the back of a truck) and ships it back to either the manufacturer or another test center.

Once the test is complete, Test Support Division personnel remove equipment and supplies from the test site and begin preparing it for next test season. Warm up shelters are removed from the test site and taken to a central storage area. Generators and portable lighting systems are removed and receive periodic service. Though preventive maintenance occurs throughout the test, maintenance personnel repair and perform major maintenance actions on support vehicles used during testing. In general, summers at CRTC are often spent upgrading or repairing facilities and equipment in anticipation of the next test season.

CRTC's primary product for its customers is data. Upon completion of the test, test officers compile a final test report that details specific and generalized findings of the test. CRTC's technical editors work with test officers to develop a thorough test report that details exactly what occurred during testing and the results of those tests. Because CRTC personnel are not evaluators, CRTC cannot draw conclusions or make recommendations pertaining to acquisition in these reports. Instead, these reports are a nonbiased accounting of what occurred during testing, how the equipment performed, and under what circumstances the equipment was operated (weather, training of operators, dates and times, etc). Photos and video from the test are also edited and published at the end of the test.

2.1.1.7 Amount of Testing Completed Annually

CRTC averages eight or ten tests per year plus storage tests and commercial vehicle test support. Since 2004, the range in numbers of all tests with chargeable labor hours per year has been a low of nine and a high of nineteen. Tests typically run three months each during the winter with an average of 1225 person-hours devoted to each test. Some tests might be as short as 1 or 2 weeks, but some might go as long as 6 months or more. These numbers can range

widely from 4 hours total for a simple Soldier systems test to a high of 10,768 hours for a complex missile system test.

To provide an idea of the range of tests CRTC conducts, table C-1 in appendix C contains a list of CRTC's major tests from 2005 to 2010. With only a few exceptions, these were conducted within DTA with some support actions occurring on Fort Greely.

2.1.1.8 Personnel

CRTC maintains a core workforce of military, government and contract personnel supported by a varying number of seasonal winter hires (see table 2.1). The number of people, particularly contract and seasonal hires, changes from year to year. For this summary, data was collected from 2005 through 2009 and averaged to provide a baseline. Permanent contract employees are those employees who do not work for the government but who are paid for out of CRTC's budget. Seasonal civilian employees consist of the center's dining facility staff – which is only open during the winter. Seasonal contract employees are hired to support winter testing. Temporary employees may work year-round but be hired only for short-term projects with definite duration. Seasonal visitors are defined as those individuals not employed or directly associated with CRTC who visit the center to conduct, observe, or otherwise participate in testing of equipment and materiel. Visitors come from a variety of locations including other Army installations, project manager offices, prime vendors, foreign countries, etc. Visits are usually – but not always – during the winter test season. The number of visitors swings greatly from year to year depending upon the types of tests being conducted, other trends in the Army and Department of Defense, and funding.



Figure 2.4 CRTC and Visiting Personnel during a Safety Briefing

Table 2.1 Average Employees on staff at CRTC	
Type of Employee	Average Number
Active Duty Army	4
Permanent Civilian	30
Permanent Contract	10
Temporary Civilian	1
Seasonal Permanent Civilian	4
Seasonal Temporary Contract	15
Seasonal Visitors	100

2.1.2 Description of Existing Facilities Used by CRTC

A convenient way to discuss the facilities that CRTC uses is to group them by operational area: the Bolio Test Complex, Texas Range (including Texas Condo), the Mississippi Test Complex, Washington Range, the Mobility Test Complex, and Main Post Fort Greely. CRTC also uses a variety of USAG Fort Wainwright facilities and ranges in outlying areas of DTA. These facility groupings will be used throughout sections 3 and 4. Locations of the operational areas are shown in Figure 2.5. Further descriptions are found in the following paragraphs.

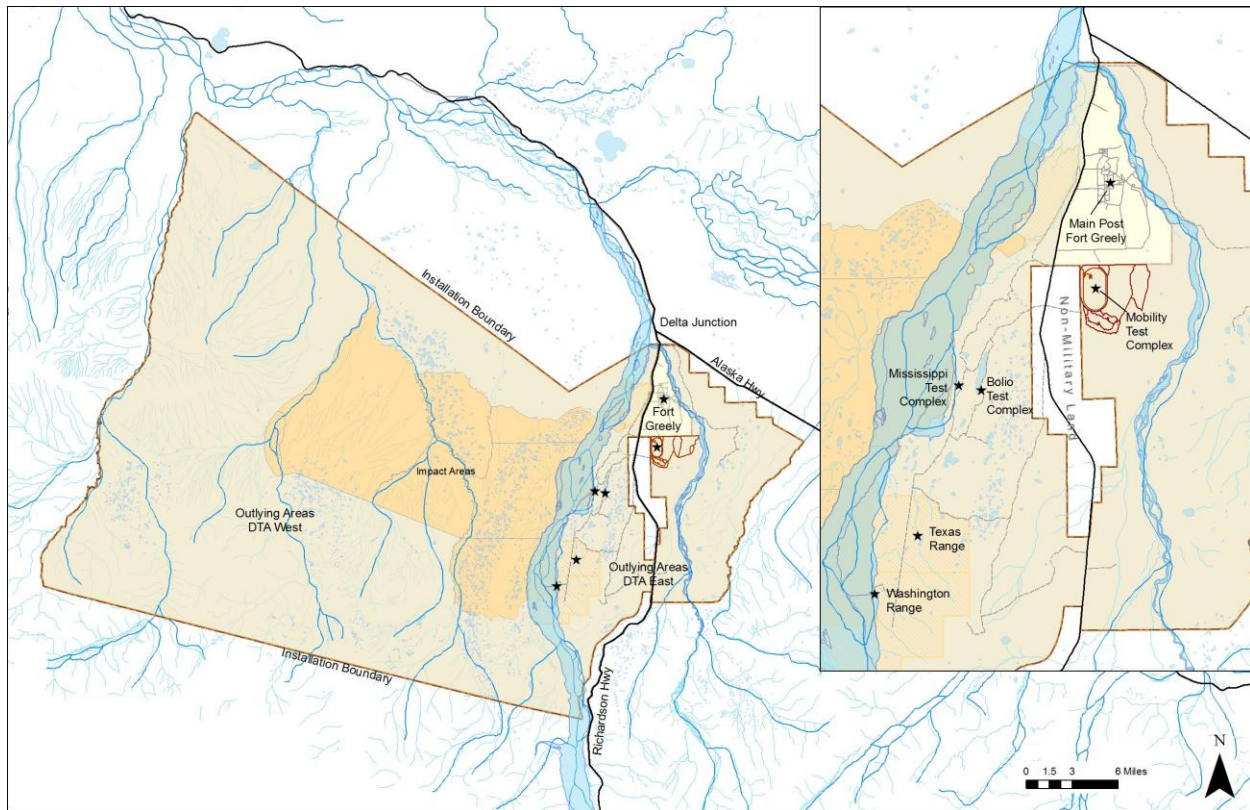


Figure 2.5 CRTC Operational Areas within DTA and FGA

Bolio Test Complex. The Bolio Test Complex is the center of operations for CRTC and consists of a number of structures. Building 1928 is the main building, which houses offices for command staff, barracks, and a dining facility. The barracks and dining facility are primarily used in the winter by visiting test personnel. Building 1929 is a separate annex to the main building that also houses offices and includes the Center's computer network hub. Building 1930 is a warm storage and maintenance building with a single office. The complex has several other smaller outbuildings used for storage or temporary office space.

Two large cold storage warehouses are located directly adjacent to the Bolio Test Complex, but not within the fenced area. These buildings hold materiel and equipment that is in long or short-term cold storage tests. This area was traditionally called Tennessee Range although weapons firing is no longer conducted here. It is only rarely used as a bore-sight range. Also adjacent to the Bolio Test Complex is a test obstacle course for Center personnel and Soldiers on foot. This is the primary location for testing clothing and some individual Soldier equipment when that testing is done independently of other activities.

The Center's local Ammunition Supply Point (ASP) is north of Bolio Lake off of Meadows Road. This facility was constructed in 2001 during base realignment of Fort Greely. It provides temporary storage of ammunition during tests. CRTC also uses ammunition storage areas at Main Post Fort Wainwright and Main Post Fort Greely.

Texas Range. The Texas Test Complex consists of an administrative building, a heated Quonset hut, a maintenance building and a steel-framed warm-storage building. The complex is enclosed by a chain-link fence used to secure various vehicles and heavy equipment. A 5000-gallon fuel tank provides fuel to test activities. A sonic detection and radar (SODAR) unit is also located here and is housed in a concrete block structure. The SODAR is used for measuring weather conditions such as temperature up to 984 feet above ground level, and wind speed, direction, and turbulence up to 1.9 miles. The data obtained from the SODAR units is valuable for inputs into the weather models that help predict when test parameters such as a particular temperature range will occur. The SODAR here is running continuously from October 1st through March 15th unless bison are present. The Texas Test Complex serves as a central maintenance point and office location for in-house and visiting test teams. Equipment tested at this facility includes weapons, personnel equipment, unmanned systems, and vehicles. Activities that occur within this complex include office operations, data processing, fueling vehicles, minor vehicle maintenance and repair, and basic weapons maintenance. Texas Range itself is used primarily for firing of smaller caliber weapons. Vehicles are also tested on Meadows Road within Texas Range.

Another area within Texas Range that is separate from the administrative area is called Texas Condo. The buildings at Texas Condo provide warm-up and observation space on the actual range for firing activities. They allow personnel to observe testing safely and collect data remotely. The original temporary structure has been demolished, and a replacement building is scheduled for construction in 2011. This Developmental Test Control Center (DTCC) will provide state-of-the-art communications and data management. CRTC completed a Record of Environmental Consideration for this project.

Mississippi Test Complex. The Mississippi Test Complex houses CRTC's meteorological operations. Buildings within the complex house computer equipment used for forecasting and for monitoring the weather. This includes two SODAR units that run continuously year-round unless bison are present. Occasionally the facilities house support activities not associated with meteorology. Examples include housing archeological survey crews working in the area and visitors from Yuma Proving Ground working on the network infrastructure. Test crews occasionally fire weapons from Mississippi Test Complex into the impact area.

Buildings within the Mississippi Test Complex vary in age and state of repair. The newest building, a steel-framed warehouse and instrumentation facility, was completed in 2008. An administrative building was built in 2001 and houses the main forecast offices. A small steel-framed structure provides storage and was constructed in the 1990s. One building, constructed in the 1970s, is in a state of disrepair and does not meet current life-safety code requirements. It is used primarily for storage. Covered bleachers sit just west of the fenced area, overlooking the impact area.

Washington Range. Washington Range is CRTC's primary range for the firing of direct and indirect fire weapons. The range features a concrete pad which serves as a stable, level platform for firing artillery, earthen berms, and roads accessing targets. Because part of the range lies within the floodplain of the Delta River, vegetation is sparse and CRTC is able to safely observe weapons firing at long distances. The range also has a concrete bunker and a small firing support building on the bluff overlooking the river at Observation Point 12 that is used by test crews during weapons firing. The meteorology section has a fourth SODAR located here near OP11. This SODAR runs continuously during test season from the first of October through the 15th of March, unless bison are present. A warm-up shack sits at Observation Point 11.

Mobility Test Complex. The Mobility Test Complex is one of CRTC's newer facilities, constructed in 2004. A detailed description of the test complex may be found in the Environmental Assessment completed for its construction (CRTC 2004). The complex features a 3.3 mile paved highway oval, a snowfield (grass field), skid pad (concrete pad covered in winter with ice), driving circle, and bump course. An undeveloped group of trails has been mapped for future use as a rugged cross-country course. A cluster of buildings to the northwest of the track features offices, a water-fill building, and a maintenance facility. The course is used primarily during the winter to test vehicles under highway conditions in cold and on ice, but is also an ideal location to test vehicles during spring, summer and fall in order to avoid environmental impacts associated with driving on trails during non-frozen conditions. CRTC has capability to create different ice and snow conditions on the pavement using snow and ice making equipment.



Figure 2.6 CRTC Mobility Test Complex

Main Post Fort Greely Facilities. Currently, CRTC has the use of three buildings on Fort Greely's Main Post. The consolidated maintenance facility, Building 605, provides heavy maintenance on all vehicles and equipment used by the center. This facility features drive-through maintenance bays, a battery shop, wash-rack, vehicle lifts, offices, a break area, bathrooms, hazardous material storage, and parts storage. Building 605 also houses CRTC's supply operation (shipping and receiving).

Building 608 houses CRTC's instrumentation shop, which provides a variety of services to tests. These services range from instrument calibration to weapons scoring to cinematography. A cold chamber is housed within Building 608. This chamber is used for demonstrations, to provide precise temperature control for test equipment in cold conditions, and to pre-condition equipment when outside temperatures are too warm. This chamber was renovated in the summer of 2009.

Building 612 houses CRTC's Allied Trades shop and a new command headquarters. The Allied Trades shop houses woodworking and metalworking equipment. This shop supports test operations by constructing targets or other structures, fabricating parts, etc. The command headquarters was added to Building 612 in 2008 as part of Base Realignment and Closure 2005,

when CRTC's headquarters were moved back from Fort Wainwright to Fort Greely. The headquarters addition to Building 612 houses offices and a conference facility.

Outlying Areas. CRTC operates in many different locations within DTA – including locations both east and west of the Delta River. Any of the small arms ranges, drop zones, firing points, observation points, or training areas might be used for a given test depending on test requirements, including the temporary installation of targetry. For example, parachute tests might be conducted at any one of several drop zones. Tents might be tested in existing bivouac areas. Night sights might be tested from various hilltops near Windy Ridge. OP 26 is utilized as a base of operations for tests conducted on DTA West. CRTC also utilizes the existing road and trail network, primarily in the area between the Richardson Highway and the Delta River, both for testing of vehicles and for access to its facilities. CRTC's network backbone is a buried set of communications cables that runs along Meadows Road, the Wahlgren Highway, Twin Lakes Road, OP Road, and within Texas and Washington Ranges. These areas are all maintained by USAG Fort Wainwright.

2.1.3 Current NEPA Review Procedures for Test Activities

CRTC usually begins National Environmental Policy Act (NEPA) review of a given test when the scope of services requested by the PM is known. CRTC consults the installation environmental staff early in the process, when general test details are made available. Test personnel attempt to avoid wetlands and cultural resources sites to ease project permitting and coordination. Test locations are selected so that the environmental impact is minimized.

NEPA review results in a draft Record of Environmental Consideration (REC) using a categorical exclusion and following the rules set forth in 32 CFR Part 651 (Environmental Analysis of Army Actions). For tests to be conducted within DTA, the draft REC contains specific language addressing various resource issues found in the USAG Fort Wainwright REC Preparation Procedures. The draft REC is routed through subject matter experts at Fort Wainwright, who provide input on cultural resources, wetlands, wildlife and fisheries, forestry and fire management, air quality, and water quality, among others. Once any issues are addressed and edits incorporated, a subsequent draft REC is sent to the USAG Fort Wainwright NEPA office for a comprehensive review. They may require additional edits or clarifications. Once the final REC is produced and signed by the CRTC environmental representative, the Fort Wainwright NEPA staff fills out a NEPA Review Form, and then proceeds to get the required Environmental and DPW signatures. This process takes anywhere from a few days to several weeks depending on project complexity, and on availability of the SMEs, NEPA staff and signatories.

The few tests conducted on Main Post Fort Greely are generally small equipment and clothing tests with very little environmental impact. If a test is to be conducted on Fort Greely, the REC is written, evaluated and signed internally at CRTC and sent to USAG Fort Greely Environmental for their concurrence.

Other aspects of environmental review include real property coordination, Range Control coordination, and the Fort Wainwright or Fort Greely work order process. Depending on the project, any of these aspects can be simple or complex.

Sometimes, the requirements of the test will trigger the need to apply for Federal or state permits. Common permits needed include storm water construction general permits, wetland permits, and fish habitat permits. Coordination with the Alaska State Historic Preservation Office and with the U.S. Fish and Wildlife Service is often required. Any of these coordinating actions or permits can take weeks or months to complete. Usually, the onus is on CRTC to apply for these permits directly to regulatory authorities. Some are required to be submitted by the landowner (USAG Fort Wainwright or Fort Greely) or their agent (often the U.S. Army Corps of Engineers).

2.1.4 Cumulative Impact Analysis

Currently, CRTC is not tracking cumulative impacts in a formal way. The CRTC Test Operations Division Chief inspects test locations during operations and after the conclusion of the test. The TOD Chief documents the results of the inspection, which are available to the environmental office. This does not apply very well to vehicle mileage tests where many miles of roads and trails were used. In addition, occasionally Range Control inspectors or other USAG Fort Wainwright staff will see something out of compliance and report it to CRTC to be corrected. Similarly, during project execution or routine maintenance, the environmental staff will check on operations and inspect sites for compliance with rules and regulations and any mitigations or best management practices written into the REC.

2.1.5 Discussion of whether the No Action Alternative meets the stated purpose and need

Maintaining the status quo (No Action Alternative) would not allow CRTC to meet the stated Purpose and Need listed in section 1.2. The following would not be met:

- *Modernize and Consolidate Facilities.* No new facilities would be constructed. Major improvements and changes to business practices would not occur. CRTC would not operate as efficiently as desired, and would not provide the best value to its customers. CRTC would also not meet its mission requirement to thoroughly test new equipment as it could not adapt to the state-of-the-art.
- *Streamlining Environmental Review.* No programmatic and streamlined NEPA analysis of routine testing activities would exist to support testing. As a group, current CRTC testing and support actions have yet to receive a specific comprehensive analysis under the National Environmental Policy Act (NEPA). No NEPA compliant tool evaluating standard test types and support activities as a whole would exist. Environmental review of tests would not be made more efficient.

The No Action Alternative would allow CRTC to meet the following purposes and needs:

- *Continuation of Testing.* The No Action alternative still allows CRTC to continue to conduct testing, although the ability of the Center to efficiently and effectively conduct testing would be compromised by lack of upgrades and improvements to infrastructure.

The No Action Alternative represents the status quo and provides a basis for comparative impact analysis with the action alternatives.

2.2 DESCRIPTION OF ACTION ALTERNATIVE 1

Action Alternative 1: Continue Testing and Modernize Facilities using Current NEPA Procedures.

The No Action Alternative (status quo) is incorporated into this alternative except that infrastructure improvement projects would be implemented. Details are provided below.

2.2.1 Description of Proposed Facility Modernization and Consolidation

This Proposed Action consists of 1) Continuing testing and 2) Site-specific CRTC construction and upgrade projects needed to support current and future testing activities (table 2.2). These projects would be constructed, if and when they are funded, over a 10-year timeframe and would not occur all within the same construction season.

Table 2.2 provides a brief description of the site-specific projects including anticipated project impact acreage footprints. Appendix B provides lengthier project descriptions and maps showing approximate locations (Figures B-1 through B-3). Two main project categories are contained within the table: *new construction* which involves construction of an entirely new facility; and *upgrade* which involves enhancement of or addition to an existing facility.

Each of the proposed projects addresses a specific deficiency or need at CRTC, and therefore, supports the test mission and military readiness in some way through new construction or upgrade to existing facilities. NEPA regulations state that connected actions (actions that are closely related or automatically trigger other actions that require analysis) cannot be reviewed independently (32 CFR 651.51(a)(1)). Each of the proposed site-specific projects fits into the overall test mission at CRTC, but can be completed individually, even if the other projects do not receive funding. 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. The exact footprint and limits of disturbance for many of these projects have not been determined. Therefore, complete NEPA review of this list of projects cannot be included at this time. Under this alternative, CRTC would complete additional NEPA as the specifics of each of these projects are defined. The exact locations of some of the projects have also not been decided, or could be shifted to better

avoid environmental impact during siting and additional environmental review. On a formal level, CRTC participates in USAG Alaska Quarterly Range Steering Committee meetings and provides project needs for coordination at these meetings. In addition, CRTC meets annually with the DTA Range Officer to describe projects on both long-term lists and projects that are approved for funding in the near term. The Fort Wainwright DPW is involved through various approval processes depending on the dollar amount of the project and the level of project complexity. Both the USAG Alaska Installation Range Office and Fort Wainwright DPW are included in NEPA review opportunities.

Table 2.2 Site-specific Infrastructure Improvement Construction Projects			
Project Name	Short Project Description	Acres*	Figure Reference No.
Bolio Test Complex			
Construct an Addition to Building 1928 <i>Upgrade</i>	Construct a major addition to Bolio Test Complex's central building (Building 1928) and move all of the headquarters personnel to the Bolio Test Complex. Office trailers and temporary buildings would be removed and some infrastructure would be improved.	<0.5	BL1
Repair or Renovate Obstacle Test Course <i>Upgrade</i>	The existing test course near the Bolio Test Complex would be renovated or repaired as needed to meet current specifications.	<1	BL2
Storage and Logistics Support Facility at Tennessee <i>New Construction</i>	Construct office and warm warehouse space to support the cold storage test activities at Tennessee Range. The new building would have a loading dock, test item processing area, concrete driveways, power, and communications lines.	<1	BL3
Texas Range			
Develop a Cross-Country Firing Course <i>Upgrade</i>	Existing and new trails would be further developed into a cross country firing course in the Texas Range area.	15	TX4
Enhance Texas Range <i>New Construction</i>	Expand existing facility to provide improved test support. Install permanent pop-up targets. Construct concrete blast shelters. Upgrade target line access road. Clear woody vegetation and maintain existing target berms.	59	TX5
Construct Minor Upgrades at Texas Administration Area <i>Upgrade</i>	Infrastructure upgrades in the administration area: new secondary containment and pole shed for the existing fuel tank, information network and power upgrades, and replace the existing Quonset hut.	<0.25	TX6
Mississippi Test Complex			
Meteorological Equipment <i>Upgrade</i>	At Mississippi Test Complex, minor, incremental facility and equipment upgrades will occur as technology evolves.	<0.25	MS7
Construct Environmental-Conditioning Firing Chamber <i>New Construction</i>	Construct a controlled-climate firing chamber to support testing of projectiles at Mississippi Test Complex under specific temperature requirements.	<0.25	MS8
Demolish Old Storage Building <i>Upgrade</i>	Demolish the oldest building at Mississippi Test Complex that does not meet code.	<0.25	MS9

Table 2.2 Site-specific Infrastructure Improvement Construction Projects (Continued)			
Project Name	Short Project Description	Acres*	Figure Reference No.
Washington Range			
Create 8 km Direct Fire Range <i>Upgrade</i>	Upgrades to support firing larger weapons systems up to distances of 8 kilometers (5 miles) on Washington Range. Include infrastructure upgrades to targetry, electrical, and communications.	4	WA10
Create 10 km Direct Fire Range <i>Upgrade</i>	Develop Washington Range capability to fire long-distance projectiles, such as missiles, at least 10 kilometers (6.2 miles). Additional infrastructure such as access roads and utilities.	5	WA11
Create New OP 12 Access <i>New Construction</i>	Extend Meadows Road south to Washington Range at OP 12 using the route of an existing trail.	16	WA12
Upgrade Support Infrastructure <i>Upgrade</i>	Upgrades to basic infrastructure at Washington Range: night/ winter lighting, permanent power sources to replace generators, permanent water and septic systems, permanent pop-up targets.	6	WA13
Mobility Test Complex			
Short-term Minor Enhancements <i>Upgrade</i>	Consolidate vehicle testing and maintenance from Bolio and Texas Range to the Mobility Test Complex. Upgrade snow and ice-making as technology improves. Make incremental changes to communications network as technology develops. Add more electric power infrastructure and lights. Build overhead cover and spill containment berms for existing fuel tanks.	<1	MTC14
Develop and Enhance Cross-Country Courses <i>Upgrade</i>	Existing cross-country trails located south and east of the test track would continue to be developed as "off-road" mobility courses. Some sections would be hardened for occasional summer use. Install wireless communications, video cameras, and signs. Repair degradation that occurs on a regular basis.	31**	MTC15
Construct New Consolidated Facility <i>New Construction</i>	Construct a consolidated facility through the Major Military Construction program. Move all vehicle testing and maintenance operations, Allied Trades functions, and instrumentation operations to the test track. Buildings 605, 608, and 612 on Fort Greely would then be turned over to Fort Greely for their use.	<1	MTC16
Energy Storage and Test Facility <i>New Construction</i>	Construct a large energy generation and storage device test facility to support hybrid technology, fuel cells, batteries and directed energy tests.	<1	MTC17
Construct an Environmental-Conditioning Chamber <i>New Construction</i>	Install a controlled-climate chamber with integral split-chassis dynamometer at the Mobility Test Complex.	<1	MTC18

Table 2.2 Site-specific Infrastructure Improvement Construction Projects (Concluded)			
Project Name	Short Project Description	Acres*	Figure Reference No.
Outlying Areas			
Minor Utility Upgrades <i>Upgrade</i>	Improve utilization of the outlying areas on DTA by improving the electrical and communications infrastructure to keep up with the current state of the art.	9	DTA19
OP 26 Improvements <i>Upgrade</i>	Upgrade facilities at OP 26 (DTA west of the Delta River) to support long-distance weaponry testing. Install a pre-fabricated steel building. Upgrades also include data and communications networks.	<1	DTA20
Construct a Laser Range <i>New Construction</i>	Develop a directed energy weapons/laser range in DTA West using natural terrain features as a backstop to limit the air and surface danger zones. Firing points and targets would be constructed. Winter trails would be designated or developed for access.	41**	DTA21
Install Permanent Laser Targets in DTA East <i>Upgrade</i>	Upgrade an existing small-scale laser target range located in the Windy Ridge and Meadows Road area. Replace temporary laser targets with permanent ones. Add 15-20 more permanent targets and install small cemented survey markers to allow for precise placement of temporary 3-D targets. No new permanent access roads will be required.	<1**	DTA22
* Acreages are approximate.		** Operational areas during testing would require the temporary closure of several training areas for each of the areas represented by these 3 projects. See section 4.11 for more information.	

2.2.2 Current NEPA Review Procedures for Facility Modernization and Consolidation

This option requires that each project be reviewed using the Center's current environmental review methods for facility construction.

CRTC usually begins National Environmental Policy Act (NEPA) review of a given project as soon as enough details are known regarding the location and the dimensions or footprint and general proposal. CRTC staff drafts a Record of Environmental Consideration (REC) using a categorical exclusion, where applicable, and following the rules set forth in 32 CFR Part 651 (Environmental Analysis of Army Actions).

For DTA projects, the draft REC contains specific language addressing various resource issues found in the USAG Fort Wainwright REC Preparation Procedures. The draft REC is routed through subject matter experts at Fort Wainwright, who provide input on cultural resources, wetlands, wildlife and fisheries, forestry and fire management, air quality, and water quality, among others. Once any issues are addressed and edits incorporated, a subsequent draft REC is sent to the USAG Fort Wainwright NEPA office for a comprehensive review. They may require additional edits or clarifications. Once the final REC is produced and signed by the CRTC environmental representative, the Fort Wainwright NEPA staff fills out a NEPA Review Form, and then routes it through the Environmental Chief and the Director of Public Works for signatures. This process takes anywhere from a few days to several weeks depending on project complexity, and on availability of the SMEs, NEPA staff and signatories.

CRTC staff submits RECs for construction and renovation projects on Fort Greely to the Fort Greely environmental staff. These documents are reviewed by the Fort Greely environmental staff and then signed by the Fort Greely Director of Public Works.

The scope of some projects may require an Environmental Assessment (EA). That process and procedure differs from that required for RECs and is more complex. In general, an EA would require in depth coordination and review between CRTC and the appropriate Garrison, and is outlined in 32 CFR Part 651.

Other aspects of environmental review include real property coordination, Range Control coordination, and the work order process. Depending on the project, any of these aspects can be simple or complex. Sometimes, the requirements of the project will trigger the need to apply for Federal or state permits. Common permits needed include storm water construction general permits, wetland permits, and fish habitat permits. Coordination with the Alaska State Historic Preservation Office and with the U.S. Fish and Wildlife Service is often required. Any of these coordinating actions or permits can take weeks or months to complete. Usually, the onus is on CRTC to apply for these permits directly to regulatory authorities. Some are required to be submitted by the landowner (USAG Fort Wainwright or Fort Greely) or their agent (often the U.S. Army Corps of Engineers).

2.2.3 Cumulative Impact Analysis

Currently, CRTC is not tracking cumulative impacts in a formal way. Section 2.1.3 discusses the current inspection process, which does not conclude with any sort of organized review of overall impacts from testing and project construction. Because Action Alternative 1 builds on the No Action Alternative by including a comprehensive list of foreseeable future construction projects, it is possible to get closer to a comprehensive cumulative impacts analysis. CRTC could implement a data-gathering effort to keep track of overall impacts from testing and projects, but without a formal Enhanced Environmental Procedures process, it would lack the power to compare impacts to any sort of thresholds for significance from cumulative impacts. Without a formal system, the data may or may not be available for others (particularly the land owners) to utilize in installation-wide impact analyses.

2.2.4 Discussion of whether Alternative 1 meets the stated purpose and need.

Alternative 1 would not allow CRTC to meet the following stated Purpose and Need as listed in section 1.2:

- *Enhanced Environmental Planning Procedures.* Facility construction 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. Analysis and planning of projects between CRTC and USAG Fort Wainwright and USAG Fort Greely would not be effectively coordinated. There would be no streamlined environmental review for projects which are independent in nature, but share similar design or space. This alternative could result in project delays and inefficiencies which could in turn lead to negative effects to the overall testing mission. Without a streamlined NEPA process, there would not be any greater flow of information between CRTC's personnel and USAG Fort Wainwright's Public Works, Range Management, Master Planning and Environmental staff, and USAG Fort Greely's Public Works, Master Planning, and Environmental staff.

Alternative 1 would allow CRTC to meet the following purposes and needs:

- *Continuation of Testing.* As with the No Action alternative, CRTC would continue to conduct testing. Infrastructure improvements would enhance the ability of the Center to efficiently and effectively conduct testing using the current state-of-the-art.
- *Modernize and Consolidate Facilities.* CRTC would manage development of its facilities in a more coherent and rational manner. This would allow CRTC to compare those actions as they relate to overall test center development planning and to ensure that all current and projected test facility requirements are met.

2.3 DESCRIPTION OF ACTION ALTERNATIVE 2

Action Alternative 2: Continue Testing and Modernize Facilities using Enhanced Environmental Planning Procedures.

CRTC proposes to implement enhanced environmental planning procedures using Environmental Management System (EMS) principles. The USAG Fort Wainwright EMS is applicable to DTA and the USAG Fort Greely EMS is applicable to CRTC's main post facilities and activities. CRTC proposes a checklist approach based on the analysis presented in this PEA with external review and concurrence by USAG Fort Wainwright or Fort Greely. CRTC also proposes continuing testing as listed in the No Action Alternative, but using enhanced environmental planning procedures as described below. Lastly, CRTC proposes to modernize and consolidate facilities through infrastructure improvement projects as described in Alternative 1, but using enhanced environmental planning procedures as described below.

The No Action Alternative (status quo) is incorporated into this alternative except that infrastructure improvement projects as described in Alternative 1 (section 2.2.1), would be implemented. In addition, enhanced environmental review procedures – of both tests and projects – would be implemented. This is our preferred alternative.

2.3.1 Rationale for Enhanced Environmental Planning Procedures

There are drawbacks to CRTC's current NEPA review process. First, CRTC routes each project and test through a time and resource-consuming, repetitive process without the benefit of an overall picture of CRTC's environmental impacts. A streamlined approach would still meet the requirements of NEPA, but coordination would be much simpler.

Second, the existing categorical exclusions listed in appendix B of 32 CFR Part 651 do not specifically address testing. Fully analyzing testing within this PEA will allow for tiering of future NEPA documentation in the form of a checklist.

Third, the current process is not flexible enough to fully meet CRTC's needs. Evolving technology in test methods and data collection will require test range adjustments that might not be predictable at this point in time. On a shorter-term basis, rapid and frequent changes to test requirements just prior to and during the test season require range adjustments on short notice. These changes must also be analyzed and documented through NEPA. All of these types of changes can be difficult to predict and difficult to plan for. Environmental review of the resulting projects, maintenance, and test plans is then only accomplished on an ad hoc basis, which can lead to delays, higher costs, a lack of flexibility, a complex environmental review process, and a lack of an overall sense of the cumulative environmental effects.

2.3.2 Methods to Determine Environmental Impacts

Rather than requiring the CRTC Environmental staff, the Subject Matter Experts and the Fort Wainwright and Fort Greely NEPA staff to consider the potential impact on each particular environmental resource for every test or project, CRTC proposes to use the following analysis

process. The repetitive nature of many routine tests, support activities, and projects lends itself to conducting this analysis once and in a comprehensive way in this programmatic document. For example, Army Test Operating Procedures (listed in appendix G) address protocols used from only a testing perspective. Although they do not address environmental protection, they serve to keep testing within certain known parameters that can be evaluated from an environmental impact perspective.

Table 2.3 summarizes the results of this analysis for routine tests, test planning, routine test support activities, and routine projects and maintenance – prior to mitigation. This table provides estimates of potential impact that each of CRTC’s routine actions would have on a particular environmental resource. The estimated potential for impact is based on the nature of each action, anticipated locations, and the professional judgment of CRTC Command and Environmental staff, USAG Fort Greely, and USAG Fort Wainwright Environmental staff. Factors considered in this process include:

- Probable Location: Is the routine action fixed to a specific location (i.e. off-highway vehicle testing on certain trails, demolition testing at Washington Range, cutting brush at Texas Range)?
- Probable Activity: Does the routine action contain an activity tied to a specific resource (i.e. bridge/stream crossing; land clearing/vegetation removal; UXO survey/Human Health and Safety)?

A proposed test, test support or maintenance activity, or project’s anticipated level of impact is a useful planning tool that would also have a bearing on what BMPs and SOPs should apply. A low potential indicates the routine action has either no ground-disturbing footprint, or is not tied to a specific location or resource, and therefore, could be conducted in a way to reduce or avoid adverse impacts to resources. A moderate potential indicates the routine action may adversely impact a resource in a way that cannot be entirely avoided. A likely potential indicates that due to the footprint and type of activity, the routine action would not be sited away from the resource, or would have some other unavoidable impact (such as impacts to air quality from using generators). During test and project planning, CRTC staff would fill out a checklist (see next section) and use this table 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 E) during the planning phase.

Table 2.3 Potential for Environmental Impact													
Routine Action	Potential for Routine Action to Impact Resource ○ = low ⊙ = moderate ● = likely												
	Soils and Permafrost	Air Quality & Greenhouse Gases	Surface Water & Floodplains	Wetlands	Vegetation	Fire Management	Wildlife & Fisheries	Cultural Resources	Airspace Management	Public Access, Recreation & Subsistence	Noise	Land Use, Energy & Utilities	Human Health, Safety & Hazardous Substances
Routine Tests													
Wheeled Vehicles < 15 Tons	⊙	○	⊙	●	○	○	⊙	⊙	○	○	○	○	○
Wheeled Vehicles > 15 Tons	●	⊙	⊙	●	⊙	○	⊙	⊙	○	○	○	○	○
Tracked Vehicles	●	⊙	⊙	●	⊙	⊙	⊙	⊙	○	○	○	○	○
Unmanned Aerial Systems	○	⊙	○	○	○	○	⊙	○	⊙	⊙	○	○	○
Small Arms Weapons	○	○	○	○	⊙	⊙	⊙	○	○	○	○	○	⊙
Large-Caliber Direct Fire Weapons	○	○	○	○	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙
Large-Caliber Artillery	○	○	○	○	⊙	⊙	⊙	⊙	⊙	○	⊙	○	○
Missiles and Rockets	○	○	○	○	○	⊙	⊙	○	⊙	⊙	○	⊙	⊙
Minefield Clearer	⊙	○	○	○	⊙	○	○	⊙	○	○	⊙	○	○
Demolitions and Intelligent Munitions	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	○	⊙	○	⊙
Obscurants & Smoke Generators	○	⊙	⊙	⊙	○	○	○	○	○	○	○	○	○
Camping and Sporting Good-Type Items	○	○	○	○	○	○	○	○	○	○	○	○	○
Rations	○	○	○	○	○	○	○	○	○	○	○	○	○
Body Armor and Helmets	○	○	○	○	○	○	○	○	○	○	○	○	○
Generators	○	⊙	○	○	○	○	○	○	○	○	○	⊙	⊙
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	○	○	○	○	○	○	○	○	○	○
Radios	○	○	○	○	○	○	○	○	○	○	○	○	○
Ranging and Lasing Devices	○	○	○	○	○	○	○	○	⊙	⊙	○	○	○
Parachutes and Air Drop Items	○	○	○	○	○	○	○	○	⊙	⊙	○	○	○

Table 2.3 Potential for Environmental Impact (Continued)													
Routine Action	Potential for Routine Action to Impact Resource ○ = low ⊙ = moderate ● = likely												
	Soils and Permafrost	Air Quality & Greenhouse Gases	Surface Water & Floodplains	Wetlands	Vegetation	Fire Management	Wildlife & Fisheries	Cultural Resources	Airspace Management	Public Access, Recreation & Subsistence	Noise	Land Use, Energy & Utilities	Human Health, Safety & Hazardous Substances
Water Storage, Handling and Purification Equipment	○	○	○	○	○	○	○	○	○	○	○	○	○
Petroleum Handling and Storage Equipment, Filters & Separators	⊙	○	⊙	○	○	○	⊙	○	○	○	○	○	⊙
Clothing (and Boots)	○	○	○	○	○	○	○	○	○	○	○	○	○
Storage	○	○	○	○	○	○	○	○	○	○	○	○	○
Test Planning													
Written Test Plan	○	○	○	○	○	○	○	○	○	○	○	○	○
Risk Assessment	○	○	○	○	○	○	○	○	○	○	○	○	○
Range Control Coordination	○	○	○	○	○	○	○	○	○	○	○	○	○
Routine Test Support Activities													
Target Creation	○	○	○	○	○	○	○	○	○	○	○	○	○
Target Emplacement	⊙	○	○	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	○
Cameras (Video, High Speed Video, Still)	○	○	○	○	⊙	○	○	○	○	○	○	○	○
Lights	○	○	○	○	○	○	⊙	○	○	○	○	○	○
Radar	○	○	○	○	○	○	○	○	⊙	⊙	○	⊙	⊙
Use of Conditioning Chambers	○	⊙	○	○	○	○	○	○	○	○	⊙	⊙	○
Meteorological Stations	○	⊙	○	○	○	○	○	○	○	○	○	○	○
Warm-Up Buildings (Shelters) and Portable Trailers	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	○
Data Collection Instruments	○	○	○	○	○	○	○	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	⊙	⊙	○	○	○	○	○	○	○	○	○	⊙
Generators	○	⊙	○	⊙	○	○	○	○	○	○	⊙	⊙	⊙
Fueling	●	○	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙
Communication Connectivity	⊙	○	⊙	⊙	⊙	○	○	⊙	○	○	○	⊙	○

Table 2.3 Potential for Environmental Impact (Concluded)													
Routine Action	Potential for Routine Action to Impact Resource ○ = low ⊙ = moderate ● = likely												
	Soils and Permafrost	Air Quality & Greenhouse Gases	Surface Water & Floodplains	Wetlands	Vegetation	Fire Management	Wildlife & Fisheries	Cultural Resources	Airspace Management	Public Access, Recreation & Subsistence	Noise	Land Use, Energy & Utilities	Human Health, Safety & Hazardous Substances
Surveys and Signage	○	○	○	○	○	○	○	○	○	○	○	○	○
Equipment Maintenance and Repair	○	⊙	○	○	○	○	○	○	○	○	○	⊙	⊙
Projects and Maintenance													
Berms Creation and Maintenance	●	⊙	●	⊙	●	○	⊙	○	○	○	○	○	●
Building Construction	●	⊙	⊙	⊙	●	⊙	⊙	⊙	○	○	⊙	●	⊙
Building Demolition	●	○	⊙	○	○	○	○	⊙	○	○	⊙	⊙	●
Culvert Installation	○	○	●	⊙	○	○	⊙	○	○	○	○	○	○
Fence Installation or Repair	○	○	○	⊙	●	⊙	●	⊙	○	●	○	⊙	○
Gravel Mining from Existing Borrow Pits	●	⊙	⊙	⊙	●	○	⊙	⊙	○	○	⊙	⊙	○
Hardstand/Firing Pad Installation	●	○	⊙	⊙	●	○	○	○	○	○	⊙	○	○
Road and Trail Creation and Maintenance	●	○	⊙	●	●	○	⊙	⊙	○	○	⊙	⊙	○
Target Installation and Maintenance	●	⊙	●	●	●	○	⊙	⊙	○	○	○	⊙	●
Utility Line Creation and Maintenance	●	○	●	●	●	○	⊙	⊙	○	○	○	⊙	○
UXO Surveys for Small Projects and Tests	●	○	⊙	⊙	⊙	○	○	⊙	○	○	○	○	●
Vegetation Clearing	●	⊙	●	●	●	○	⊙	⊙	○	○	●	○	⊙

The data in table 2.3 was used to develop a checklist for environmental impacts common to certain types of test and construction activities (appendix D). Routine actions that have a potential for moderate or likely impact require additional mitigations via the implementation of BMPs and SOPs¹, listed in appendix E, directed to protection of the resource area at risk.

¹ 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 the Army accomplishes projects.

2.3.3 Proposed Enhanced Environmental Planning Procedures

This proposed action constitutes a planning tool intended to enable a timelier, more holistic, and environmentally sensitive response to the changing testing world. The first step for tests or projects would be to determine which routine test, support activities, or routine actions apply. During test or project plan development, CRTC environmental staff would work with test and project managers to minimize impacts. Avoidance of wetlands and cultural resources sites eases project permitting and coordination, helping to avoid delays. More importantly, finding a site that meets the project requirements with the least environmental impact helps achieve the sustainable use goals of the Army Strategy for the Environment (OASA I&E 2004).

CRTC proposes to implement a checklist approach to NEPA review for each test or project. This checklist addresses likely environmental concerns highlighted in table 2.3, and is included in this PEA in appendix D. When a project or test is identified, and sufficient information made available, CRTC environmental staff will complete the checklist. This checklist requires a detailed description of the proposed project or test (either will be referred to as the “project” within the checklist).

The first section of the checklist contains three questions used to determine if CRTC may tier off of this PEA using the checklist. CRTC identified a list of routine and regular test types as discussed in section 2.1.1.1 and described in appendix C. CRTC also identified a list of test support activities and non-specific routine range projects or maintenance activities as discussed in sections 2.1.1.3 and 2.1.1.4; these are also described in appendix C. The checklist is applicable for the site-specific infrastructure improvement projects listed in section 2.2.1 and appendix B. The results of this checklist review would also inform the CRTC and appropriate garrison Environmental staff’s analysis of whether a proposed project (appendices B and C) falls within the scope of the analysis of this PEA and, therefore, qualifies for the expedited environmental review. For those projects that indeed qualify, CRTC Environmental staff use the checklist review (appendix D) as a means to tier off the analysis contained within this PEA. Non-qualifying proposals would require a more detailed NEPA analysis.

The checklist includes a review of valued environmental components (resource areas), as developed from table 2.3. If “yes” is indicated for any of the valued environmental component (VEC) questions on this checklist, applicable Standard Operating Procedures and Best Management Practices (SOPs and BMPs) would be followed (see appendix E). Information contained within this Checklist may support a finding as to whether the project falls within the scope of this Programmatic Environmental Assessment.

After completing the checklist, those resource areas identified as having impacts would be further reviewed. For those that pose a moderate to likely potential to impact the environment, CRTC staff will determine which SOPs and BMPs are applicable for mitigating these impacts. These SOPs and BMPs are located in appendix E. The SOPs and BMPs would be utilized to avoid or minimize the significance of environmental impacts from these activities. This SOP and BMP guidance would be readily available for use by the test support division and test

Meanwhile, BMPs are loosely defined as a menu of techniques from which the Army will select, given the unique conditions of the project site, in order to minimize or mitigate the impact of the project.

operations division in their daily activities and would assist CRTC with project planning and would be a systematic approach to reduce, avoid and minimize environmental impacts.

Should mitigation using BMPs and SOPs not reduce the environmental impact, CRTC would not tier off this PEA, and would then re-start the NEPA review processes, concluding with the development of a formal Record of Environmental Consideration, Environmental Assessment, or Environmental Impact Statement. This process would also include concurrence by the USAG Fort Wainwright and/or Fort Greely environmental staff.

USAG Fort Wainwright NEPA staff or USAG Fort Greely environmental staff will review each project description and checklist and certify whether the project may be “tiered” off this CRTC PEA. CRTC environmental staff should also maintain this checklist as part of the project administrative record.

Enhanced Environmental Planning Procedures Summary:

Testing. During test planning, the CRTC Environmental staff will determine if the test falls within the scope of the analysis of this Programmatic EA, by completing the checklist. The completed checklist will be forwarded to Fort Wainwright and/or Fort Greely NEPA staff for their concurrence and to keep them informed of CRTC’s actions on DTA and/or Fort Greely. Subsequent changes to the test plan or operations would require a review of the completed checklist to ensure that nothing has changed and the listed mitigations are still applicable. If changes are necessary, they will be documented through the use of a Memorandum for Record (MFR) drafted by CRTC and sent to the Fort Wainwright or Fort Greely NEPA staff for concurrence and signature. Major changes would require a new checklist and review process be conducted.

Projects. As early as possible, projects are evaluated, such as the site-specific improvement projects listed in this PEA. Once projects receive funding and designs are finalized, disturbance footprints and other specifics will be re-evaluated. CRTC environmental staff would complete a checklist prior to any project being initiated, and forward it to USAG Fort Wainwright or Fort Greely for concurrence. The checklist process would identify projects requiring additional NEPA review - those that do not fit as a tiered project under this PEA. Any subsequent changes to the project plans would require a review of the completed checklist by the CRTC Environmental staff to ensure that nothing has changed and the listed mitigations are still applicable. Changes will be documented through the use of a Memorandum for Record (MFR) drafted by CRTC and sent to the Fort Wainwright or Fort Greely NEPA staff for concurrence and signature. Projects would also be coordinated through the appropriate Garrison work order process. Major changes would require a new checklist and review process be conducted.

2.3.4 Related Environmental Compliance and Safety Precautions

For tests, including test support actions, or site-specific infrastructure improvement projects, CRTC Environmental personnel must determine the potential environmental, cultural and human health and safety impacts. This may include surveys 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. CRTC would coordinate these findings with USAG Fort Wainwright and USACE Alaska District regulatory branch and any required Section 404 permitting would be obtained. Projects affecting streams may require coordination with the ADFG, Division of Habitat to obtain any necessary Fish Habitat Permits. If contaminated sites are encountered, immediate coordination with USAG Fort Wainwright's or Fort Greely's Environmental Division is required. If spills of hazardous materials occur, they must be reported to either Fort Greely or Fort Wainwright's Fire Department and the ADEC. Appropriate remediation measures will be accomplished. USAG Fort Wainwright cultural resources personnel would be consulted regarding any required archaeological surveys and Section 106 consultations would be conducted with the State Historic Preservation Office as needed. When DTA Range Control or the Test Director determines that there is a potential for finding unexploded ordnance, surveys for surface munitions constituents would be conducted by qualified Explosive Ordnance Disposal personnel. Finally, a Preconstruction Environmental Survey (PES) must be completed by the USAG Fort Wainwright or Fort Greely's Environmental and Master Planning staffs with input by CRTC, approved by the Garrison Commander, and certified by the IMCOM Pacific Region Director for any MILCON-funded projects. The purpose of the PES is to identify any environmental constraints toward executing the specific project. Thus, a certified PES serves as important input to the environmental planning 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 project area, additional sampling or surveys would be conducted to determine the extent of the constraint. The results would be used to make a determination on whether the proposed construction or testing can be reconfigured to avoid such areas or if the siting constraints should be addressed (i.e., avoidance of wetlands or archeological sites or mitigation if avoidance is not possible). Execution of projects would be consistent with all applicable regulatory and permitting requirements.

For projects using heavy 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 could reach surface or ground waters. In addition, during all construction activities, CRTC would follow existing SOPs listed in the USARAK PAM 200-1 for the handling and transfer of hazardous material, and would adhere to relevant and applicable occupational health and safety standards listed in 29 CFR Parts 1910 and 1920.

Should a given projects disturb 1 acre or more of land or have a significant potential for erosion of soils into public waters, CRTC (or designated contractor) would file a Notice of Intent with the ADEC, Division of Water. CRTC would also obtain an Alaska Pollutant Discharge Elimination System (APDES) permit for Construction Activities through the ADEC, Division of Water. This permit details erosion control practices that must be employed during the construction process to minimize or eliminate erosion and associated discharges of sediment into adjacent bodies of water. The Army and construction contractors would ensure that the requirements of these permits were met throughout the construction process.

CRTC would also meet the storm water requirements of Sec. 438 of the Energy Independence and Security Act. This Act encourages the Federal Government to implement green building strategies. It requires all projects over with a footprint over 5,000 square feet be designed in such a way that the completed project has little to no impact on local hydrology, mimicking natural processes where possible. Site planning, design, and maintenance strategies must maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. This is typically accomplished by conducting a hydrologic and hydraulic analysis and incorporating infiltration or rainwater storage into the facility's design.

For all of these actions involving consultation, coordination, or permission from other state and Federal agencies, the appropriate garrison environmental office will provide guidance to CRTC on the approved process that is acceptable to the landowner. CRTC will provide copies of all permits, agreements, consultations, and survey data to the appropriate garrison environmental office.

2.3.5 Cumulative Impact Analysis

CRTC will track checklists and the mitigating actions listed in them that reduce or avoid the significance of environmental impacts. CRTC will also inspect projects and tests as needed to ensure that mitigations are being conducted. This data will be collected and summarized to support this PEA's conclusion that CRTC's activities would not create cumulative significant impacts. Because CRTC's actions may contribute to installation-wide cumulative impacts, these results will be shared with the USAG Fort Wainwright and Fort Greely environmental staff, for their respective installations. Summaries will be provided in October each year, or more frequently upon request. USAG Fort Wainwright or USAG Fort Greely can then use this data for inclusion in installation-wide cumulative impacts analyses (in future NEPA documents).

Aware that repeated iterations of generally benign projects could result in undesirable cumulative impacts, CRTC test officers and environmental staff have incorporated certain safeguards within Action Alternative 2 that would eliminate the risk of cumulatively significant adverse impacts. These safeguards include maintaining current chains of command and communication for test planning, support, and project execution; providing guidance on the likely impacts of each test or project and direction on how to avoid or minimize these impacts; performing environmental planning review of all projects; and conducting independent reviews of cumulative PEA-related impacts on a 5-year cycle.

2.3.6 Discussion of whether Alternative 2 meets the stated purpose and need

Alternative 2 does meet the following stated Purpose and Need as listed in section 1.2:

- *Continuation of Testing.* As with the No Action alternative, CRTC would continue to conduct testing. Infrastructure improvements would enhance the ability of the Center to efficiently and effectively conduct testing using the current state-of-the-art.

- *Modernize and Consolidate Facilities.* CRTC would manage development of its facilities in a more coherent and rational manner. This would allow CRTC to compare those actions as they relate to overall test center development planning and to ensure that all current and projected test facility requirements are met.
- *Enhanced Environmental Planning Procedures.* By preemptively examining in detail the impacts associated with existing testing and proposed infrastructure improvement projects and thereby eliminating much of the time and cost of redundant analysis in the future, Alternative 2 would streamline the environmental review process for future tests and projects. The enhanced environmental planning procedures would benefit from programmatic guidance. Analysis and planning of tests and projects between CRTC and USAG Fort Wainwright and USAG Fort Greely would be more simply, quickly, and effectively coordinated.

2.4 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

CRTC's preferred course of action is to select Action Alternative 2: Continuation of Testing and Facility Modernization using Enhanced Environmental Planning Procedures. This is the Proposed Action.

2.5 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.

2.5.1 Nuclear, Biological and Chemical Testing

CRTC does not test nuclear, biological or chemical (NBC) agents (e.g. mustard, nerve agents, etc), nor does CRTC test munitions containing depleted uranium. Currently there is no requirement to conduct tests of these materials in a cold climate. In order to test these materials in a cold climate, a separate NEPA analysis would be required. If testing were proposed, the expected change in land use and contamination of the land with NBC agents would require significant public education, comment, and coordination with no guarantee that testing these materials would be approved. Use of depleted uranium in munitions would require the same coordination, in addition to approval by the Secretary of the Army. For these reasons, this alternative was not considered viable and was excluded from further study. CRTC will, however, continue to test NBC equipment such as detectors, masks, and larger items like the NBC reconnaissance vehicle Stryker variant. These tests will be conducted using benign simulants – not actual agents.

2.5.2 Major Facility Expansion

CRTC considered a major facility expansion option that primarily consisted of improving infrastructure west of the Delta River. CRTC has identified a need for longer distances between firing points and impact areas, which can be accommodated in areas west of the Delta River. A greater range of elevations is also available in DTA West, from 1200 feet in the north to nearly 6000 feet on Molybdenum Ridge in the southwest. A ring of roads, power, and communication lines around the existing impact areas would support this requirement. This would also allow the Center to become a more comprehensive year-round test center, more fully supporting a broad suite of Army systems, especially longer-range missiles and aviation systems. CRTC's core operations would still be winter testing; however, it would provide needed supplementation to the Army's Aberdeen and Yuma proving grounds. Due to the extensive and complex nature of this option, this major facility expansion was tabled as being too costly and difficult to execute under the period and scope examined in this EA.

2.6 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This section summarizes the conclusions reached in the analysis contained within section 4. The No Action represents continued cold regions environmental testing and test support activities using current NEPA procedures. Action Alternative 1 includes continued testing and test support along with a series of site-specific infrastructure improvement projects using current NEPA procedures. Action Alternative 2 is the same as Action Alternative 1 but uses the proposed enhanced environmental planning procedures.

Table 2.4 contains a summary matrix of the environmental consequences by each resource category, of the No Action Alternative and each Action Alternative with mitigation measures applied. The differences from implementing enhanced environmental planning procedures in Alternative 2 vs. continuing with the existing NEPA procedures in Alternative 1 are primarily non-environmental. The improved efficiency should occasionally highlight a less environmentally damaging choice (such as fostering a systematic review of the chemicals used during vehicle maintenance to switch to less hazardous materials). However, we did not consider any of these specific environmental improvements sufficient enough to change the overall level of qualitative impact listed in the table. 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.

Table 2.4 Summary of Environmental Consequences by Alternative.			
Resource/Issue	No Action <i>Current Testing, Current NEPA Procedures, No Infrastructure Projects</i>	Action Alternative 1 <i>Current Testing, Current NEPA Procedures, 22 Infrastructure Projects</i>	Action Alternative 2 <i>Current Testing, Enhanced Environmental Planning Procedures, 22 Infrastructure Projects</i>
Soils and Permafrost	Minor to Moderate	Moderate	Moderate
Air Quality and Greenhouse Gases	Minor	None to Minor	None to Minor
Surface Water and Floodplains	Minor to Moderate	Minor to Moderate	Minor to Moderate
Wetlands	Moderate	Moderate	Moderate
Vegetation	Minor	Minor to Moderate	Minor to Moderate
Fire Management	Minor	Minor to Moderate	Minor to Moderate
Wildlife & Fisheries	Minor to Moderate	Moderate	Moderate
Cultural Resources	None to Minor	Minor	Minor
Airspace Management	Minor	Minor	Minor
Public Access, Recreation and Subsistence	None to Minor	Minor	Minor
Noise	Minor	Minor	Minor
Land Use, Energy and Utilities	Minor	Minor	Minor
Human Health, Safety and Hazardous Substances	Minor	Minor	Minor and Beneficial

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SECTION 3. AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This section describes the affected environment, organized by resource or issue. Several resources were determined not to be affected by the Action and No Action Alternatives; therefore, a detailed analysis of these topics is not presented in this section (see section 1.5). Existing environmental documentation for Army actions within DTA describes the affected environment in detail (see section 1.6 for a list of these documents). The most recent of these, the BAX/CACTF Final EIS, provides the basis for this section except where otherwise noted. Subsections beginning with 3.2 Soils and Permafrost, will first provide a general description of the resource, and then a description specific to DTA, appropriate for considering projects in the outlying areas. Lastly, the resources that may vary in specific ways between the different CRTC Operational Areas (originally presented in section 2.1.2) are described for each of these individual areas.

3.2 SOILS AND PERMAFROST

Soils are formed through a complex interaction between climate, vegetation, biological organisms, parent materials, and topography. Human activity can affect soils, particularly in relation to activities that remove vegetation, or other disturbances such as construction, or vehicle traffic. Loss of vegetation can increase erosion and reduce the soil's quality and stability. A soil's inherent properties can have an effect on what actions are best suited to an area, particularly when siting construction projects.

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 1 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 summer air. If enough vegetation is removed, the permafrost soils 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.

In 2005, the Natural Resources Conservation Service completed a soil survey of DTA and Fort Greely that provides a complete, detailed description of soils within DTA (NRCS 2005). Specifically, DTA soils are derived from glacial deposits, and reworked by streams and floods in the lowland areas. 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 have a moderate to high erosion potential. Depending on their location, the parent materials of DTA's soils are from glacial moraines, outwash terraces, and loess deposits (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).

The Bolio Test Complex is surrounded by rolling terrain (glacial moraines), distinguished by numerous kettle lakes, including Bolio Lake itself, formed by retreating glaciers. Low-lying areas tend to have small lakes underlain by permafrost. Lake water levels in this area vary according to precipitation. The developed facilities occupy upland areas that are well drained with varying thicknesses of loess deposits over glacial till.

Texas Range overlooks the Delta River and is a broad, open expanse. The Texas Test Complex and Texas Condo are constructed on stream terrace and moraine features that consist of well-drained soils. Much of the range area between these facilities is poorly drained loess over glacial till that is underlain by permafrost. The range gradually slopes up to the east to Windy Ridge, a glacial moraine of gravelly soils.

Mississippi Test Complex lies on the bluff, or stream terrace overlooking the Delta River. Soils are well-drained loess over alluvium. There is no permafrost present.

Part of Washington Range is in the Delta River flood plain and consists of well-drained alluvium and river wash with no permafrost. The observation points sit on steep escarpments on stream terraces, which are well-drained loess over sandy and gravelly alluvium and no permafrost. The undeveloped eastern part of the range is on moraines where soils are poorly drained loess over glaciofluvial deposits and permafrost. Access from Meadows road is over this soil type and the proposed extension of Meadows direct to OP 12 would be on this soil.

The test track and support buildings at the Mobility Test Complex are all on well-drained loess over alluvium soil types that are associated with old stream terraces and moraine features. The cross country courses are mostly (80%) on these same soil types with the addition of crossing steep moraine hills (10%) and low-lying poorly drained loess and partially decomposed organic material over permanently frozen loess and poorly drained depressions on moraines (10%). These low-lying areas are typically very wet in summer and underlain by permafrost.

The facilities CRTC occupies on Fort Greely Main Post are entirely on developed areas of post that have been paved or constructed. The soils are well drained and free of permafrost.

3.3 AIR QUALITY AND GREENHOUSE GASES

The Clean Air Act authorizes EPA to establish National Ambient Air Quality Standards to protect public health for six criteria pollutants (ozone, carbon monoxide, nitrogen dioxide, sulfur oxides, particulate matter, and lead). Areas that comply with these standards are referred to as attainment areas. Due to its rural location and relative lack of industrial sources nearby, air quality within DTA is generally considered excellent (i.e. in attainment of air quality standards). The largest air quality issue relates to dust. Fugitive dust is typically generated from daily industrial activities such as bulk material handling, storage, and construction projects. Vehicles driving on unpaved roads and surfaces are also a contributing source of human-caused dust at DTA. The Delta River and Jarvis Creek are large sources of fugitive dust during wind events in summer, and sometimes during winter months.

Greenhouse gases are a byproduct of fossil fuel combustion. Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, requires Federal agencies to reduce greenhouse gas emissions. EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance, was signed in 2009 and expands on the requirements of EO 13423. 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.

3.4 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 ground waters and prepare a report describing the status of its water quality. Section 303(d) of the CWA requires that Alaska maintain a list of any “impaired” water bodies that do not meet water quality standards. Alaska’s water quality standards (18 ACC 70) apply to surface water bodies in an attempt to preserve them for nature and for public use. The standards are applied to waterways based on their designated use (ADEC 2008). The water bodies in the installation all fall under one of 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.

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.

DTA’s surface waters are diverse, including numerous rivers, streams, ponds, and lakes. Most surface waters within DTA East drain directly into the Delta River or into its major tributary, Jarvis Creek. North of the installation, the Delta River drains into the Tanana River, which itself is a tributary to the Yukon. Both the Delta River and Jarvis Creek are fed by melting glaciers, as well as the major rivers in DTA West (Delta Creek and Little Delta River). Glacially fed streams typically carry clay and silt-sized material (rock silt) derived from glacial wearing action of parent material. The major streams of DTA have broad, braided channels flowing over

permeable alluvial fan deposits. Large quantities of stream flow infiltrate through the sediments into the groundwater table, resulting in decreasing stream volume in a down stream direction. The amount of stream flow also varies seasonally, with the highest flow during spring and summer. Many streams dry up completely in winter or freeze solid. Overflow ice (aufeis) occurs on both the Delta and Jarvis, potentially resulting in ice dams and flooding outside of the normal floodplain.

Lakes and ponds within DTA are generally fed either by runoff or by groundwater. The water levels in these lakes are somewhat cyclical depending on recent precipitation. Some ponds are seasonal, drying up by the end of summer. Lakes and ponds are an important component of the surface water resources at DTA. These resources provide various benefits such as water storage, flood control, water supply sources, and recreation. They also provide important habitat for numerous fish and wildlife species. Water quality information is sparse and dated since there has not been any recent sampling.

No surface waters on DTA or Fort Greely are listed on the State of Alaska's 303(d) impairment list. In a site-specific study of water quality in streams flowing through DTA, water and sediment samples were collected upstream and downstream of the installation boundaries. Samples were also collected from Bolio Lake (US Army Environmental Hygiene Agency 1990). These surface water quality values met the state's primary drinking water standards. Aluminum, iron, and manganese concentrations were higher than the state's secondary standards. High iron concentrations are typical in streams that drain wetland areas high in organic matter (Anderson 1970).

The Federal Emergency Management Agency has not mapped floodplain boundaries within DTA, yet they do exist and flooding associated with streams regularly occurs. Flooding can be caused during spring snowmelt or summer rains that are heavier than normal. In early spring, ice can start to break up, float downstream, and cause jams that divert water to unexpected upland locations. Another cause of flooding involves aufeis that builds up in the river channel over the winter, causing water to flow onto the ice surface and out past the normal stream channels and banks. The most severe flooding occurs when one or more of these factors happen together, such as early rainfall melting snow that remains in late spring.

The Bolio Test Complex sits next to one of the largest lakes within DTA. Bolio Lake is fed by surface runoff and by groundwater. Water levels in the lake vary from year to year depending on precipitation and other factors. The Alaska Department of Fish and Game (ADFG) stocks the lake for recreational use with Chinook Salmon, Grayling and Rainbow Trout. Bolio Lake has been sampled several times for different purposes. The most recent was 1992 for the purpose of determining whether or not activities at the Complex, particularly the septic system, are affecting water quality. Twelve water, sediment, fish, and macroinvertebrate samples were taken from Bolio Lake and analyzed. The results indicated that the septic system and activities at the nearby test site were not adversely impacting the lake's water quality. The concentrations of metals in the fish were within safe levels for human consumption (USAEHA 1993).

Texas Range has several shallow ponds in the eight to ten-acre range. Some dry up completely and stay that way, only holding water in years with greater precipitation. Some of

the ponds are connected by ephemeral waterways to each other. No water quality data is available.

Part of Washington Range sits within the Delta River floodplain, and the remaining part is on the bluff and river terraces adjacent on the east. The Delta River channel here becomes braided and complex and changes frequently. The U.S. Army Corps of Engineers, Cold Regions Research and Engineering Lab (CRREL) has analyzed several hundred water samples collected from surface waters draining ranges and impact areas since 2002, including the Delta River. CRREL analyzed the samples for a range of munitions constituents. One sample had a trace amount (0.05 µg/L) of TNT and one sample had a trace amount (0.04 µg/L) of RDX. Both positive samples were collected in snowmelt runoff on the edge of the Delta River in May 2003 (CRREL 2010). There are only a couple of small ponds in the eastern part of Washington Range.

The Mississippi Complex has no water bodies on site, although it does sit on a bluff overlooking the Delta River. The Mobility Test Complex also does not have any water bodies in the test track and administrative areas. There are unmapped shallow ponds in the cross-country course area, associated with wetland bogs, but no stream courses. No water quality data is available.

There are no surface waters or floodplains near the Fort Greely Main Post CRTC facilities. Jarvis Creek is three quarters of a mile from Building 612. The U.S. Army Corps of Engineers completed a study of Jarvis Creek at 1000 meter (0.62 mile) intervals from the southern border of Donnelly Training Area to the mouth at the Delta River, plus at other likely locations such as the mixing zone from the Fort Greely waste water discharge point (Bristol Environment and Engineering Service 2003). Dissolved oxygen ranged from 1.15 to 19.90 mg/l, while the state standard is between 4 and 17 mg/l. Temperature ranged from 41 to 61° F, with higher temperatures dominating the shallow, braided parts of the creek. Alaska state standards are less than 59° F for drinking water, or 68° F for general supply. All other parameters measured were within or below the state's criteria.

3.5 WETLANDS

Wetlands provide numerous ecological and human services including habitat for wildlife, collection and retention of sediments and filtering of pollutants contained within storm water runoff and provide control of floodwater flows and recharge for groundwater aquifers. Wetland resources are protected under Section 404 of the CWA and EO 11990, Protection of Wetlands.

A number of wetland mapping resources are available to land managers at DTA. Wetlands within DTA East and part of DTA West were mapped under the National Wetlands Inventory (NWI) program by the USFWS in the early 1990's. This study used aerial photos and maps to predict and classify wetland areas based on vegetation, visible hydrology, and topography. In addition, the USACE Waterways Experiment Station completed a wetland planning level inventory for DTA in 2000 based on Ecological Land Survey ecotype classes (Lichvar 2000). Ecotype classification involves mapping areas (1:50,000 scale) that share homogenous

topography, terrain, soil, surface-form, hydrology, and vegetation. For the USACE map, these homogenous ecotype units were used 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. Lastly, wetland delineations for specific projects have been approved by the U.S. Army Corps of Engineers (USACE), Regulatory Division. These have discreet boundaries, covering small areas with more accuracy.

All of these mapping tools are available to managers when making initial decisions about where projects could be sited. Because so much of Alaska is wetland, managers cannot always avoid wetlands. Hydrogeomorphic (HGM) classifications can be conducted by examining four core functions performed by HGM wetlands (USAG Alaska and USACE, 2005):

Groundwater flow – the capacity of a wetland to influence the amount of groundwater movement

Surface water flow – the ability to store water during flooding events

Water quality – the ability to remove suspended and dissolved solids

Wildlife habitat – the capacity to produce/provide an abundance and diversity of species

For initial project planning, it is useful to try to avoid certain types of wetlands that tend to have greater HGM functions. These 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 (USAG Alaska and USACE, 2005). Wetland delineations and functional assessments would be conducted as necessary prior to construction activities.

Wetland types at DTA are classified as either palustrine, riverine, or lacustrine. Palustrine shrub wetlands are the most common types 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 needleleaf forest ecotypes of the Ecological Land Survey.

The wetlands nearest to the Bolio Test Complex are palustrine scrub-shrub/emergent and begin to the west and south of the fenced compound. The hillsides to the east are upland (non-wetland). Bolio Lake itself is classified as lacustrine. There are NWI-mapped wetlands adjacent to the ASP (palustrine scrub-shrub/emergent and palustrine scrub-shrub). During construction of the ASP, an initial designation of upland was found to be in error. There are likely more wetlands in the ASP area than are mapped.

A majority of Texas Range is palustrine scrub-shrub, scrub-shrub/emergent complexes, and emergent types associated with lakes and ponds. The existing developed areas on Texas Range were constructed on upland areas.

The Mississippi Complex is situated entirely in uplands, with the nearest wetland approximately 650 feet north of the site. There are also no wetlands on or near the CRTC facilities on Fort Greely Main Post.

The Delta River floodplain is classified in the NWI as Riverine, unconsolidated bottom, permanently flooded and as riverine, unconsolidated shore, seasonally flooded. There are also forested islands within the riverbed that are listed as palustrine forested wetlands. On the bluff above the floodplain, a large lowland area is classified as palustrine scrub-shrub/emergent. Other large areas are forested and scrub-shrub wetlands. Much of this Washington Range area on the bluff east of the floodplain is in a hydric soil type with underlying permafrost. These are good indicators that wetlands may exist even where the NWI maps show uplands.

Most of the area at the Mobility Test Complex is upland. There are wetlands associated with the small ponds found to the east in the area of the cross country course.

3.6 VEGETATION

The type of vegetation that will grow at DTA is adapted to low temperatures, severe winters, and relatively low precipitation (Bailey 1995). Vegetation plays an important role within DTA providing realistic testing conditions, wildlife habitat, filtering of surface water runoff, and stabilization of soils.

An ecological survey (CRREL, 2001a) reported vegetation cover on DTA as forest (29.0 percent), scrublands (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 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, 2001a). Barren lands also occur above tree line and along ridges. 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, which tracks rare vascular plant species in Alaska (AKNHP 2008).

Invasive species are non-native to an ecosystem, typically out-compete native vegetation, and are difficult to control. Several invasive species occur within DTA East. Narrowleaf hawksbeard (*Crepis tectorum*) has begun to spread down roadsides in the training areas. USAG

Fort Wainwright DPW and/or their contractors periodically conducts vegetation control along roadsides, around buildings, fences, and targetry infrastructure.

Vegetation around the Bolio Test Complex is a mix of forested types on the hills to the east, including closed white spruce, closed birch, open aspen, and mixes of these. There are also stands of tall shrubs (alder and willow) and low shrubs (dwarf birch, willow, ericaceous species). To the west, Bolio Lake itself is surrounded by low moist sedge and grass that is periodically flooded. Closed deciduous forest grows on the hillside rising up west of Bolio Lake. The ASP is surrounded by closed black spruce and birch that burned in the 1999 Donnelly Flats Fire. There are small pockets of moist sedge and grass and a couple of small unburned spruce stands.

The Texas Test Complex sits in a large cleared area defined by pioneer vegetation that has been kept mowed and by bare ground or gravel. The natural areas surrounding this are typical upland forests that have regenerated since a 1981 fire, specifically, balsam poplar, and aspen. Unburned areas are forested with black and white spruce. Farther away from the maintenance area, low shrub wetland vegetation dominates. The Texas Condo area also was burned in 1981. Various combinations of low and tall shrubs with the occasional unburned spruce tree surround the cleared areas associated with Texas Condo. The remainder of the range is a vast area of dwarf birch, willow, and ericaceous shrub habitat, along with smaller areas of moist sedge and grass around lakes, and a few regeneration patches of balsam poplar. Prescribed fire is used as a tool to manage vegetation on about 3,300 acres in and adjacent to Texas Range. USAG Fort Wainwright foresters and the BLM Alaska Fire Service manage prescribed fire on DTA, and currently burn this area on a 2-3 year rotation. Prescribed fire promotes early succession sedge/grass communities, which is beneficial to military users and is better habitat for bison.

Outside the cleared area that defines the Mississippi Test Complex, are closed spruce forests to the north and west and mixed forest types to the south and east. The 3 Main Post buildings that CRTC uses are in the middle of the Fort Greely built up area some distance from the spruce and mixed forests that originally made up the area.

The main portion of the firing range at Washington Range is located on an abandoned channel/floodplain of the Delta River. Sparse shrubs (alder, willow, silverberry) and some grasses and forbs grow here. The bluff above the range is heavily forested with closed white spruce and small patches of balsam poplar and black spruce.

The Mobility Test Complex was built in a black and white spruce forest that had burned in 1999. The area is regenerating with grasses, sedges, shrubs and some aspen and birch. The cross-country course runs through similar habitat surrounding the Mobility Test Complex. In addition, about 6% of the course runs adjacent to or across wetland areas dominated by sedge tussocks and dwarf shrubs.

In forested areas, USAG Fort Wainwright or Fort Greely may implement timber sales to improve the quality of forest stands, support military training and testing activities, and improve wildlife habitat. They may also choose to sell timber from an area that must be cleared for a construction project. Bureau of Land Management and Army timber management practices and contract stipulations govern timber sales on USAG Fort Wainwright lands. Timber sales on

withdrawals where the Army holds vegetation rights, such as Fort Greely, will be governed by Army practices and contract stipulations.

3.7 FIRE MANAGEMENT

The boreal ecosystems of interior Alaska are subject to periodic natural fire events. Much of the area north of Bolio Lake and around the Mobility Test Complex was burned in the June 1999 Donnelly Flats Fire, with only scattered pockets of vegetation surviving. Training areas south of Bolio Lake, encompassing most of Texas Range and part of Washington Range burned in a large 1981 fire. Another small 110-acre fire occurred on Texas Range in May of 2001. Several controlled burns have been conducted in the Texas Range area during the last decade.

Wildfire management on Army lands is required by the Sikes Act, AR 200-1 and other laws. Wildfire management is the responsibility of U.S. Army Garrison Alaska and the Bureau of Land Management's Alaska Fire Service.

The vegetation on the floor of Alaskan forests is composed almost entirely of small, fast drying plants considered wildfire "fuels" (USARAK 2006). When relative humidity decreases, the moisture content of these fuels also drops quickly. Surface fuels in Alaska become almost involatile above 15 percent moisture content. They burn readily at 8 to 10 percent humidity; and at 5 to 7 percent, these fuels burn with fierce intensity and can carry fire into tree crowns.

Fuels management actions are used by USAG Fort Wainwright and BLM to prevent wildfire. For CRTC, reduction of fuels on Texas Range is important to preventing fires that could be caused by test firing on the range. This is mainly accomplished through prescribed burns. CRTC personnel work with USAG Fort Wainwright Range Control and Conservation staff to develop areas most likely to benefit from such burns. USAG Fort Wainwright and BLM then plan and conduct the burns.

Fire management at all of CRTC's operational areas can be described in the same terms, with the exception of Texas Range which is discussed in the preceding paragraph. For the other operational areas, the fire history, naturally fire resistant riverine vegetation and river channels, and the road network reduce the risk of fire spread. Recently burned areas can burn again, but are easier to contain and stop without the large swaths of spruce, particularly black spruce that carry fire more readily than other vegetation types.

3.8 WILDLIFE AND FISHERIES

DTA is home to a diverse population of wildlife as well as nineteen stocked lakes. Large mammals such as bison and moose have traditionally been the species most closely managed by wildlife biologists, though there is an increasing focus on other non-game species and using an ecosystem management philosophy.

The U.S. Fish and Wildlife Service manages migratory birds. The State of Alaska manages game across the entire state, including on military installations. DTA East sits within state Game Management Unit (GMU) 20D. The Delta Junction Management Area and the Delta Controlled Use Area designations place restrictions on moose hunting and caribou hunting within DTA East, including CRTC's six operational areas. DTA West is in GMU 20A and has various restrictions depending on the species and the sub unit. GMU 20A has been designated as an Intense Management Unit for moose and caribou by the Alaska Legislature. The Alaska Department of Fish and Game is required to meet specific population goals and harvest goals. In Unit 20A caribou are managed using a draw permit hunt. Unit 20A is being managed for moose by sub units that have specific population goals and harvest objectives. The 20A moose population is currently high and liberal hunting seasons have been imposed. If the population drops below a certain number, hunting will become more restrictive.

USAG Fort Wainwright works cooperatively with the Alaska Department of Fish and Game, U.S. Fish and Wildlife Service, and the Bureau of Land Management to manage wildlife, including game species. This cooperation is outlined in the 2007-2011 Integrated Natural Resources Management Plan (INRMP), and is required by the Sikes Act. The primary tool available to USAG Fort Wainwright for wildlife management is habitat manipulation. On occasion, CRTC has assisted with habitat improvements by providing heavy equipment and operators. Most recently, moose habitat improvement areas were shear-bladed to allow for re-growth of plant species preferred by moose. This was an agreement worked out with the ADFG and USAG Fort Wainwright because of concerns about habitat loss when the Mobility Test Complex was constructed and fenced.

Moose may be found throughout the study area and are frequently seen at Bolio Lake, Texas Range and Washington Range, and near the Mobility Test Complex. Bison calve and spend the summer on Texas and Washington Ranges, and Washington Impact Area. They are rarely present during the winter test season.

The types of birds in the study area are diverse and representative of interior Alaska. Waterfowl are regularly seen at Bolio Lake during the summer. Approximately 300,000 cranes migrate through DTA from late-April to mid-May and again in September during fall migration (Anderson et al. 2000). Many cranes use the gravel bars of the braided Delta River as roosting areas, and this area has been defined as a special interest management area in the USAG Alaska INRMP (USAG Alaska 2007a). Songbirds, raptors, and ravens are seen throughout DTA. An Osprey nest is located between Meadows Road and OP5. Cliff and riparian areas are important raptor nesting habitat, and several areas on DTA were identified as potential raptor nesting habitat during wildlife surveys conducted in the summer of 1998 (ABR, Inc 1998). Cliff areas on Molybdenum Ridge and Donnelly Dome, and along the Delta River, the Little Delta River and on upper Delta Creek and Ptarmigan Creek near Molybdenum Ridge provide potential nesting habitat for Peregrine Falcons, Gyrfalcons, Golden Eagles and other raptors. Additional surveys in 2010 by DTA wildlife personnel have identified new nests not found by ABR. They confirmed a Bald Eagle nest and a Peregrine Falcon nest along the Little Delta River. DTA personnel verified the location of the Golden Eagle nest on Donnelly Dome.

No endangered species inhabit the area. Peregrine Falcons, which have been delisted, have been observed nesting on the Delta River bluffs about 0.6 mile north of Mississippi Complex. The Rusty Blackbird nests in black spruce wetland areas and is a species of concern due to steeply declining population numbers. If the Rusty Blackbird is listed under the Endangered Species Act, there could be implications for management on DTA.

The State of Alaska also manages fisheries, including the lake-stocking program. Bolio Lake is stocked with Rainbow Trout, Grayling, and Chinook Salmon. It is a popular summer and winter fishing spot for local residents. Naturally occurring populations of Lake Chub, Northern Pike, Sculpin, and Northern Longnose Sucker are found in some lakes not stocked by the Alaska Department of Fish and Game. Ponds within Texas and Washington ranges are shallow and freeze solid during winter; therefore, they contain no fish. Twin Lakes and those lakes along Windy Ridge Road are the closest stocked lakes to Texas Range, and are also quite popular for recreational fishing. There are no water bodies within the Mississippi Complex, the Mobility Test Complex or near the Main Post facilities.

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 for spawning. In addition, the Delta River on DTA is used by Grayling for overwintering. Grayling migrate through these glacial streams to clear tributaries to spawn, and a few clear streams provide summer habitat for Grayling.

3.9 CULTURAL RESOURCES

Donnelly Training Area and Fort Greely lands have supported human populations for the past 10,000 to 12,000 years. Though not located on Army lands, two of the oldest well-dated sites in North America—Swan Point and Broken Mammoth, dated to between 11,500 and 12,400 radiocarbon years before present (BP)—are located in the Tanana Valley near the DTA. The oldest radiocarbon date for any item found on DTA itself is 9920 \pm 60 years BP.

The DTA lands fall within an area occupied at the time of Euro-American contact by Lower-Middle Tanana Athabaskans. Traditional settlement patterns focused on a widely mobile seasonal round, including caribou hunting and summer fishing, berry and root collecting and sheep hunting. These activities frequently had a communal focus including several local ‘bands’ connected by common interest, geography, and intermarriage.

As Euro-American traders, miners, missionaries, and explorers moved into the Tanana River valley, the traditional lifestyles of local Athabaskan groups were disrupted. In 1898, the discovery of gold in the Tanana uplands began a rush of Euro-American settlement into the Tanana River valley. As the economic importance of the valley increased, the need for reliable transportation routes and communication systems rose in tandem. Existing trails, such as the Bonnifield, Donnelly-Washburn, and Valdez-Fairbanks trails, saw increased use and development in the first decade of the 20th century. This increase in activity also resulted in the

establishment of several roadhouses and posts. In 1906, Congressional appropriations led to improvement of the Valdez-Fairbanks trail, crossing the Alaska Range south of Delta Junction, following the Tanana River to Fairbanks. Completion of the Alaska Railroad in 1923 was followed two decades later by construction of the Alaska Highway in 1942, firmly tying the Alaskan interior to the outside.

Development in the Alaskan interior increased dramatically with the advent of World War II and the subsequent military build-up in Alaska. Of particular significance was the development of the airfield near Delta Junction (Fort Greely). This and other locations began as lend-lease bases and cold regions testing centers, but soon expanded with the increased need for military support during World War II and later, the Cold War.

Today's DTA was formerly part of Ft. Greely, an Arctic training and testing installation south of Delta Junction. Ft. Greely's predecessor was Allen Army Airfield, a World War II airfield built in 1942 to support the Lend-Lease operation along the Northwest Staging Route. After the war, the Army began to use the installation and surrounding lands for much-needed Arctic testing and training. In 1955, the airfield and 678,000 acres of training lands became part of the new post of Ft. Greely. As the home of the Northern Warfare Training Center and the Army's Cold Regions Test Center, Ft. Greely continued to support Arctic training and testing missions. With the realignment of Ft. Greely in 2001, the training lands were transferred to the control of Ft. Wainwright and are presently known as the Donnelly Training Area. Main Post Fort Greely is now a separate Army installation, supporting primarily the Space and Missile Defense Command but also CRTC.

CRTC has worked closely with USAG Fort Wainwright's cultural resources staff to identify potential cultural resources within CRTC's operational areas. Archaeological surveys and reports have been completed for several areas specifically for CRTC's needs. USAG Fort Wainwright has also completed other archaeological work on DTA for range development purposes that overlaps with areas of interest to CRTC.

Archaeological research on the DTA has resulted in numerous technical reports (Bacon 1978; Bacon and Holmes 1979; Dixon et al. 1980; Frizzera 1973; Hedman et al. 2003; Higgs et al. 1999; Holmes 1979; Potter et al. 2000; Rabich and Reger 1978; Raymond-Yakoubian and Robertson 2005; Robertson et al. 2004; Robertson et al. 2006; Staley 1993), scientific papers (Holmes and Anderson 1986; West 1967, 1975), and the identification of at least 400 archaeological sites. Survey on DTA has been done largely through stratified sampling, resulting at times in as little as 1% of the survey universe being inventoried. This work has generally focused on recorded sites and areas thought to be of the very highest potential for containing archaeological sites. Thus, while a large number of important sites have been identified on DTA's training lands, a number of important gaps exist in the cultural resource inventory.

Despite its incomplete nature, the current archaeological record represents all of the recognized prehistoric cultures of the Alaskan interior. Of significance is the role played by archaeological resources located on Army lands that fall under the definition of the Denali Complex of the American Paleoarctic Tradition (Anderson 1970; West 1967, 1981) because they

are located just south of two of the oldest, well-dated sites in North America, Swan Point and Broken Mammoth, both in the vicinity of Shaw Creek. These sites are dated to between 11,500 and 12,000 before present (BP) (Holmes 1996, 1998; Holmes et al. 1996; Yesner et al. 1999). The proximity of these two sites makes it likely that equally significant sites may be found in the DTA.

Sites reflecting the influence of what has been termed Northern Archaic (e.g. Anderson 1968; Workman 1978), dating to perhaps 6000 to 2000 BP, are also present, as are late prehistoric Athabaskan (e.g. Andrews 1975, 1987; Cook 1989; Mishler 1986; Sheppard et al. 1991; Shinkwin 1979; Yarborough 1978) and Euro-American historic archaeological sites (Gamza 1995; Phillips 1984).

The Bolio Lake area was surveyed in 2005 and 2008. The nearest archaeological sites are at least 550 meters (1804 feet) away from the Bolio Test Complex and 450 meters (1476 feet) away from the Ammunition Supply Point. Texas Range was also surveyed in 2005. The archaeological sites found in the Texas Range area are at least 500 meters (1640 feet) away from the maintenance and administrative area. There are a series of sites along the ridge on the eastern edge of Texas Range, and within 350 meters (1148 feet) of Texas Condo. Past consultation with the State Historic Preservation Office has determined that work at the Texas Condo site did not affect historic properties. There are sites on the bluff overlooking the Delta River in the western portion of Texas Range. This area is off limits to maneuver or ground disturbing activities. The Mississippi Complex and the area around it were surveyed in 2004 and 2005, with no sites discovered. Washington Range has not been surveyed except for a small area surrounding OP 12. These surveys are discussed in a 2005 report that specifically addresses these CRTC operational areas (Robertson et al. 2005).

Prior to construction of the Mobility Test Complex, archaeological surveys were conducted on the area and several sites were identified (Robertson 2004). The test track and administrative areas avoided these sites. Designation of the trail network east and south of the test track as the cross-country course will require avoidance of one large site that will be proposed for inclusion on the National Register of Historic Places as determined by archaeological investigation in summer 2010.

Buildings 605, 608, and 612 are among the oldest buildings used by the center, and were constructed in 1955, according to the Fort Greely real property inventory. Each of these three buildings was determined to be eligible for the National Register of Historic Places, due to cold war aspects. A Memorandum of Agreement with the Alaska SHPO resulted in complete photo recordation of the buildings and thereby allowed the use, rehabilitation, or destruction of these buildings without further Section 106 consultation with the SHPO.

3.10 AIRSPACE MANAGEMENT

The definition of airspace includes vertical and horizontal boundaries and time of use. The Federal Aviation Administration (FAA) manages all airspace within the United States, including Alaska. The FAA is responsible for managing commercial airline and air carrier, general

aviation, and government agency airspace, including the U.S. military. Use of airspace is required for the successful operation of the U.S. military. Some military flight activities are not compatible with civilian uses of airspace, and some military activities potentially conflict with other uses of military airspace. Airspace restrictions are needed within military installations to ensure safety and to avoid possible user conflicts.

The FAA has designated four types of airspace within the United States. These are Special Use, Controlled, Other, and Uncontrolled airspace. Special Use Airspace (SUA) is an area where certain activities (such as military firing or military aircraft training activities) are confined because of their potential to impact non-participating aircraft. Controlled airspace has defined dimensions within which air traffic control service is provided to instrument flight rule (IFR) and visual flight rule (VFR) flights. There are a variety of activities that fall into the “Other” airspace category, such as designated parachute jump operations, military training routes, and aerial refueling tracks. Uncontrolled airspace has no specific prohibitions associated with its use. More information on these airspace definitions, particularly how they relate to DTA, can be found in the Establish the Delta MOA EA recently completed by the U.S. Air Force (2010).

Special Use Airspace is further categorized as Military Operations Areas (MOAs), Restricted Airspace, and others. All of DTA and much of the adjoining land parcels are covered by either MOAs or Restricted Areas. MOAs are established to separate or segregate certain non-hazardous military activities from IFR aircraft traffic and to identify for VFR aircraft traffic where these military activities are conducted. Restricted Areas support ground or flight activities that may be extremely hazardous to non-participating aircraft. Entry into restricted airspace without approval from the using or controlling agency is prohibited. Restricted airspace overlies military training ranges, including Restricted Areas over DTA. If the restricted area is not active and has been released back to the FAA, aircraft can operate in the restricted airspace with permission from the using or controlling agency. Additional information about these types of SUAs and how they relate to DTA can be found in the BAX and CACTF EIS (USARAK 2006).

The special use airspace over part of DTA, Restricted Area R2202, was created for CRTC as the “using agency” and covers most of the CRTC operational areas and the DTA impact areas. It is composed of subunits R2202A and R2202B that include airspace from the ground surface to 10,000 feet above sea level. R2202C starts at 10,000 feet above sea level and goes to FL310 (31,000 feet). R2202D starts at FL310 and is unlimited in height. There is also a Controlled Firing Area (CFA) over the small arms ranges at DTA. All obligations for ensuring flight safety fall upon the ground activity within the CFA (for instance, during small arms firing, CRTC personnel would be responsible for ensuring no aircraft are transiting the CFA and that firing cease if aircraft are present).

CRTC uses restricted areas for testing live ordnance. Artillery, mortars, missiles, and other ordnance are fired from firing points to targets located within existing Army impact areas. Army regulations require special use airspace during any activity over 150 feet AGL, to include ricochet ordnance that would be hazardous to aircraft. Such activities include artillery fire, mortars, missiles and rockets, air-to-ground weapon systems, aerial target practice, laser operations, demolition and explosive devices, electronic warfare devices, remotely piloted and

unmanned aerial vehicles and any other activity considered to be hazardous or non-compatible with other user of the airspace. The exception to this would be small arms firing authorized and conducted within a CFA.

Over the last six test seasons, CRTC has conducted anywhere from zero to five tests requiring the use of restricted airspace (the average is 2.7). Generally these tests require just a few hours each, spread out over up to 5 days, of active use of the restricted areas.

3.11 PUBLIC ACCESS, RECREATION, AND SUBSISTENCE

The training lands around CRTC facilities are used by a variety of locals and visitors for hunting, fishing, and gathering. Non-consumptive recreational activities include off-road recreational vehicle use, hiking, bird watching/wildlife viewing, skiing, biking, and dog sledding. USAG Fort Wainwright and the Bureau of Land Management designate areas within DTA for gathering firewood by permit, including an area near the Bolio Test Complex that burned in the 1999 fire. Moose hunting opportunities near CRTC's operational areas are limited due to the small number of permits issued by the Alaska Department of Fish and Game. A portion of DTA East is open for the regular moose hunting season and is very popular with hunters. Various lakes in the vicinity, including Bolio Lake are used for fishing. Berries are harvested throughout the area. Fires that occur in road-accessible areas, such as the 1999 burn, attract large numbers of morel mushroom harvesters.

Many of CRTC's facilities lie in areas closed to the public. The land around them is therefore not available for subsistence users. These facilities include Texas and Washington Ranges, the Mobility Test Complex, and Main Post. Other CRTC facilities have fences immediately outside of the developed areas, which do not enclose and place off limits any lands valuable for public access (the Bolio Test Complex, the Ammunition Supply Point, and the Mississippi Complex).

Subsistence is 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. DTA has a wide range of plants, animals, and fish suitable for regional subsistence activities under this definition. Due to the size and relatively remote location of DTA, natural resources and wildlife populations are generally well preserved. Federal subsistence management is based on the same Game Management Units that the State designates; however, special Federal subsistence rules only apply to certain Federal lands, which do not include lands reserved for military uses.

Subsistence practices depend upon the availability and accessibility of customary useful subsistence resources. The type and availability of vegetation, wildlife, and fish are discussed in prior sections of this PEA. Because many recreational users of DTA East engage in gathering of resources important to subsistence, the factors governing recreational access to various areas of DTA are relevant to the issue of subsistence access.

3.12 NOISE

The impacts of noise from local training and test activities have been expressed as a concern by the surrounding community for many years. The majority of the noise concerns from the community pertain to firing larger caliber weapons, bombing, and low-flying aircraft, particularly at night. The noise CRTC contributes to the overall noise on DTA includes small-caliber weapons fire, artillery, demolitions, vehicle operations, and missile and rocket firing. Test support activities also cause noise similar to general construction noises (heavy equipment working, for example). CRTC operates a meteorological instrument called a SODAR (Sonic Detection and Ranging) which measures the scattering of sound waves by atmospheric turbulence. It is used to remotely measure wind speed, direction, and turbulence of the lower layer of the atmosphere. The SODAR's operational noise can regularly be heard at distances greater than ½ mile away, and under the right atmospheric conditions can be heard up to 6 miles away. DTA Natural Resources has received several complaints from recreationists 2 miles away at Twin Lakes regarding the noise (Haddix, pers com). There is a SODAR at Texas Range, two at Mississippi Range, and one at Washington Range.

The primary locations of noise generation for CRTC activities are the operational areas. For weapons firing and demolitions, Texas and Washington Ranges are the most commonly used, with the Wills Small Arms Complex used less often. Vehicle operations are concentrated at the Mobility Test Complex, but also roads and trails throughout DTA East may be used depending on test requirements. Test support noises also primarily occur in the operational areas, including activities at the three buildings on Main Post Fort Greely. Generally, the noises from test events happen during the winter. Support-related noise could occur any time of year, but is more frequent during the winter test season. CRTC-generated noise varies with the quantity of tests being conducted at DTA (see table C-2 in appendix C for a listing of recent tests).

3.13 LAND USE, ENERGY AND UTILITIES

Land Use. DTA is divided for land management purposes into east and west training areas. DTA East and West are on long-term withdrawal from the public domain for military purposes, most recently extended for 25 years in the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106-65). USAG Fort Wainwright is the lead in management of these lands, with input from other state and Federal agencies, including CRTC, and the public. The Bureau of Land Management retains some overall responsibility for stewardship, primarily through the development of resource management plans. The Fort Greely lands that were transferred to the Space Missile Defense Command are under a permanent withdrawal from the public domain. USAG Fort Greely is responsible for management of their lands.

Military activities are the primary land use on DTA. Public use for recreation and subsistence is allowed whenever that use does not conflict with training and testing, as mandated by the Sikes Act. Not all areas are open to the public for safety reasons. Impact areas are typically permanently off limits to the public. Smaller areas may be fenced off for security of certain military assets such as buildings, ranges, and ammunition supply points.

Energy and Utilities. Doyon Utilities owns, operates, and maintains all of the utilities on USAG Fort Wainwright and Fort Greely, including DTA. Utilities were transferred in 2008 as part of an effort to privatize base support and operations. Doyon Utilities is responsible for upgrades and expansions to the existing power distribution network as part of an initial project to ensure full capability for future growth. This work should fully cover any projected increases in electrical power needs.

3.14 HUMAN HEALTH, SAFETY, AND HAZARDOUS SUBSTANCES

Human health, safety, and hazardous substances covers military activities and materials that potentially pose a risk to human health and safety. Military testing on Army lands can present risks to humans from live-fire events, vehicular accidents, occupational safety hazards, and unexploded ordnance. Hazardous materials and wastes can also present safety risks. Typical hazardous substances in routine use include petroleum, oils, and lubricants (POLs), batteries, light ballasts, mercury-containing light bulbs, paint and paint thinners, industrial solvents and degreasers, and pesticides. Impact areas and small arms ranges can accumulate metals such as lead and other munitions constituents. The primary environmental concern with these hazards would be if there are off-range migration pathways, and potential off-range human and ecological receptors. Some of the older buildings occupied by CRTC also may contain hazards including asbestos, lead-based paints, and polychlorinated biphenyls (PCBs). Wildlife can also represent a hazard, particularly bears and moose.

CRTC has implemented a comprehensive environmental and safety program to eliminate, avoid, and/or reduce risks to its workers and the public. This program includes the following:

- Compliance with all applicable Federal, state, DOD, and Army laws and regulations regarding environmental protection and health, safety, and risk management.
- Development of CRTC SOPs that address implementation of these laws and regulations, and focus risk factors specific to testing operations in a cold-weather environment.
- Writing risk assessments and conducting hazard analysis working groups for each test with approvals at the appropriate command level. These documents are read by test personnel as a proactive safety measure.
- Cold-weather and driving safety briefs are given to all new employees and visiting test personnel.

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SECTION 4. ENVIRONMENTAL CONSEQUENCES

This section describes the impact assessment methodology and the environmental consequences for the No Action Alternative and the two Action Alternatives. Several resources were determined not to be affected by the Proposed Alternatives; therefore, a detailed analysis of these topics is not presented in this section (see section 1.5). Much of the analysis in this section is based on descriptions of the affected environment in existing environmental documentation supporting general Army actions within DTA (see section 1.6).

4.1 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. Context is the affected region (region of influence), the affected interest, and the locality. For the site-specific infrastructure improvement projects, locality is the chosen site or area (for example, the Texas Range cross country firing course has not been specifically sited, but will be located on Texas Range between Meadows Road and the east bluff of the Delta River). Localities for routine test types and support activities may be more general or may occur at a number of sites (for example, firing large-caliber weapons can be done from one of several firing points throughout DTA). The region of influence for each resource can differ, depending on the resource itself. Table 4.1 lists each resource and the region of influence. The intensity of a potential impact is an evaluation of the impact's severity and takes into account beneficial and adverse impacts, the level of controversy associated with the project's impacts on human health, whether the action establishes a precedent for further actions with significant effects, the level of uncertainty about projected impacts, or whether the action threatens to violate Federal, state, or local environmental protection laws. Table 4.1 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. Where impacts are expected to be somewhere between two categories, they are listed that way (e.g. none to minor, or minor to moderate). In general, the following five categories were used to describe 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 4.1 Region of Influence and Factors of Potential Impact

Resource/Issue of Concern	Region of Influence	Factors
Soils and Permafrost	DTA	<ul style="list-style-type: none"> • Minor to Moderate (insignificant) – The degree to which activities cause erosion or otherwise impact the productive capacity of local soils; also the degree to which activities disrupt or melt permafrost on an installation and regional level. Adverse impacts would occur on less than 5 percent of soils within DTA East. • Severe (significant) – Activities that would cause uncontrolled and irreparable erosion resulting in permanent loss of soils, and/or soil loss or compaction that precludes restoration of native vegetation, would represent a significant impact. Activities that would result in the uncontrolled or unmanaged melting of permafrost (ice masses), or cause irregular subsidence to occur represent significant impacts. Adverse impacts would occur on greater than 5 percent of soils within DTA East.
Air Quality and Greenhouse Gases	DTA and Deltana*	<ul style="list-style-type: none"> • Minor to Moderate (insignificant) – The degree to which activities result in measurable changes to local and regional air quality. The degree to which activities result in increasing fossil fuel consumption. • Severe (significant) – Activities causing an exceedance of regulatory thresholds would represent a significant impact.
Surface Water and Floodplains	Delta River Watershed	<ul style="list-style-type: none"> • 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 DTA	<ul style="list-style-type: none"> • 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 4.1 Region of Influence and Factors of Potential Impact (Continued)		
Resource/Issue of Concern	Region of Influence	Factors
Vegetation	DTA	<ul style="list-style-type: none"> • Minor to Moderate (insignificant) – The degree to which activities alter the local or regional vegetation patterns; includes a consideration of vegetation as wildlife habitat. • 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, segment habitat such that regional wildlife species are jeopardized, or eliminate a habitat type from an installation or region would represent a significant impact.
Fire Management	DTA and Deltana*	<ul style="list-style-type: none"> • 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 FWA's Integrated Wildland Fire Management Plan or that pose risks exceeding response capability would represent a significant impact.
Wildlife and Fisheries	DTA and GMU 20A, GMU 20D, Delta River Watershed	<ul style="list-style-type: none"> • Minor to Moderate (insignificant) – The degree to which activities affect local animals and biological conditions. • Severe (significant) – Activities that reduce regional wildlife populations below state management levels would represent a significant impact. • Minor to Moderate (insignificant) – The degree to which activities affect migratory birds or bald and golden eagles on or near the installation. • Severe (significant) – Activities that violate the Migratory Bird Treaty Act or 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 waterway's fish population. • Severe (significant) – Activities that violate state Fish Habitat (Title 16) Statutes, ignore recommendations 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.
Cultural Resources	DTA	<ul style="list-style-type: none"> • 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 a historic district or National Landmark losing its National Register of Historic Places (NRHP) designation, would represent a significant impact.

Table 4.1 Region of Influence and Factors of Potential Impact (Concluded)		
Resource/Issue of Concern	Region of Influence	Factors
Airspace Management	Special Use Airspace	<ul style="list-style-type: none"> 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.
Public Access, Recreation and Subsistence	DTA and Deltana*	<ul style="list-style-type: none"> 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.
Noise	DTA and Deltana*	<ul style="list-style-type: none"> 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.
Land Use, Energy and Utilities	DTA and Deltana*	<ul style="list-style-type: none"> 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.
Human Health, Safety, and Hazardous Substances	DTA and Deltana*	<ul style="list-style-type: none"> 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. 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 imminent and substantial endangerment to human health and the environment would represent a significant impact.
* Deltana includes the local populated areas of Delta Junction, Big Delta, and the farming areas of Tanana Loop, Clearwater, and along the Alaska Highway.		

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

No Action Alternative – *Continue Cold Regions Environmental Testing*. Routine test types, test support activities, and test support maintenance activities were considered for their impact on each resource area. Past observed impacts from testing and support, and types of testing analogous to training impacts were used to estimate the degree to which activities affect or have the potential to affect each resource area.

Action Alternative 1 – *Continue Testing and Modernize Facilities using Current NEPA Procedures*. In addition to considering the impacts of testing listed in the No Action Alternative, the facility infrastructure upgrade projects were separately analyzed for their potential to impact each resource area. These projects were reviewed for unmitigated impacts. They were also analyzed with existing mitigation measures that would be incorporated (SOPs and BMPs). For resources with land-based areas such as soils and permafrost, wetlands, vegetation (including vegetation as habitat), and surface water and floodplains, GIS mapping was used to determine the proximity of sensitive resources to the proposed project locations. Based on the proposed project components, anticipated acreage of disturbance (table 2.2), and proximity to resources, an assessment was made regarding the type and intensity of mitigated adverse impact, by resource area, resulting from each proposed project.

Action Alternative 2 – *Continue Testing and Modernize Facilities using Enhanced Environmental Planning Procedures*. The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures vs. Enhanced Environmental Planning Procedures. As a result, the analysis conducted for Alternative 1 (including the continuation of testing from the No Action Alternative) is no different than the results would be for Alternative 2. The differences between Alternative 1 and Alternative 2 (using Current vs. Enhanced Environmental Planning Procedures) are non-environmental.

4.1.1 Differences between Action Alternative 1 and Action Alternative 2

The enhanced environmental planning procedures outlined in Alternative 2 require CRTC to complete a checklist, which is new, and then require a review of that checklist for potential environmental impact (section 2.3.3). Where a project or test poses a moderate to likely potential to impact a valued environmental component, SOPs and BMPs will be required – identified in the document and implemented by CRTC maintenance, test officers, and other personnel with oversight by CRTC management and environmental staff. This checklist process includes the landowner, USAG Fort Wainwright or Fort Greely, who has final review and approval authority over checklists for each test and project. Although this clear step-wise plan is new, it is not accurate to analyze the No Action and Action Alternative 1 as if no BMPs and SOPs would be used (the non-mitigated state). Appendix E contains a concise listing of SOPs and BMPs by resource area. In addition, the USAG Alaska INRMP lists SOPs and BMPs for resource protection that are applicable to certain range improvement projects and support actions. Lastly, the existing test operating procedures used by CRTC test officers during testing are another existing mitigation measure already being applied to tests. The existing NEPA process described in Alternative 1 would identify most of the appropriate BMPs and SOPs for

the protection of the environment during tests, test support activities, and infrastructure improvement projects, but does not offer a streamlined approach.

As a result, the specific analyses discussed below in each of the No Action and Alternative 1 sections, are no different than the analytical results would be for Alternative 2. The improved efficiency should occasionally highlight a less environmentally damaging choice (such as fostering a systematic review of the chemicals used during vehicle maintenance to switch to less hazardous materials). However, we did not consider any of these specific environmental improvements sufficient enough to change the overall level of qualitative impact. There are several non-environmental differences between Alternative 1 and Alternative 2: environmental coordination under the new procedures would be simpler; the intent of NEPA would be more clearly met; the new procedures would allow for more flexibility; and there would be cost savings associated with simplifying and streamlining the procedures. These differences between Alternative 1 and Alternative 2 apply when considering both the continuation of testing and the modernization of facilities across all of the resource areas.

4.2 SOILS AND PERMAFROST

Direct impact to soils and permafrost are discussed for the No Action and Action Alternatives below. Indirect impacts resulting from soil disturbance include those to water quality, wetlands, vegetation, fisheries habitat and cultural resources are discussed within each of those sections of section 4 (4.4, 4.5, 4.6, 4.8, and 4.9 respectively). Hazardous substances can impact soils, but will primarily be discussed in section 4.14.

To assess the intensity of potential direct impacts resulting from each alternative, CRTC used the following categories:

Minor to Moderate (insignificant) – The degree to which activities cause erosion or otherwise impact the productive capacity of local soils; also the degree to which activities disrupt or melt permafrost on an installation and regional level. Adverse impacts would occur on less than 5 percent of soils within DTA East.

Severe (significant) – Activities that would cause uncontrolled and irreparable erosion resulting in permanent loss of soils, and/or soil loss or compaction that precludes restoration of native vegetation, would represent a significant impact. Activities that would result in the uncontrolled or unmanaged melting of permafrost (ice masses), or cause irregular subsidence to occur represent significant impacts. Adverse impacts would occur on greater than 5 percent of soils within DTA East.

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 area, excavation, or placement of fill material such as gravel.

- *Soil compaction* includes disturbance to soils that affect soil structure (e.g., placement of heavy machinery over soil). This type of disturbance less extreme than permanent loss of soil, however, it can adversely affect the functioning of the soil such as the ability to filter water or support vegetative growth.
- *Wind erosion* includes loss of the upper soil horizons by wind due to exposed soils.
- *Water erosion* includes the loss of the upper soil horizons by runoff due to exposed soils.
- *Permafrost impacts* include the degradation of permafrost soils through melting of permafrost and subsidence of soils.
- *Soil stability* 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.

To analyze the impacts of continued cold regions environmental testing (see section 4.2.1), observed impacts of past training and testing activities were used to judge expected impacts from routine testing and test support activities. For the infrastructure improvement projects (see section 4.2.2), impacts were analyzed using the best available information about the proposed site-specific projects. Estimates of project acreage were generated using known footprints or best guesses based on project requirements (see table 4.2). Soils impact acreages are generally going to be the same as the project acreage except for TX5 which includes woody vegetation clearing that would minimally impact soils. Soils impacts include all of the types listed above, so for instance, some of the impacts to soils from project DTA21 would be from creating gravel firing points and targets, but some would be from potential compaction due to use of winter trails.

The Soil Survey of Fort Greely and Donnelly Training Area, Alaska (USDA 2005) was used to estimate where permafrost exists on the landscape. Many of the mapped soil units are complexes, made up of two or more major kinds of soil, listed as percentages. These individual soil types each have their own properties, such as presence of permafrost, that are listed in tables in the soil survey. Permafrost acreages were then generated by overlaying the best guess about where a project footprint would be located on the soils map. There are limitations to estimates generated from the soil survey compared with soil borings that might be done when a project has been funded and is in final design stages; however, this is the best information for providing the general overview presented in this PEA. When actual project siting is done, it may be possible to adjust the project footprint around permafrost-rich soils, and it is also likely that in some areas, avoiding permafrost will not be possible. Many of CRTC's operational areas such as Bolio Test Complex, Mississippi Test Complex and the administration and track portions of the Mobility Test Complex are on well-drained, gravelly, non-permafrost areas. Any projects tied to these areas would not impact permafrost regardless of exact positioning.

Table 4.2 Project Acreage and Estimated Soils and Permafrost Impacts			
Project Name	Approximate Project Acreage	Approximate Acreage of Soils Impact	Approximate Acreage of Permafrost Impacts
(BL1) Construct an Addition to Bolio Building 1928	<1	<1	0
(BL2) Repair or Renovate Obstacle Test Course	<1	<1	0
(BL3) Storage and Logistics Support Facility at Tennessee	<1	<1	0
(TX4) Develop a Cross-Country Firing Course	15	15	0
(TX5) Enhance Texas Range	59*	21	2
(TX6) Construct Minor Upgrades at Texas Administration Area	<1	<1	0
(MS7) Meteorological Equipment Upgrades	<1	<1	0
(MS8) Construct an Environmental Conditioning Firing Chamber	<1	<1	0
(MS9) Demolish Old Storage Building	<1	<1	0
(WA10) Create 8 Km Direct Fire Range	4	4	0
(WA11) Create 10 Km Direct Fire Range	5	5	0
(WA12) Create New OP 12 Access	16	14	12
(WA13) Upgrade Support Infrastructure	6	6	0
(MTC14) Short-term Minor Enhancements	<1	<1	0
(MTC15) Develop and Enhance Cross-Country Courses	31	31	2
(MTC16) Construct New Consolidated Maintenance Facility	<1	<1	0
(MTC17) Energy Storage and Test Facility	<1	<1	0
(MTC18) Construct an Environmental Conditioning Chamber	<1	<1	0
(DTA19) Minor Utility Upgrades	9	9	1
(DTA20) OP 26 Improvements	<1	<1	<1
(DTA21) Construct a Laser Range	41	41	36
(DTA22) Install Permanent Laser Targets in DTA East	<1	<1	0
* This acreage includes approximately 40 acres of forest clearing that would impact only a small percentage of soils during the project.			

4.2.1 No Action

Current testing and test support cause minor to moderate impacts to soils and permafrost on DTA. Test activities cause minor erosion or otherwise impact the productive capacity of local soils and minor to moderate disruption or melting of permafrost. Soils are largely protected from testing impacts because the majority of tests take place during winter with frozen soil conditions and snow cover. Moderate adverse impacts can occur when vehicle tests begin early in the season prior to the soils being frozen deep enough to prevent rutting, or when vehicle testing runs late in the season during break-up (after the snow begins to melt and the ground begins to thaw). Vehicle testing impacts are mitigated to minor using SOPs that require monitoring the ground conditions prior to and during tests to ensure that soils are frozen deep enough to protect soils and permafrost for the weight of the vehicle being tested. Any non-winter vehicle testing

impacts are mitigated through compliance with the Range Regulation 350-1, and SOPs that limit driving to the test track and improved roads. Weapons firing can cause minor adverse impacts to soil resources through soil compaction, and disruption of soil stability at both the firing points (vehicles maneuvering weapons into position) and in the impact areas where the projectiles land. Weapons system tests would have only a minor adverse impact on permafrost. Clothing and individual Soldier equipment tests have no direct adverse impact to soils or permafrost.

Some general support activities such as grading or repairing roads, clearing vegetation, repairing firing berms, building firing pads, installing fences, mining gravel, and exploded ordnance disposal operations have the potential to cause moderate adverse impact to soils through erosion or other impact on the productive capacity of local soils. These adverse impacts are mitigated to minor levels using BMPs during these types of maintenance support activities. Test support activities impact soil stability by compaction, by leaving bare soils vulnerable to wind and water erosion, and by permanent loss through covering soils with gravel. Some test support activities requiring the removal of vegetation, especially the vegetative mat, can cause disturbance and melting of the permafrost which would be a moderate adverse impact to permafrost. These adverse impacts to permafrost would be mitigated to minor using existing BMPs during maintenance activities, including leaving the vegetative mat in place when operating on soils known to contain permafrost.

Bolio and Mississippi test complexes both experience almost none of the testing and test support activities that cause soils disturbances. Both complexes are graveled within the fence line and permafrost soils are not present. Any maintenance of vehicles occurs inside buildings where POL or other hazardous material spills and clean up would not impact soils. Testing on Texas Range causes a minor adverse impact to soils in all categories of impact. Washington Range has a moderate potential for wind and water erosion due to the types of soils and the location of part of the range within the Delta River floodplain. This contributes to a moderate intensity of adverse impact to soil stability as well. Testing on the track and at the administration area at the Mobility Test Complex causes no soil impacts, however, testing on the cross-country course causes minor adverse impacts. Soil erosion from water runoff over impervious surfaces is a moderate adverse impact. Any testing and test support activities in the Main Post area take place within buildings or other built up areas with no impacts to soils. Various types of vehicle testing, especially driving over unimproved trail, causes minor adverse soil impacts in outlying areas (other areas of DTA outside CRTC's operational areas). Transporting test equipment and personnel to special test locations, such as DTA west, also causes minor adverse impacts to soils.

The occurrence of permafrost dictates where those impacts could occur. Testing and test support activities could cause minor to moderate adverse impacts to permafrost at Texas Range, Washington Range in the eastern portion, and in outlying areas where permafrost is present.

An assessment of impacts to soils and permafrost from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.3. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.3 Assessment of Soils and Permafrost Impacts from Routine Testing, Support, Projects and Maintenance, 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
Routine Tests								
Wheeled Vehicles < 15 Tons	○	⊙	○	○	⊙	⊙	○	⊙
Wheeled Vehicles > 15 Tons	○	⊗	○	○	⊙	⊙	○	⊗
Tracked Vehicles	○	⊙	○	○	⊙	⊙	○	⊙
Unmanned Aerial Systems	○	○	○	○	○	○	○	○
Small Arms Weapons	○	○	○	○	○	○	○	○
Large-Caliber Direct Fire Weapons	○	⊙	○	○	○	⊙	○	⊙
Large-Caliber Artillery	○	⊙	○	○	○	⊙	○	⊙
Missiles and Rockets	○	⊙	○	○	○	⊙	○	⊙
Minefield Clearer	○	○	○	○	○	⊙	○	⊙
Demolitions and Intelligent Munitions	○	○	○	○	⊙	⊙	○	⊙
Obscurants & Smoke Generators	○	⊙	○	○	○	○	○	⊙
Camping and Sporting Good-Type Items	○	○	○	○	○	○	○	○
Rations	○	○	○	○	○	○	○	○
Body Armor and Helmets	○	○	○	○	○	○	○	○
Generators	○	⊙	○	○	○	○	○	⊙
NBC Alarms, Detectors, Masks, Decontamination Systems	○	⊙	○	○	○	○	○	⊙
Radios	○	○	○	○	○	○	○	○
Ranging and Lasing Devices	○	○	○	○	○	○	○	○
Parachutes and Air Drop Items	○	○	○	○	○	○	○	○
Water Storage, Handling and Purification Equipment	○	⊙	○	○	○	○	○	⊙
Petroleum Handling and Storage Equipment, Filters & Separators	○	⊙	○	○	○	○	○	⊙
Clothing (and Boots)	○	○	○	○	○	○	○	○
Storage	○	⊙	○	○	○	○	○	⊙
Routine Test Support Activities								
Target Creation	○	○	○	○	○	○	○	○
Target Emplacement	○	⊙	○	○	○	⊙	○	⊙
Cameras (Video, High Speed Video, Still)	○	○	○	○	○	○	○	○
Lights	○	○	○	○	○	○	○	○
Radar	○	○	○	○	○	○	○	○
Use of Conditioning Chambers	○	⊙	○	○	○	○	○	⊙

Table 4.3 Assessment of Soils and Permafrost Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)

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
Meteorological Stations	○	⊙	○	○	○	○	○	⊙
Warm-Up Buildings and Portable Trailers	○	⊙	○	○	○	⊙	○	⊙
Data Collection Instruments	○	○	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○	○	○
Generators	○	○	○	○	○	○	○	○
Fueling	○	○	○	○	○	○	○	○
Communication Connectivity	○	○	○	○	○	○	○	○
Surveys and Signage	○	⊙	○	○	○	⊙	○	⊙
Equipment Maintenance and Repair	○	○	○	○	○	○	○	○
Projects and Maintenance								
Berms Creation and Maintenance	⊙	⊗	⊙	⊙	⊙	○	○	⊗
Building Construction	⊙	⊙	⊙	⊙	○	○	○	⊙
Building Demolition	⊙	⊙	⊙	⊙	○	○	○	⊙
Culvert Installation	⊙	○	○	⊙	⊙	○	○	⊙
Fence Installation or Repair	⊙	○	⊙	⊙	○	⊙	○	⊙
Gravel Mining from Existing Borrow Pits	⊗	⊗	⊗	⊗	⊙	⊗	○	⊗
Hardstand/Firing Pad Installation	⊗	⊗	⊙	⊙	⊙	⊙	☆	⊗
Road and Trail Creation and Maintenance	⊗	⊗	⊙	⊗	⊙	⊙	☆	⊗
Target Installation and Maintenance	⊗	⊙	⊙	⊙	⊙	○	○	⊗
Utility Line Creation and Maintenance	⊙	○	⊙	⊙	○	○	○	⊙
UXO Surveys for Small Projects and Tests	○	○	○	○	○	○	○	○
Vegetation Clearing	○	⊙	⊙	⊙	⊙	○	○	⊙

4.2.2 Action Alternative 1

An analysis of soils impacts due to continued testing and test support activities is provided above in section 4.2.1, No Action Alternative. This analysis is the same for the part of Alternative 1 that deals with continued testing. Refer to the discussion in section 4.2.1.

The second part of Action Alternative 1 is to modernize and consolidate facilities by conducting site-specific infrastructure improvement projects to help ensure that CRTC's

facilities are state-of-the-art and are most effective at testing future military technology. The analysis of impacts to soils and permafrost from these twenty-two projects is presented below.

Due to the small footprints of disturbance and/or nature of activity (lack of ground disturbance) of projects TX6, MS9, MTC14, and DTA22 adverse impacts would be minor and managed during construction of these proposed projects.

Based on the size and nature of activity, the remaining projects (BL1, BL2, BL3, TX4, TX5, MS7, MS8, MS9, WA10, WA11, WA12, WA13, MTC15, MTC16, MTC17, MTC18, DTA19, DTA20, and DTA21) have the potential to cause moderate adverse impacts to soil resources through erosion or other impacts that reduce the productive capacity of local soils. In addition, due to the presence and extent of permafrost soils, projects TX5, WA12, MTC15, DTA19, and DTA21 have the additional potential to cause moderate adverse impacts to permafrost through disruption or melting of permafrost. Adverse impacts to soil resources from these projects would be mitigated to minor adverse impacts through use of BMPs during construction, listed in appendix E.

Besides disturbances during construction, projects TX4, TX5, WA10, WA11, MTC15, and DTA21 would have the potential to cause moderate adverse impacts to soils during operations. These projects involve establishment of new cross-country courses (TX4 and MTC15) and new or substantially enhanced ranges (TX5, WA10, WA11, and DTA21) which would experience recurrent use and could degrade the productive capacity of local soils over time. Adverse impacts to soil resources from recurrent future use would be mitigated to minor adverse impacts through use of SOPs listed in appendix E during testing. None of the other projects are anticipated to cause adverse soil impacts from testing. They involve new building construction which would not involve testing outdoors (BL1, BL3, MS8, MTC16, MTC17 and MTC18), or they involve upgrades to existing testing infrastructure which would not involve additional operational surface areas used for testing (BL2, TX6, MS7, MS9, WA12, WA13, MTC14, DTA19, and DTA20), and would therefore, not be anticipated to cause additional levels of soil loss, compaction or erosion during testing.

Due to the large amount of surface disturbance associated with range enhancement and creation, and cross-country course development (projects TX4, TX5, WA12, MTC15, and DTA21), there would be a greater potential for moderate loss of soils and there would be greater potential for moderate impacts due to soil compaction and erosion during construction. Due to the need for working near both sides of the Delta River associated with project WA11, there would be a greater potential for moderate water erosion and a loss of soil stability. All remaining projects could result in minor adverse impacts such as soil loss, erosion, and soil compaction.

Due to the large percentage of permafrost soils in the area where DTA21 would be constructed, there is no way to avoid permafrost. Potential adverse impacts would be reduced as much as practicable by using construction SOPs and BMPs designed for building winter trails and hardened gravel pads without damaging and melting the underlying permafrost. In addition, general practices that limit soil disturbance and removal of vegetative cover, and using the range only during the winter season would minimize uncontrolled or unmanaged melting of permafrost. The other projects with the potential for moderate adverse permafrost impacts (TX5,

WA12, MTC15, and DTA19) would be reduced to minor by siting projects away from permafrost and limiting soil disturbance and removal of vegetative cover.

Projects BL1, BL2, TX4, TX5, MS8, WA12, MTC18, MTC15, and MTC16 would require gravel for construction, which would be mined from existing pits in coordination with USAG Fort Wainwright DPW and DTA Range Control.

4.2.3 Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the specific analyses discussed above in section 4.2.1 and 4.2.2, are no different than the analytical results would be for Action Alternative 2. The impacts to soils from Action Alternative 2 (considering both the continuation of testing and the modernization of facilities) would be no different from the impacts associated with Action Alternative 1.

4.3 AIR QUALITY AND GREENHOUSE GASES

The following criteria were used to determine the effect of CRTC's proposed action on air quality:

Minor to Moderate (insignificant) – The degree to which activities result in measurable changes to local and regional air quality. The degree to which activities result in increasing fossil fuel consumption.

Severe (significant) – Activities causing an exceedance of regulatory thresholds would represent a significant impact.

The following bullets provide general descriptions of the type of impacts used in the air quality and greenhouse gases impact analysis:

- *Fugitive dust (construction)* includes decreased air quality from human-caused sources of dust from construction activities.
- *Fugitive dust (operations)* includes decreased air quality from testing and test support activities causing fugitive dust, particularly driving on unpaved roads.
- *Temporary combustion emissions* include temporary sources of air pollution and greenhouse gas emissions during construction of infrastructure improvement projects.
- *Vehicle emissions* include sources of air pollution and contribution of greenhouse gases to the atmosphere from burning fossil fuels in vehicles.
- *Non-vehicle emissions* include air pollution and greenhouse gases from combustion of fossil fuels for heating, power generation, and any other non-vehicle sources.

- *Beneficial impact* includes decreases in fossil fuel consumption for the same square footage when older structures are replaced (i.e. an increase in energy efficiency), decreases in consumption through other energy conservation practices, and decreases in human-caused fugitive dust generation.

The activities associated with CRTC's proposed actions may increase greenhouse gases through the addition of new facilities requiring heating and electrical power. A short-term minor increase in fossil fuel consumption would be required for construction. Changes in the numbers of certain types of tests could also increase greenhouse gas emissions, particularly if vehicle testing increases. Replacing older structures with more energy efficient buildings would offset some of these increases. From a regional perspective, the upgrades of facilities, new construction, and any potential changes in the make-up of testing resulting from the proposed actions would result in negligible additional consumption of fossil fuels and the corresponding increase in local greenhouse emissions.

4.3.1 No Action

Current testing and test support cause minor impacts to air quality and greenhouse gases on DTA. Vehicle testing causes a minor to moderate adverse impact to air quality from fugitive dust emissions (driving on unpaved roads and surfaces) and from combustion emissions. Most of CRTC's vehicle test activities occur during the winter when less dust is generated, and the majority of any summer testing would occur on the paved test track. Weapons system testing causes a minor adverse impact from fugitive dust and combustion emissions during operations. Clothing and individual Soldier equipment testing, such as laser rangefinders or MRE heaters, generally result in none to minor air impacts, mostly from combustion emissions associated with conducting the test (vehicle support, generators for targets, etc). Test support vehicles produce emissions from transportation throughout DTA, but they also contribute to emissions (increased fossil fuel consumption) and decreased local air quality when vehicles are kept running to provide warm-up shelter for test personnel during cold winter weather.

Maintenance support activities resulting in minor (insignificant) air impacts from temporary air emissions include maintenance and vegetation clearing. These support actions cause fugitive dust emissions from soil agitation and air pollution and greenhouse gas emissions from the combustion of fossil fuels from operation of equipment. These activities typically occur during the summer when roads and trails are drier and more likely to produce dust. Test support activities produce emissions resulting in minor impacts to air quality.

Heating and power generation are also typical sources of air pollution due to combustion. CRTC facilities at Bolio Test Complex, Texas Range, Mississippi Test Complex, Washington Range, and the Mobility Test Complex all generate heat with oil-fired boilers throughout the winter. CRTC's facilities on Main Post Fort Greely are heated by steam from the installation's central heating plant. Temporary trailers placed in the outlying areas, or DTA facilities such as observation point shacks used for a specific test typically only operate heaters when the structures are occupied. Most electrical power is supplied by Doyon Utilities through their oil fired plant at Fort Greely or from an intertie with Golden Valley Electric Association. Those power generators are subject to Air Quality Operating Permits. Any increased power needs

would be reflected in Fort Wainwright and Fort Greely permits. CRTC uses a few portable generators and back-up generators that are not subject to permitting.

Because the number of tests would remain relatively constant, under the no action alternative, CRTC would continue to use about the same amount of fossil fuels, resulting in the same level of air pollution and greenhouse gas emissions.

An assessment of impacts to air quality and greenhouse gases from each routine test, support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.4. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.4 Assessment of Air Quality and Greenhouse Gas Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs							
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial						
	Fugitive dust (operations)	Temporary combustion emissions	Combustion emissions (operations)	Vehicle emissions	Non-vehicle emissions	Beneficial	Overall
Routine Tests							
Wheeled Vehicles < 15 Tons	⊙	○	⊙	⊙	⊙	○	⊙
Wheeled Vehicles > 15 Tons	⊙	○	⊙	⊙	⊙	○	⊙
Tracked Vehicles	⊙	○	⊙	⊙	⊙	○	⊙
Unmanned Aerial Systems	○	○	⊙	⊙	⊙	○	⊙
Small Arms Weapons	○	○	○	⊙	⊙	○	⊙
Large-Caliber Direct Fire Weapons	○	○	○	⊙	⊙	○	⊙
Large-Caliber Artillery	○	○	○	⊙	⊙	○	⊙
Missiles and Rockets	○	○	○	⊙	⊙	○	⊙
Minefield Clearer	○	○	○	⊙	⊙	○	⊙
Demolitions and Intelligent Munitions	⊙	○	⊙	⊙	⊙	○	⊙
Obscurants & Smoke Generators	⊙	○	⊙	⊙	⊙	○	⊙
Camping and Sporting Good-Type Items	○	○	○	⊙	○	○	⊙
Rations	○	○	○	⊙	○	○	⊙
Body Armor and Helmets	○	○	○	⊙	○	○	⊙
Generators	○	○	⊙	⊙	⊙	○	⊙
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	⊙	⊙	○	⊙
Radios	○	○	○	⊙	⊙	○	⊙

Table 4.4 Assessment of Air Quality and Greenhouse Gas Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Continued)

Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial						
	Fugitive dust (operations)	Temporary combustion emissions	Combustion emissions (operations)	Vehicle emissions	Non-vehicle emissions	Beneficial	Overall
Ranging and Lasing Devices	○	○	○	⊙	⊙	○	⊙
Parachutes and Air Drop Items	○	○	⊙	⊙	○	○	⊙
Water Storage, Handling and Purification Equipment	○	○	⊙	⊙	⊙	○	⊙
Petroleum Handling and Storage Equipment, Filters & Separators	○	○	⊙	⊙	⊙	○	⊙
Clothing (and Boots)	○	○	○	⊙	○	○	⊙
Storage	○	○	○	⊙	○	○	⊙
Routine Test Support Activities							
Target Creation	○	⊙	○	○	○	○	⊙
Target Emplacement	⊙	⊙	⊙	⊙	○	○	⊙
Cameras (Video, High Speed Video, Still)	○	⊙	⊙	⊙	○	○	⊙
Lights	○	⊙	⊙	⊙	⊙	○	⊙
Radar	○	⊙	⊙	⊙	⊙	○	⊙
Use of Conditioning Chambers	○	○	⊙	○	⊙	○	⊙
Meteorological Stations	○	⊙	○	○	○	○	⊙
Warm-Up Buildings and Portable Trailers	○	⊙	⊙	○	⊙	○	⊙
Data Collection Instruments	○	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○	○
Generators	○	○	⊙	○	⊙	○	⊙
Fueling	⊙	○	⊙	○	⊙	○	⊙
Communication Connectivity	○	⊙	○	○	○	○	⊙
Surveys and Signage	⊙	⊙	○	⊙	○	○	⊙
Equipment Maintenance and Repair	○	○	⊙	⊙	○	○	⊙
Projects and Maintenance							
Berms Creation and Maintenance	○	⊙	○	○	○	○	⊙
Building Construction	○	⊗	⊙	○	⊙	○	⊗
Building Demolition	○	⊙	○	○	○	○	⊙
Culvert Installation	○	⊙	○	○	○	○	⊙
Fence Installation or Repair	○	⊙	○	○	○	○	⊙
Gravel Mining from Existing Borrow Pits	⊗	⊙	⊙	⊙	⊙	○	⊗

Table 4.4 Assessment of Air Quality and Greenhouse Gas Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)							
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial						
	Fugitive dust (operations)	Temporary combustion emissions	Combustion emissions (operations)	Vehicle emissions	Non-vehicle emissions	Beneficial	Overall
Hardstand/Firing Pad Installation	⊙	⊙	⊙	⊙	○	○	⊙
Road and Trail Creation and Maintenance	⊙	⊙	⊙	⊙	○	○	⊙
Target Installation and Maintenance	○	⊙	⊙	⊙	⊙	○	⊙
Utility Line Creation and Maintenance	○	⊙	○	○	○	○	⊙
UXO Surveys for Small Projects and Tests	○	⊙	○	○	○	○	⊙
Vegetation Clearing	○	⊙	○	○	○	○	⊙

4.3.2 Action Alternative 1

The analysis provided above for continued testing and test support activities under the No Action Alternative is the same for the part of Alternative 1 that considers continued testing. The analysis for modernizing facilities through site-specific infrastructure improvement projects is provided below in this section.

Construction activities associated with all of the infrastructure improvement projects would produce *temporary* minor to moderate combustion emissions from construction equipment, producing *temporary* minor to moderate measurable decreases to local air quality from fugitive dust and fossil fuel combustion. BMPs for minimizing fugitive dust generation on construction projects are included in appendix E, and projects with a potential for fugitive dust emissions would be coordinated with USAG Fort Wainwright Air Specialists to determine conformity with existing permits.

Increases in square footage associated with construction of new facilities would generally result in increased greenhouse gases as a result of burning oil for heat and electrical power requirements (projects BL1, BL3, MS8, MTC16, MTC17, MTC18, and DTA20), representing a minor increase in fossil fuel consumption. New range facilities (projects TX4, TX5, WA10, and WA11) do not add square footage in terms of buildings, but they do add moving targets and other small electricity users, also representing a minor increase in fossil fuel consumption. Removing old buildings decrease fossil fuel consumption for heating and electric power generation (projects TX6 and MS9). These projects have an overall beneficial impact. Renovation of buildings and installation of hard-wired power on the ranges (replacing portable

generators) would result in increased energy efficiency, decreasing greenhouse gas emissions – a positive environmental impact (projects WA13 and DTA19).

After the initial construction emissions, projects BL2, MS7, MTC14, and MTC15 have no additional impact, projects WA12, DTA21, and DTA22 would have only the potential for fugitive dust generation, a minor impact.

Overall, the impact to air quality and greenhouse gases from Action Alternative 1 would be a none to minor measureable change to local and regional air quality and a none to minor increase in fossil fuel consumption. It is unlikely that test activities themselves would result in increased air emissions or decreased air quality. The end effect of these changes, both positive and negative, would result, at most, in negligible additional consumption of fossil fuels and corresponding increases in local greenhouse emissions.

4.3.3 Action Alternative 2

The discussions and analysis provided above for continued testing and modernization of facilities is the same between Action Alternative 1 and Action Alternative 2. Changing the way that environmental reviews are conducted would not affect air quality or greenhouse gases.

4.4 SURFACE WATER AND FLOODPLAINS

Direct impacts to surface water and floodplains are discussed in the No Action and Action Alternative sections below. Indirect impacts of surface water quality degradation to fisheries, and recreation and subsistence are further discussed in sections 4.8 and 4.11, respectively.

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

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 floodwater movement would also represent a significant impact.

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

- *Channelization of streams* including 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, storm water management, and landscape terrain.
- *Change of flow direction* includes potential alteration of stream flow direction through placement of structures such as surface water crossings. This also includes the potential to affect aueis conditions.
- *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. This also includes the potential for fill activities to affect aueis conditions.

The proposed actions would have an overall minor to moderate impact to surface water and floodplains. Direct adverse impacts would come from hardening trails at the Mobility Test Complex and creation of hardened firing points and target pads for a laser range in DTA West. Decreases in surface water quality would cause indirect impacts to fisheries (discussed in section 4.8), subsistence and recreation (section 4.10), and wetlands (section 4.5).

Implementation of BMPs listed in appendix E, including project designs that avoid and minimize floodplain disturbance, would help reduce floodplain impacts. Standard best management practices for construction are primarily concerned with protecting water resources, and would be required for all of the Action Alternative 1 infrastructure improvement projects. Tests and test support activities can affect surface waters by creating bare ground that increases sedimentation of nearby waterways. These actions would be mitigated using best management practices for test support, particularly maintenance activities at the ranges. Preferred vegetation clearing methods include hydro-axing or using a bulldozer in winter with a shear blade attached (shear-blading). These methods leave the ground surface and vegetative mat mostly intact. True cross-country driving can impact water quality also, but tests requiring cross-country mileage do so utilizing pre-set courses on existing trails.

To help analyze surface water and floodplain impacts, estimates of stream crossings (surface water) and extent of a project footprint within a floodplain were calculated. Surface water impacts can arise from many different types of impacts as listed in the bullets above, which is hard to quantify in terms of acres. Winter trails, all-season trails, roads, and utilities all cross streams, which can be quantified in terms of linear feet (see table 4.5). We included both

ephemeral and permanent streams in our calculations. The Washington Range projects occur in whole or in part in the Delta River floodplain, as does a portion of TX4. No other project areas occur in floodplains. This footprint acreage is not the same as fill in a floodplain, which would be less than an acre for 5-10 pop-up target berms.

Table 4.5 Project Acreage and Estimated Surface Water and Floodplain Impacts			
Project Name	Approximate Project Footprint (acres)	Approximate Surface Water (Streams) Impacts (linear feet)	Approximate Floodplain Footprint (acres)
(BL1) Construct an Addition to Bolio Building 1928	<1	0	0
(BL2) Repair or Renovate Obstacle Test Course	<1	0	0
(BL3) Storage and Logistics Support Facility at Tennessee	<1	0	0
(TX4) Develop a Cross-Country Firing Course	15	92	4
(TX5) Enhance Texas Range	59	0	0
(TX6) Construct Minor Upgrades at Texas Administration Area	<1	0	0
(MS7) Meteorological Equipment Upgrades	<1	0	0
(MS8) Construct an Environmental Conditioning Firing Chamber	<1	0	0
(MS9) Demolish Old Storage Building	<1	0	0
(WA10) Create 8 Km Direct Fire Range	4	0*	4
(WA11) Create 10 Km Direct Fire Range	5	0*	5
(WA12) Create New OP 12 Access	16	200	<1
(WA13) Upgrade Support Infrastructure	6	0*	5
(MTC14) Short-term Minor Enhancements	<1	0	0
(MTC15) Develop and Enhance Cross-Country Courses	31	0	0
(MTC16) Construct New Consolidated Maintenance Facility	<1	0	0
(MTC17) Energy Storage and Test Facility	<1	0	0
(MTC18) Construct an Environmental Conditioning Chamber	<1	0	0
(DTA19) Minor Utility Upgrades	9	70	0
(DTA20) OP 26 Improvements	<1	0	0
(DTA21) Construct a Laser Range	41	275	0
(DTA22) Install Permanent Laser Targets in DTA East	<1	0	0
* These project footprints are located in the Delta River floodplain and currently do not impact any active channels.			

4.4.1 No Action

Current testing and test support cause minor to moderate impacts to surface water and floodplains on DTA. The routine tests that could have an impact on water resources and floodplains are primarily vehicle tests with a driving component. Ground disturbance to cross-

country trails could cause soil compaction, creating ruts that channelize water during spring runoff or rain events. Driving on gravel roads, even during winter can cause fugitive dust that is deposited in nearby wetlands, ponds, lakes, and streams. These actions could introduce sediment or other pollutants into local and regional waterways, and could represent a moderate adverse impact. Weapons firing at the ranges on DTA could impact water courses and wetlands, resulting in a minor adverse impact. The potential for munitions constituents to enter the DTA water supply has been studied by the Cold Regions Research and Engineering Lab (CRREL). CRREL determined that contaminant levels were below actionable levels and that long-term firing activities would not threaten water quality (CRREL 2005). Clothing and individual Soldier equipment tests would not be expected to have any impact on surface waters or floodplains.

Support activities such as range maintenance on berms and targets can also cause disturbance to the vegetation and soils, in turn causing runoff of sediment into surface waters. These activities have the potential to directly or cumulatively degrade water quality standards of a surface water body, causing a severe impact. CRTC maintenance personnel are required to use best management procedures, including compliance with storm water pollution prevention regulations, which would minimize the potential for pollutant or sediment runoff to occur, mitigating the impact to minor to moderate levels. Most other support activities happen during winter test season and have none to minor chance for impact to water resources through introduction of sediment. SOPs for handling POLs and other hazardous materials, and strict pollution control standards reduce the chance of introduction of pollutants into local or regional waterways to none to minor. Range maintenance activities on Washington Range have the potential to affect the Delta River floodplain. Due to the potential for UXO and the highly regulated nature of operations that disturb the ground at Washington Range, no routine range maintenance activities would be allowed that would alter this floodplain. Other routine support actions have only a minor chance of altering floodplains at DTA.

The following text summarizes surface water and floodplain impacts from routine testing and test support activities by CRTC operational area. Bolio Test Complex, Mississippi Test Complex, Texas Range, and Washington Range are located within the watershed of the Delta River. Main Post Fort Greely and the Mobility Test Complex are located within the Jarvis Creek watershed, which is a major tributary to the Delta River. Bolio and Mississippi test complexes and Main Post would not have any test or test support activities that affect surface waters or floodplains. There is a potential for minor adverse impacts at Texas Range from loss of streambed, increased turbidity during maintenance projects, and degraded water quality during test operations. These same types of impacts, along with the potential for a change of flow direction and permanent fill in the floodplain at Washington Range, all have a potential for minor adverse impacts from routine testing and test support. At the Mobility Test Complex, use and upkeep of the cross-country course could cause minor adverse impacts from loss of streambed and increased turbidity. Test operations, if conducted on the cross-country course during summer would cause a moderate adverse impact through degraded water quality.

An assessment of impacts to surface waters and floodplains from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.6. The analysis was conducted on each type of impact described at the

beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.6 Assessment of Surface Water and Floodplain Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs									
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial								
	Channelization of streams	Loss of streambed	Increased turbidity (construction)	Degraded water quality (operations)	Change of flow direction	Change of velocity	Permanent fill in floodplain	Beneficial	Overall
Routine Tests									
Wheeled Vehicles < 15 Tons	○	○	○	⊙	○	○	○	○	⊙
Wheeled Vehicles > 15 Tons	○	○	○	⊙	○	○	○	○	⊙
Tracked Vehicles	○	○	○	⊗	○	○	○	○	⊗
Unmanned Aerial Systems	○	○	○	⊙	○	○	○	○	⊙
Small Arms Weapons	○	○	○	○	○	○	○	○	○
Large-Caliber Direct Fire Weapons	○	○	○	⊙	○	○	○	○	⊙
Large-Caliber Artillery	○	○	○	⊙	○	○	○	○	⊙
Missiles and Rockets	○	○	○	⊙	○	○	○	○	⊙
Minefield Clearer	○	○	○	⊙	○	○	○	○	⊙
Demolitions and Intelligent Munitions	○	○	○	⊙	○	○	○	○	⊙
Obscurants & Smoke Generators	○	○	○	⊙	○	○	○	○	⊙
Camping and Sporting Good-Type Items	○	○	○	○	○	○	○	○	○
Rations	○	○	○	○	○	○	○	○	○
Body Armor and Helmets	○	○	○	○	○	○	○	○	○
Generators	○	○	○	○	○	○	○	○	○
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	○	○	○	○	○	○
Radios	○	○	○	○	○	○	○	○	○
Ranging and Lasing Devices	○	○	○	○	○	○	○	○	○
Parachutes and Air Drop Items	○	○	○	○	○	○	○	○	○
Water Storage, Handling and Purification Equipment	○	○	○	○	○	○	○	○	○
Petroleum Handling and Storage Equipment, Filters & Separators	○	○	○	○	○	○	○	○	○
Clothing (and Boots)	○	○	○	○	○	○	○	○	○
Storage	○	○	○	○	○	○	○	○	○
Routine Test Support Activities									
Target Creation	○	○	○	○	○	○	○	○	○

Table 4.6 Assessment of Surface Water and Floodplain Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)

Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial								
	Channelization of streams	Loss of streambed	Increased turbidity (construction)	Degraded water quality (operations)	Change of flow direction	Change of velocity	Permanent fill in floodplain	Beneficial	Overall
Target Emplacement	○	○	○	○	○	○	○	○	○
Cameras (Video, High Speed Video, Still)	○	○	○	○	○	○	○	○	○
Lights	○	○	○	○	○	○	○	○	○
Radar	○	○	○	○	○	○	○	○	○
Use of Conditioning Chambers	○	○	○	○	○	○	○	○	○
Meteorological Stations	○	○	○	○	○	○	○	○	○
Warm-Up Buildings and Portable Trailers	○	○	○	○	○	○	○	○	○
Data Collection Instruments	○	○	○	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○	○	○	○
Generators	○	○	○	○	⊙	○	○	○	⊙
Fueling	○	○	○	○	○	○	○	○	○
Communication Connectivity	○	○	○	○	⊙	○	○	○	⊙
Surveys and Signage	○	○	○	○	○	○	○	○	○
Equipment Maintenance and Repair	○	○	○	○	○	○	○	○	○
Projects and Maintenance									
Berms Creation and Maintenance	○	○	⊙	○	⊙	○	⊙	○	⊙
Building Construction	○	○	⊙	○	○	○	○	○	⊙
Building Demolition	○	○	⊙	○	○	○	○	○	⊙
Culvert Installation	○	⊙	⊙	○	⊙	○	⊙	○	⊙
Fence Installation or Repair	○	○	○	○	○	○	○	○	○
Gravel Mining from Existing Borrow Pits	○	○	⊙	⊙	○	○	○	○	⊙
Hardstand/Firing Pad Installation	○	○	⊙	○	○	○	⊙	○	⊙
Road and Trail Creation and Maintenance	○	⊙	⊗	⊙	⊙	○	⊙	○	⊗
Target Installation and Maintenance	○	○	⊗	○	⊙	○	⊙	○	⊗
Utility Line Creation and Maintenance	○	○	⊗	○	⊙	○	⊙	○	⊗
UXO Surveys for Small Projects and Tests	○	○	○	○	○	○	○	○	○
Vegetation Clearing	○	○	⊙	○	○	○	○	○	⊙

4.4.2 Action Alternative 1

Projects in the Bolio Test Complex, Mississippi Test Complex, Texas Range, and Washington Range are located within the watershed of the Delta River. Main Post Fort Greely and the Mobility Test Complex projects are located within the Jarvis Creek watershed, a tributary to the Delta River.

Due to the small footprints of disturbance, and/or the nature of activity or location, projects BL2, BL3, TX6, MS7, MS8, MTC14, MTC18, and DTA22 would result in none to minor adverse impacts to surface waters or floodplains. Any minor impacts would be managed during construction and operation of these proposed projects.

Based on size, nature of activity, and location of the projects within the tributary watersheds of the Delta River, projects TX4, TX5, WA12, and DTA19 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 in their respective streams. For these four projects, the potential to exceed this threshold of significance would likely occur from the introduction of sediments and storm water runoff from construction sites into receiving streams. Projects WA10, WA13, and WA11 occur in the Delta River watershed and would not likely contribute to significant adverse impacts because this river is glacially fed and contains high levels of background sediments. Project MTC15 occurs in an area without a surface water outlet, however, there is a potential for significant adverse impacts from sediment and storm water runoff into the surface lakes, ponds and wetlands. Project DTA21 lies within the Delta Creek watershed and could impact both clear water tributaries and Delta Creek, which is glacially fed. This project also has a potential for significant adverse impacts during construction because of disturbance to permafrost and/or exposure of soils. Regardless of watershed, adverse impacts to surface waters and floodplains from all of these projects would be mitigated to insignificant (minor or moderate) adverse impacts through use of BMPs and SOPs during construction. These BMPs and SOPs are found in appendix E.

Besides disturbances during construction, projects TX4, TX5, WA10, WA13, MTC15, and DTA21 would have the potential to cause significant adverse impacts to water resources during operations. These projects involve establishment of new ranges or test courses that 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). Adverse impacts to water resources from recurrent future use would be mitigated to insignificant (minor or moderate) through use of BMPs during maintenance and SOPs during test operations, as listed in appendix E.

Projects BL1, MS9, MTC16, MTC17, DTA20, and DTA21 would result in the addition of hardened gravel surfaces to support parking which would create the potential for storm water runoff and associated pollutants (POLs leaked from vehicles) to reach receiving water bodies. These impacts, however, would be avoided using site grading and contouring and storm water management retention, where appropriate, as specified in site-specific SWPPPs which would be developed for these projects. This mitigation would result in minor adverse affects.

Project MTC15 has a slight beneficial impact to surface water due to trail improvements. This would help to prevent erosion and runoff into surface waters, reducing the need for off-road maneuvering and bypassing bad spots that increases disturbance. TX6 and MTC14 both include projects to build overhead cover and spill containment berms for existing fuel tanks. These would have a slight beneficial effect on water resources by creating better containment and shelter for these tanks

4.4.3 Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the specific analyses discussed above in sections 4.4.1 and 4.4.2 is no different than the analytical results would be for Action Alternative 2. Changing procedures would not make a difference in the type or intensity of impacts to surface water resources and floodplains between the action alternatives.

4.5 WETLANDS

Direct impacts to wetlands are discussed below in the No Action and Action Alternative sections. Indirect impacts of wetland disturbances to surface water and floodplains, and wildlife and fisheries are discussed in sections 4.4 and 4.8 respectively. Hazardous substances can impact wetlands, but will primarily be discussed in section 4.14.

CRTC used the following categories from table 4.1 to assess the intensity of potential direct impacts resulting from each alternative:

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.

General descriptions of the types of impacts CRTC used to analyze wetland impacts are listed below:

- *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 surfaces in areas containing wetlands or indirect impacts such as alteration of wetland hydrology.

- *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* includes disturbance to vegetation during Army testing or other 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 loss of the 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.

There is no practicable alternative that entirely avoids wetland impacts since testing and test support occur on existing ranges with some wetlands, and since each proposed project involves enhancements to existing infrastructure that are already located within proximity to wetland areas. Implementation of BMPs listed in appendix E, including project designs that avoid and minimize wetland disturbance, would help reduce wetland impacts. Standard best management practices for construction are primarily concerned with protecting water resources, including wetlands, and would be required for all of the Action Alternative 1 infrastructure improvement projects.

To analyze the impacts of continued cold regions environmental testing (see section 4.5.1), observed impacts of past training and testing activities were used to judge expected impacts from continued routine testing and test support activities. For the infrastructure improvement projects (see section 4.5.2), impacts were analyzed using the best available information about the proposed site-specific projects. Estimates of wetland acres were calculated using known footprints or best guesses based on project requirements (see table 4.7). National Wetland Inventory maps, other Army wetland delineations, hydric soils maps, aerial photography, and vegetation maps were utilized to estimate where wetlands exist on the landscape. All wetlands are considered jurisdictional for the purposes of this analysis. The known limitations of the NWI for analyzing specific wetland impacts from a given project make it necessary to do field wetland delineations first. The Army Corps of Engineers, Regulatory Branch requires formal wetland delineations using the 2008 Alaska Region Methodology, functional assessments, and permit applications for any projects impacting wetlands. Avoidance, minimization and mitigation measures would be considered during project design and permitting processes, so the impacts and acreages assessed represent the worst case scenario.

Table 4.7 Project Acreage and Estimated Wetland Impact		
Project Name	Approximate Project Acreage	Approximate Acreage of Wetland Impacts
(BL1) Construct an Addition to Bolio Building 1928	<1	0
(BL2) Repair or Renovate Obstacle Test Course	<1	0
(BL3) Storage and Logistics Support Facility at Tennessee	<1	0
(TX4) Develop a Cross-Country Firing Course	15	3
(TX5) Enhance Texas Range	59	3.5
(TX6) Construct Minor Upgrades at Texas Administration Area	<1	0
(MS7) Meteorological Equipment Upgrades	<1	0
(MS8) Construct an Environmental Conditioning Firing Chamber	<1	0
(MS9) Demolish Old Storage Building	<1	0
(WA10) Create 8 Km Direct Fire Range	4	4
(WA11) Create 10 Km Direct Fire Range	5	5
(WA12) Create New OP 12 Access	16	10
(WA13) Upgrade Support Infrastructure	6	6
(MTC14) Short-term Minor Enhancements	<1	0
(MTC15) Develop and Enhance Cross-Country Courses	31	3
(MTC16) Construct New Consolidated Maintenance Facility	<1	0
(MTC17) Energy Storage and Test Facility	<1	0
(MTC18) Construct an Environmental Conditioning Chamber	<1	0
(DTA19) Minor Utility Upgrades	9	1
(DTA20) OP 26 Improvements	<1	0.5
(DTA21) Construct a Laser Range	41	15
(DTA22) Install Permanent Laser Targets in DTA East	<1	0

4.5.1 No Action

Of the various test types, vehicle testing has the greatest potential to impact wetlands by causing temporary disturbance, vegetation alteration, wetland degradation, and alteration of hydrology. Vehicle testing would result in temporary impacts to wetlands, which is considered minor; however, if regionally unique or rare wetlands are impacted, this would be considered moderate. Severe impacts from vehicle testing would result if there is any unpermitted loss of jurisdictional wetland function. Vehicle testing impacts are mitigated to minor or moderate by limiting cross-country travel to designated routes on existing trails or when the ground is sufficiently frozen. Weapons firing had some potential to impact wetlands through temporary disturbance and vegetation alteration at the firing points. Projectile impacts would be measured in small areas (hundredths of an acre) for an entire test and are targeted away from wetlands whenever possible. Clothing and individual Soldier equipment testing has no direct adverse impacts to wetlands. Indirect minor impacts from driving to sites could occur through temporary wetland disturbance or vegetation alteration.

Test support activities are also generally conducted during the winter test season. If temporary targets, cameras, portable buildings, etc are set up in wetlands, severe adverse impacts could result if there is an unpermitted loss of jurisdictional wetland function. These adverse impacts are mitigated to minor or moderate because frozen conditions and snow cover during winter protect wetland resources, and any permanent impacts would comply with Section 404 and any associated mitigation requirements. Temporarily set-up items would be removed prior to spring break-up. Minor impacts to wetlands could be caused by testing in summer if set-up or access to test locations is in or through wetlands. Regionally unique or rare wetlands would be avoided as much as possible; otherwise, test support activities impacting these wetlands would represent moderate impacts. Support maintenance activities such as permanent loss of wetlands through addition of fill material, or vegetation alteration from mowing and brushing operations could result in severe impacts. These actions would be mitigated by complying with section 404 and would at most represent moderate impacts.

The following paragraph summarizes wetland impacts from routine testing and test support activities in each CRTC operational area. Testing and test support activities occurring in the Bolio Test Complex area generally do not have on the ground impacts and would not impact the few wetlands in the area. Mississippi Test Complex and Main Post Fort Greely do not contain wetlands. CRTC will continue operating on Texas and Washington ranges, where there is a large proportion of wetlands and severe adverse impacts could occur. Mitigation measures such as testing during frozen conditions and obtaining Section 404 permits for activities impacting wetlands would reduce adverse impacts to minor or moderate. In addition, testing and support could result in minor temporary damage to vegetation at Texas and Washington ranges. The test track and administrative portion of the Mobility Test Complex do not contain wetlands. About 3 acres of the cross-country course at the Mobility Test Complex does contain wetlands that could be impacted by driving vehicles for tests or support actions. This represents a moderate impact and would generally be mitigated to minor by use of the course only during winter test season and frozen conditions. Outlying areas, have varying amounts of wetlands that can sometimes be avoided. In some areas, particularly in DTA West, wetlands cannot be avoided. As with Texas and Washington ranges, severe adverse impacts could occur from testing and support activities, but would be mitigated to minor or moderate.

An assessment of impacts to wetlands from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.8. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.8 Assessment of Wetland Impacts from Routine Testing, Support, Projects and Maintenance, 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	Wetland degradation	Alteration of hydrology	Beneficial	Overall
Routine Tests							
Wheeled Vehicles < 15 Tons	○	○	⊙	⊙	○	○	⊙
Wheeled Vehicles > 15 Tons	○	○	⊙	⊙	○	○	⊙
Tracked Vehicles	○	○	⊙	⊙	○	○	⊙
Unmanned Aerial Systems	○	○	○	○	○	○	○
Small Arms Weapons	○	○	○	⊙	○	○	⊙
Large-Caliber Direct Fire Weapons	○	○	○	⊙	○	○	⊙
Large-Caliber Artillery	○	○	○	⊙	○	○	⊙
Missiles and Rockets	○	○	○	⊙	○	○	⊙
Minefield Clearer	○	○	⊙	⊙	○	○	⊙
Demolitions and Intelligent Munitions	○	○	⊙	⊙	○	○	⊙
Obscurants & Smoke Generators	○	○	○	○	○	○	○
Camping and Sporting Good-Type Items	○	○	○	○	○	○	○
Rations	○	○	○	○	○	○	○
Body Armor and Helmets	○	○	○	○	○	○	○
Generators	○	○	○	○	○	○	○
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	○	○	○	○
Radios	○	○	○	○	○	○	○
Ranging and Lasing Devices	○	○	○	○	○	○	○
Parachutes and Air Drop Items	○	⊙	○	○	○	○	⊙
Water Storage, Handling and Purification Equipment	○	○	○	○	○	○	○
Petroleum Handling and Storage Equipment, Filters & Separators	○	○	○	○	○	○	○
Clothing (and Boots)	○	○	○	○	○	○	○
Storage	○	○	○	○	○	○	○
Routine Test Support Activities							
Target Creation	○	○	○	○	○	○	○
Target Emplacement	○	⊙	⊙	○	○	○	⊙
Cameras (Video, High Speed Video, Still)	○	⊙	⊙	○	○	○	⊙
Lights	○	⊙	⊙	○	○	○	⊙
Radar	○	⊙	⊙	○	○	○	⊙
Use of Conditioning Chambers	○	○	○	○	○	○	○
Meteorological Stations	○	○	○	○	○	○	○

Table 4.8 Assessment of Wetland Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)							
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial						
	Permanent loss of wetlands	Temporary disturbance	Vegetation alteration	Wetland degradation	Alteration of hydrology	Beneficial	Overall
Warm-Up Buildings and Portable Trailers	○	⊙	⊙	○	○	○	⊙
Data Collection Instruments	○	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○	○
Generators	○	○	○	○	○	○	○
Fueling	○	○	○	○	○	○	○
Communication Connectivity	○	○	○	○	○	○	○
Surveys and Signage	○	⊙	⊙	○	○	○	⊙
Equipment Maintenance and Repair	○	○	○	○	○	○	○
Projects and Maintenance							
Berms Creation and Maintenance	⊙	⊙	⊙	○	⊙	○	⊙
Building Construction	⊙	⊙	⊙	○	⊙	○	⊙
Building Demolition	○	⊙	⊙	○	○	○	⊙
Culvert Installation	○	⊙	○	○	○	☆	⊙
Fence Installation or Repair	⊙	⊙	⊙	○	○	○	⊙
Gravel Mining from Existing Borrow Pits	⊙	○	⊙	○	⊙	○	⊙
Hardstand/Firing Pad Installation	⊗	⊙	⊗	⊙	⊙	☆	⊗
Road and Trail Creation and Maintenance	⊗	⊙	⊗	⊙	⊙	☆	⊗
Target Installation and Maintenance	⊙	⊙	⊙	○	○	○	⊙
Utility Line Creation and Maintenance	⊙	⊗	⊙	○	○	○	⊗
UXO Surveys for Small Projects and Tests	○	⊙	⊙	⊙	○	○	⊙
Vegetation Clearing	○	⊙	⊗	⊗	○	○	⊗

4.5.2 Action Alternative 1

An analysis of wetlands impacts due to continued testing and test support activities is provided above in section 4.5.1, No Action Alternative. This analysis is the same for the part of Alternative 1 that deals with continued testing. The second part of Action Alternative 1 is to modernize and consolidate facilities by conducting site-specific infrastructure improvement projects to help ensure that CRTC's facilities are state-of-the-art and are most effective at testing future military technology. The analysis of impacts to wetlands from these twenty-two projects is presented in the text below.

Projects BL1, BL2, BL3, TX6, MS7, MS8, MS9, MTC14, MTC16, MTC17, and MTC18 are not within proximity to wetlands and therefore would not have any adverse impacts to wetland resources. The scattered nature and small individual footprints associated with installing permanent laser targets (DTA22) means that wetlands can easily be avoided, however there is a slight chance of adverse temporary disturbance if wetlands must be crossed during the summer construction season. Project TX4 is estimated to impact up to 3 acres of wetland, based on the general area the project will be sited in and the percentage of wetland in the area. As final plans for this project are developed, avoidance of wetlands will be a siting factor and the total outcome of wetland impact acres would be less. Project MTC15 is based on existing trails meaning some of the wetland impacts will be unavoidable. As plans and Section 404 permitting progress, it should be feasible to re-route some trails to avoid wetlands, resulting in less than the current estimated 3 acres of wetland impact. In addition, this becomes a benefit in the future because some of the permanent losses from wetland fill are offset by preventing further damage to wetlands from driving around bad spots in ever-widening bypasses.

There are even greater unknowns regarding numbers of wetland acres that may be impacted by the remaining projects (TX5, WA10, WA11, WA12, WA13, DTA19, DTA20, and DTA21). Site-specific wetland delineations will be required, project details and plans need to be finalized, and the Section 404 permitting process and subsequent mitigation measures will likely reduce the total amount of impacted acres. For this analysis, CRTC used NWI mapping and/or hydric soils data, along with the best information available for projects in proximity to wetlands to estimate a worst-case scenario for potential wetland impacts. This resulted in an estimate of approximately 50 wetland acres impacted by these projects (see table 4.2 above). If total wetland loss were to be permitted and occur as a result of these projects, an insignificant adverse impact would result from a loss of approximately 1/100 of a percent of existing wetlands (approximate total is 432,000 acres) within DTA and would constitute an overall moderate adverse impact. CRTC would avoid severe (significant) wetland impacts by obtaining permits for any loss of jurisdictional wetland function or area, and by keeping overall losses to less than 10 percent of the installation's wetlands.

4.5.3 Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the specific analyses discussed above in sections 4.5.1 and 4.5.2 is no different than the analytical results would be for Action Alternative 2. Changing procedures would not make a difference in the type or intensity of impacts to wetland resources between the action alternatives.

4.6 VEGETATION

Direct impacts to vegetation are discussed in this section. Indirect impacts to soils, greenhouse gases, surface water quality, wetlands, wildfire management, and wildlife habitat can result when vegetation is disturbed. These are discussed in their respective sections (4.2, 4.3, 4.4, 4.5, 4.7, and 4.8). Overall impacts to vegetation would be minor, with direct adverse impacts resulting from vegetation removal for construction, where it would not be allowed to

grow back. Intensity of potential vegetation impacts depends on the existing condition and the long-term outcome, such as permanent loss, conversion from one habitat type to another or a single time disturbance. Infrastructure improvement projects fall into several categories. Impacts from modernizing facilities were analyzed using worst case scenario and are summarized by the intensity of the potential outcome: clearing vegetation in a permanent way for construction (51 acres), brushing or mowing repeatedly to keep woody vegetation cut back (60 acres), temporary clearing for utilities where vegetation is allowed to grow back (12 acres), conversion of habitat type such as forest or shrub to meadow (75 acres). Some of the acreages impacted by brushing or mowing are also counted as habitat conversion, so these acres do not represent the total, which is less (total impact to vegetation is 132 acres).

From table 4.1, the following categories are used in assessing potential impacts resulting from each alternative.

Minor to Moderate (insignificant) – The degree to which activities alter the local or regional vegetation patterns; includes a consideration of vegetation as wildlife habitat.

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, segment habitat such that regional wildlife species are jeopardized, or eliminate a habitat type from an installation or region would represent a significant impact.

The following bullets provide general descriptions of the type of impacts CRTC used in the vegetation impact analysis:

- *Permanent loss of vegetation* includes loss of vegetation cover due to direct impacts that 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 use of the site for testing or test support actions which would alter the vegetative composition such as the conversion of forested areas to shrub or meadow.
- *Vegetative crushing* includes the trampling of vegetation by personnel, vehicles, and equipment during test operations.
- *Beneficial impact* includes those actions that would benefit vegetation by removing or reducing the potential for vegetation disturbance during test operations.

To analyze the impacts of continued cold regions environmental testing (see section 4.6.1), observed impacts of past training and testing activities were used to judge expected impacts from continued routine testing and test support activities. For the infrastructure improvement projects (see section 4.6.2), impacts were analyzed using the best available information about the proposed site-specific projects. Overall vegetation impacts were calculated by estimating how much of the construction footprint would be on previously cleared and disturbed areas and subtracting that number from the total estimated footprint (see table 4.9). The vegetation types impacted include everything from forested lands to shrub-scrub encroaching on trails to grassy meadow areas. Impacts include both permanent and temporary, as detailed in the bullet list above.

Table 4.9 Project Acreage and Estimated Vegetation Impacts		
Project Name	Approximate Project Acreage	Acreage of Potential Vegetation Impacts
(BL1) Construct an Addition to Bolio Building 1928	<1	0
(BL2) Repair or Renovate Obstacle Test Course	<1	<1
(BL3) Storage and Logistics Support Facility at Tennessee	<1	0
(TX4) Develop a Cross-Country Firing Course	15	7
(TX5) Enhance Texas Range	59	58
(TX6) Construct Minor Upgrades at Texas Administration Area	<1	0
(MS7) Meteorological Equipment Upgrades	<1	0
(MS8) Construct an Environmental Conditioning Firing Chamber	<1	0
(MS9) Demolish Old Storage Building	<1	0
(WA10) Create 8 Km Direct Fire Range	4	4
(WA11) Create 10 Km Direct Fire Range	5	5
(WA12) Create New OP 12 Access	16	10
(WA13) Upgrade Support Infrastructure	6	3
(MTC14) Short-term Minor Enhancements	<1	0
(MTC15) Develop and Enhance Cross-Country Courses	31	6
(MTC16) Construct New Consolidated Maintenance Facility	<1	0
(MTC17) Energy Storage and Test Facility	<1	0
(MTC18) Construct an Environmental Conditioning Chamber	<1	0
(DTA19) Minor Utility Upgrades	9	9
(DTA20) OP 26 Improvements	<1	0
(DTA21) Construct a Laser Range	41	28
(DTA22) Install Permanent Laser Targets in DTA East	<1	<1

4.6.1 No Action

Current testing and test support cause minor impacts to vegetation on DTA. Most tests are conducted in existing range areas or on roads and trails, including “cross-country” vehicle testing which occurs on existing trails rather than across undisturbed vegetated areas. Severe adverse

impacts could result from test support maintenance activities requiring vegetation clearing if local populations of rare or sensitive plant species are eliminated. USAG Fort Wainwright subject matter expert review of NEPA documents for maintenance projects mitigates the adverse impact to minor or moderate through comparison of site locations and known rare and sensitive plant populations, and requiring modification of locations or activities to avoid significant impact. Severe adverse impacts could result from almost any testing or test support activity that has a chance to introduce weed seeds, allowing the propagation of non-native, invasive plant species. Several measures currently in place mitigate these impacts to minor by helping to protect against the establishment of invasive plant species. Equipment and vehicles are washed prior to shipping to CRTC. If test items arrive dirty from shipping or other reasons, they are washed at the wash rack in building 605 on Fort Greely prior to the start of testing. Other SOPs and BMPs (see appendix E) address invasive species prevention measures and revegetation that would reduce the potential impacts to minor.

CRTC also analyzed vegetation impacts from routine testing and test support activities by operational area. Bolio and Mississippi test complexes are developed sites purposely kept clear of vegetation. These were originally cleared decades ago. Maintenance activities at both Texas and Washington ranges include minor adverse impacts through vegetation community alteration, and minor impacts from vegetation crushing and temporary disturbance. Vehicle and weapons system testing also cause minor adverse impacts from vegetation community alteration, vegetation crushing and temporary disturbance. Clothing and individual Soldier equipment testing also causes minor vegetation crushing. Testing and test support on the test track and at the Mobility Test Complex's administration area do not impact vegetative resources. Minor adverse impacts to vegetation occur from vehicle testing and trail maintenance on the cross-country course. Cross country vehicle testing takes place during winter on trails. Maintenance includes keeping brush from encroaching onto the trail, by clearing back overhanging brush from the trail edges up to 3-6 feet on each side using hand crews or a hydro-axe when appropriate. Some maintenance might occur during summer that could damage vegetation where vehicles must be driven around muddy and boggy areas. When feasible, maintenance would be done during frozen conditions. No test or test support activities on Main Post would affect vegetative resources. In outlying areas of DTA, the same kinds of minor adverse impacts to vegetation are observed as occur in the ranges and test complexes listed above. Minor impacts to vegetation are expected when vehicles are driven on winter trails for off-road mileage, or when transporting test equipment and personnel over winter trails that access DTA West.

An assessment of impacts to vegetation from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.10. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.10 Assessment of Vegetation Impacts from Routine Testing, Support, Projects and Maintenance, 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	Beneficial	Overall
Routine Tests						
Wheeled Vehicles < 15 Tons	○	○	○	⊙	○	⊙
Wheeled Vehicles > 15 Tons	○	○	○	⊙	○	⊙
Tracked Vehicles	○	○	○	⊙	○	⊙
Unmanned Aerial Systems	○	○	○	⊙	○	⊙
Small Arms Weapons	○	○	○	⊙	○	⊙
Large-Caliber Direct Fire Weapons	○	⊙	○	⊙	○	⊙
Large-Caliber Artillery	○	⊙	○	⊙	○	⊙
Missiles and Rockets	○	⊙	○	⊙	○	⊙
Minefield Clearer	○	⊙	○	⊙	○	⊙
Demolitions and Intelligent Munitions	○	⊙	○	⊙	○	⊙
Obscurants & Smoke Generators	○	○	○	⊙	○	⊙
Camping and Sporting Good-Type Items	○	○	○	⊙	○	⊙
Rations	○	○	○	⊙	○	⊙
Body Armor and Helmets	○	○	○	⊙	○	⊙
Generators	○	○	○	⊙	○	⊙
NBC Alarms, Detectors, Masks, Decontamination Systems	○	⊙	○	⊙	○	⊙
Radios	○	○	○	⊙	○	⊙
Ranging and Lasing Devices	○	⊙	○	⊙	○	⊙
Parachutes and Air Drop Items	○	⊙	○	⊙	○	⊙
Water Storage, Handling and Purification Equipment	○	⊙	○	⊙	○	⊙
Petroleum Handling and Storage Equipment, Filters & Separators	○	⊙	○	⊙	○	⊙
Clothing (and Boots)	○	○	○	⊙	○	⊙
Storage	○	⊙	○	⊙	○	⊙
Routine Test Support Activities						
Target Creation	○	○	○	○	○	○
Target Emplacement	○	⊙	⊙	⊙	○	⊙
Cameras (Video, High Speed Video, Still)	○	○	○	⊙	○	⊙
Lights	○	○	○	⊙	○	⊙
Radar	○	○	○	⊙	○	⊙

Table 4.10 Assessment of Vegetation Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)						
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial					
	Permanent loss of vegetation	Temporary disturbance	Vegetation community alteration	Vegetation crushing	Beneficial	Overall
Use of Conditioning Chambers	○	○	○	⊙	○	⊙
Meteorological Stations	○	○	○	⊙	○	⊙
Warm-Up Buildings and Portable Trailers	○	⊙	○	⊙	○	⊙
Data Collection Instruments	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○
Generators	○	○	○	⊙	○	⊙
Fueling	○	○	○	⊙	○	⊙
Communication Connectivity	○	⊙	○	⊙	○	⊙
Surveys and Signage	○	⊙	○	⊙	○	⊙
Equipment Maintenance and Repair	○	○	○	⊙	○	⊙
Projects and Maintenance						
Berms Creation and Maintenance	⊙	⊙	⊙	⊙	○	⊙
Building Construction	⊙	⊙	○	⊙	○	⊙
Building Demolition	○	⊙	○	⊙	○	⊙
Culvert Installation	○	⊙	○	⊙	☆	⊙
Fence Installation or Repair	⊙	⊙	○	⊙	○	⊙
Gravel Mining from Existing Borrow Pits	⊙	⊙	○	⊙	○	⊙
Hardstand/Firing Pad Installation	⊙	⊙	○	⊙	○	⊙
Road and Trail Creation and Maintenance	⊙	⊙	○	⊙	☆	⊙
Target Installation and Maintenance	⊙	⊙	⊙	⊙	○	⊙
Utility Line Creation and Maintenance	○	⊙	⊗	⊙	○	⊗
UXO Surveys for Small Projects and Tests	○	⊙	○	⊙	○	⊙
Vegetation Clearing	⊙	⊙	⊗	⊙	○	⊗

4.6.2 Action Alternative 1

The previous section provides an analysis of current/continued testing and test support activities. This analysis is the same for the part of Alternative 1 concerned with continued testing. The analysis for the part of Alternative 1 that concerns modernizing facilities is provided below.

Several site-specific projects are located in developed areas that were previously cleared and disturbed. Projects BL1, BL3, TX6, MS7, MS8, MS9, MTC14, MTC16, MTC18, and DTA 20 would have no new adverse impacts to vegetation resources.

Permanent loss of vegetation from the direct impacts of clearing and creation of impervious surfaces could cause a severe adverse impact if certain thresholds are reached. Projects TX4, TX5, WA12, WA13, and DTA21 would all have minor to moderate adverse impacts to vegetation. Permanent impacts to vegetation come from installing new targets, blast shelters, earthen berms, and firing positions (TX5, WA13, and DTA21) and creation of new trails and targets for a cross-country firing course (TX4). The extension of Meadows Road to access OP 12 (WA12) would result in minor to moderate adverse impacts to vegetation through the loss of vegetation to the road footprint. MTC17 is in a re-vegetating area that burned in 1999. Clearing vegetation for this project (<1 acre) would represent a permanent minor adverse impact.

Project WA12 will include large white spruce and paper birch, which is usually considered salvageable timber. Per USAG Fort Wainwright's timber policy, when the proposed route is finalized CRTC will need to request that the DPW forester evaluate it 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 or free public use as appropriate. The USAG Fort Wainwright forester has evaluated the large vegetation clearing areas within project TX5, and determined that the trees involved are not salvageable.

Several projects involve temporary disturbance to vegetation (a minor adverse impact). WA10 and WA11 would involve minimal clearing of riverine gravelly habitat types that quickly grow back. Vegetation is naturally sparse (<30% cover) consisting of pioneer species grading to areas dominated by early successional dwarf shrubs. BL2, MTC15, and DTA19 all involve clearing back brush either from roadsides, the obstacle course, or from overhead power line clearings. Underground utility upgrades (DTA19) involve removal of the vegetation during digging operations, but vegetative cover is encouraged to re-grow. DTA22 would likely require a small amount of temporary vegetation clearing (a minor adverse impact).

In addition to permanent vegetation impacts, projects TX4, TX5, WA13, and DTA21 also would result in temporary minor adverse impacts to vegetation. Clearing woody vegetation to maintain line of sight on Texas Range is required every few years because shrubs and deciduous trees tend to grow back relatively quickly (TX4 and TX5). Other minor temporary vegetation impacts are expected with projects WA13, DTA21 due to the nature of the projects.

Vegetation community alteration and vegetation crushing are expected minor to moderate impacts from projects TX4, TX5, WA12, and DTA21. Currently forested areas that need to be cleared for line of sight on Texas Range (TX4 and TX5) would be converted to shrub or herbaceous type habitats. WA10 and WA11 may involve vegetation community alteration because the line of sight would be kept in an early successional state. If spruce trees begin to grow and block the line of sight, the vegetation will be kept knocked down either through chaining or other mechanical means that would not impact the soils. Most of the Meadows Road (WA12) extension goes through forested habitat (both the existing trails and proposed new

route). Clearing along the shoulders and ditches would convert forest to shrub and herbaceous habitats. Winter trails usually are vegetated, but any new trails that need to be developed for DTA21 would primarily be in shrub habitats. Repeated driving over winter trails would result in a change in species composition over time from shrubs to herbaceous.

4.6.3 Action Alternative 2

The specific analyses discussed above in sections 4.6.1 and 4.6.2 and the impacts to vegetation from Action Alternative 1 are no different from the analytical results and the impacts associated with Action Alternative 2. Changing the procedures used to analyze the impacts would not affect the quantity or intensity of vegetation impacts.

4.7 FIRE MANAGEMENT

Direct impacts are further discussed by the No Action and the Action Alternatives in section 4.7.1 through 4.7.3. The following categories are used in assessing potential impacts resulting from the alternatives.

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 Fort Wainwright's Integrated Wildland Fire Management Plan or that pose risks exceeding response capability would represent a significant impact.

General descriptions of the types of impacts used in the wildfire management impact analysis are listed below:

- *Increased fire start potential during construction* includes the potential for increased fire start due to the presence and operation of equipment during construction.
- *Fire start potential (human causes)* includes either an increased or decreased potential for fire starts.
- *Wildfire spread* includes the beneficial reduction of potential wildfire spread through the placement of structures such as roadway or vegetative clearing that would act as fuel breaks.
- *Increased fire management measures* include the need for increased fire management from activities that have the potential to increase wildfire starts.
- *Increased fire equipment access* includes a beneficial increase of access for firefighting equipment into Army ranges.

4.7.1 No Action

Routine testing carries with it a risk of starting wildfires. For CRTC, testing during the winter season greatly mitigates that risk and summer testing occurs rarely (approximately 5% of tests). Weapons firing can cause fires to start, but is mitigated by following the seasonal restrictions based on the daily fire index as outlined in the USAG Fort Wainwright Range Regulation (350-1). Testing of mines or demolitions can also cause fire starts. Vehicles driven on trails with vegetated strips down the middle can ignite dry grasses and forbs in summer. Vehicles would almost never be driven off paved or secondary roads during summer. Clothing and individual Soldier equipment testing has no inherent direct impact of starting wildfires, although any human activity, especially in undeveloped areas, carries a minor potential for wildfire starts. None of CRTC's testing activities changes the potential severity of wildfire starts and is not expected to impact fire fighting response capabilities.

Test support for set-up also occurs primarily during winter, with a low risk of fire. Activities that could be a risk during summer would be anything requiring the use of generators or vehicles being driven across dry vegetation. High intensity lights could also be a hazard, but long daylight hours and low probability of summer tests make this a minor risk also. Range maintenance in support of test activities has the most fire risk because these activities mostly occur during summer. Vegetation clearing in summer would involve driving heavy equipment or vehicles over potentially flammable plants. This is a temporary increased risk. Once range areas have been cleared of woody vegetation for line of sight, the risk of wildfire decreases.

The overall potential for continued cold regions environmental testing to affect the likelihood or potential severity of wildfire starts or to impact the response capabilities is a minor adverse impact. There is a minor chance that fires could start, and the level of ecological impact would also be minor.

CRTC also analyzed fire management impacts from routine testing and test support activities by operational area. Bolio and Mississippi test complexes are developed sites purposely kept clear of vegetation that have none to minor impact from routine testing and support on fire management. Vehicle and weapons system testing at both Texas and Washington ranges include a minor to moderate adverse impact from the likelihood or potential severity of wildfire starts. Maintenance activities at Texas and Washington ranges have both a minor adverse impact on the potential for wildfires to start and a beneficial impact through reduction of vegetation. Testing and test support on the test track and at the Mobility Test Complex's administration area would not impact wildfire management. Minor adverse impacts due to the small increased likelihood of wildfire starts would occur from vehicle testing and trail maintenance on the cross-country course. Wildfire management is not applicable to CRTC's operations on Main Post. Fire response capabilities are not changed by test support activities on Main Post. In outlying areas of DTA, the same kinds of minor to moderate adverse impacts to wildfire management are observed as occur in the ranges and test complexes listed above. Minor increases in fire start potential are expected when vehicles are driven over dry vegetation during summer, or when weapons are tested at other locations within DTA.

An assessment of impacts to fire management from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.11. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.11 Assessment of Fire Management Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs						
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial					
	Increased fire start potential during construction	Fire start potential (human causes)	Wildfire spread	Increased fire management measures	Increased fire equipment access (Beneficial)	Overall
Routine Tests						
Wheeled Vehicles < 15 Tons	○	⊙	○	○	○	⊙
Wheeled Vehicles > 15 Tons	○	⊙	○	○	○	⊙
Tracked Vehicles	○	⊙	○	○	○	⊙
Unmanned Aerial Systems	○	⊙	○	○	○	⊙
Small Arms Weapons	○	⊙	○	○	○	⊙
Large-Caliber Direct Fire Weapons	○	⊙	○	○	○	⊙
Large-Caliber Artillery	○	⊙	○	○	○	⊙
Missiles and Rockets	○	⊙	○	○	○	⊙
Minefield Clearer	○	⊙	○	○	○	⊙
Demolitions and Intelligent Munitions	○	⊙	○	○	○	⊙
Obscurants & Smoke Generators	○	⊙	○	○	○	⊙
Camping and Sporting Good-Type Items	○	⊙	○	○	○	⊙
Rations	○	⊙	○	○	○	⊙
Body Armor and Helmets	○	⊙	○	○	○	⊙
Generators	○	⊙	○	○	○	⊙
NBC Alarms, Detectors, Masks, Decontamination Systems	○	⊙	○	○	○	⊙
Radios	○	⊙	○	○	○	⊙
Ranging and Lasing Devices	○	⊙	○	○	○	⊙
Parachutes and Air Drop Items	○	⊙	○	○	○	⊙
Water Storage, Handling and Purification Equipment	○	⊙	○	○	○	⊙
Petroleum Handling and Storage Equipment, Filters & Separators	○	⊙	○	○	○	⊙
Clothing (and Boots)	○	⊙	○	○	○	⊙

Table 4.11 Assessment of Fire Management Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)

Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial					
	Increased fire start potential during construction	Fire start potential (human causes)	Wildfire spread	Increased fire management measures	Increased fire equipment access (Beneficial)	Overall
Storage	○	○	○	○	○	○
Routine Test Support Activities						
Target Creation	○	○	○	○	○	○
Target Emplacement	○	⊙	○	○	○	⊙
Cameras (Video, High Speed Video, Still)	○	⊙	○	○	○	⊙
Lights	○	⊙	○	○	○	⊙
Radar	○	⊙	○	○	○	⊙
Use of Conditioning Chambers	○	○	○	○	○	○
Meteorological Stations	○	⊙	○	○	○	⊙
Warm-Up Buildings and Portable Trailers	○	⊙	○	○	○	⊙
Data Collection Instruments	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○
Generators	○	⊙	○	○	○	⊙
Fueling	○	⊙	○	○	○	⊙
Communication Connectivity	○	○	○	○	○	○
Surveys and Signage	○	⊙	○	○	○	⊙
Equipment Maintenance and Repair	○	○	○	○	○	○
Projects and Maintenance						
Berms Creation and Maintenance	⊙	⊙	○	⊙	○	⊙
Building Construction	○	○	○	⊙	○	⊙
Building Demolition	○	○	○	○	○	○
Culvert Installation	○	○	○	○	○	○
Fence Installation or Repair	⊙	○	○	○	○	⊙
Gravel Mining from Existing Borrow Pits	○	○	○	○	○	○
Hardstand/Firing Pad Installation	⊙	○	☆	○	○	⊙
Road and Trail Creation and Maintenance	⊙	⊙	☆	○	☆	⊙
Target Installation and Maintenance	⊙	⊙	○	⊙	○	⊙
Utility Line Creation and Maintenance	⊙	○	○	○	○	⊙
UXO Surveys for Small Projects and Tests	○	○	○	○	○	○
Vegetation Clearing	⊙	○	☆	○	☆	☆

4.7.2 Action Alternative 1

The analysis of wildfire management impacts from continued routine testing and test support provided in section 4.7.1 above is the same for the part of Alternative 1 that deals with continued testing. The second part of this alternative is to modernize and consolidate facilities by conducting site-specific infrastructure improvement projects. The analysis of impacts on wildfire management from conducting these infrastructure improvement projects is provided below.

Some of the proposed infrastructure improvement projects (BL2, BL3, TX6, MS7, MS9, WA13, and MTC14) will occur in previously developed areas, representing no impact to the likelihood or potential severity of wildfire starts and no impact to response capabilities. Other proposed projects will provide a benefit in terms of decreasing the amount of vegetation that can fuel a wildfire (TX5) and increasing the quantity and quality of roads, providing improved access for fighting wildland fires (TX5, TX6, WA12, and MTC15).

Proposed infrastructure improvement projects TX4, TX5, WA12, MTC15, DTA19, DTA20, DTA21, and DTA22 would increase the potential for fires to start during construction of the project. The range creation or enhancement projects (TX4, TX5, WA10, WA11, and MTC16) would result in a minor to moderate impact from the potential for wildfire starts during operations. This does not represent an increase over current operations however, because total amount of weapons firing is not expected to increase. In addition, WA10 and WA11 are range creation projects located in the Delta River floodplain would not affect fire management on that portion of Washington Range. The habitat type is naturally fire resistant, with a high proportion of bare areas. Fires do not typically start nor do they carry in these types of floodplains. One other project (MTC15) has a minor impact of potential wildfire starts during operations. This is because it would increase human activities outside of developed areas. Although the area burned in 1999, it is possible for new fires to occur. Increased access for firefighting purposes would offset some of the potential increase in fire risk. Projects BL1, BL3, MS8, MTC16, MTC17, MTC18, and DTA20 would increase the need for 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.

4.7.3 Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the specific analyses discussed above in sections 4.7.1 and 4.7.2 is no different than the analytical results would be for Action Alternative 2. Changing procedures would not make a difference in the likelihood or potential severity of wildfire starts and it would not make a difference in fire response capabilities.

4.8 WILDLIFE AND FISHERIES

Direct impacts are discussed in the No Action and Action Alternatives in the following sections 4.8.1 through 4.8.3. Indirect impacts resulting from wildlife and fisheries disturbance to subsistence and recreation are further discussed in section 4.11. 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 animals and biological conditions. (b) The degree to which activities affect migratory birds or bald and golden eagles on or near the installation. (c) The degree to which activities affect a given waterway's fish population.

Severe (significant) – (a) Activities that reduce regional wildlife populations below state management levels would represent a significant impact. (b) Activities that violate the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act or otherwise cause discernible population-level impacts at the installation or regional level would represent a significant impact. (c) Activities that violate state Fish Habitat (Title 16) Statutes, ignore recommendations 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.

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 that 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 stream bank 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 testing activities which disrupt mammal migration.
- *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 testing which effects wildlife behavior.

- *Increase vehicle collision potential* includes the increased potential for wildlife-vehicle strikes during operations.
- *Beneficial impact* includes those actions that would benefit wildlife and fisheries by removing or reducing the potential for vegetation disturbance during operations.

The Fort Wainwright and Fort Greely Garrisons will continue implementation of their respective Integrated Natural Resources Management Plans (INRMP). The INRMPs guide implementation of the natural resources programs for US Army Garrison lands. They are designed to support the military mission, manage natural resources and ensure compliance with related environmental laws and regulations. INRMPs are required by the Sikes Act (16 USC 670a et seq.), Department of Defense Instruction 4715.3 (*Environmental Conservation Program*), and Army Regulation 200-1 (*Environmental Protection and Enhancement*). INRMPs have the signatory approval of the US Fish and Wildlife Service to acknowledge compliance with the Endangered Species Act and Migratory Bird Treaty Act (MBTA). The Fort Wainwright INRMP clarifies military readiness activities as they relate to the MBTA to include definitions, restrictions and requirements. The Alaska Department of Fish and Game is also a signatory cooperating agency. The plans are updated every five years, including NEPA analysis of the proposed management actions within the plans. The Fort Wainwright plan includes a few military training and testing restrictions agreed upon by the signatory parties for the protection of sensitive species. CRTC, as a tenant on Fort Wainwright, is obligated to comply with these restrictions. Implementation of the management proposals contained within these plans is the responsibility of the Garrisons and signatory parties, but CRTC may choose to participate on a voluntary basis when resources are available.

4.8.1 No Action

Current testing and test support cause minor to moderate impacts to wildlife and fisheries on DTA. Cold regions testing has the potential to adversely affect local animals, biological conditions, migratory birds, bald and golden eagles, and local fish populations. These adverse effects would be insignificant (minor to moderate in degree). Direct adverse impacts to wildlife and fisheries are partially mitigated because many species migrate out of the area and are not present during the winter test season. Bison migration onto Texas and Washington ranges does not usually begin until late February, as test season is winding down. Use of the SODAR could cause noise impacts to bison, moose, and other species. Because bison are a species of concern among local stakeholders, and impacts from SODAR to animals are unknown, it is currently not used during spring and summer when bison are present. Sandhill cranes have migrated through DTA before winter testing begins, and do not come back through on spring migration until after the winter test season is complete. The current INRMP places restrictions on military use that limit disturbance in crane special interest areas from 25 April to 15 May and 1 September to 30 September, if cranes are present. Any non-winter season testing would comply with this agreement. The small amount of testing that occurs outside of the winter test season (roughly 5% or tests), could represent a minor additional adverse impact to wildlife and fisheries.

Vehicle testing has minor direct adverse impacts on individual animals and birds through collisions, potential disruptions to large mammal movements, and noise disturbances, and minor

indirect adverse impacts on wildlife and fisheries through a decrease in habitat quality when driven off-road. Weapons systems testing (firing the weapon) adversely impacts wildlife by altering large mammal movements (a minor impact), and through noise disturbance which would be a moderate adverse impact. When any large mammals are present, CRTC suspends or shifts weapons firing testing to different ranges when at all possible. Noise impacts to raptors and ravens are mitigated by following U.S. Fish and Wildlife Service (USFWS) guidelines for protection of raptor and raven cliffs from April 15 through August 1. These guidelines apply to all cliff areas with potential nesting habitat, listed in section 3.8.

Testing clothing would not directly or indirectly affect wildlife or fish. Individual Soldier equipment tests can adversely affect large mammal movement and cause noise disturbance to wildlife, both minor impacts. Test support activities could cause minor adverse impacts by altering large mammal movements and through noise disturbance to wildlife. Maintenance support activities have a minor adverse impact on wildlife and fisheries from small permanent losses of terrestrial and aquatic habitat, decreases in habitat quality, altering large mammal movement, affecting migratory birds and nesting, and causing noise disturbance during the actual maintenance work. These impacts are mitigated by following USFWS guidelines to avoid vegetation clearing from May 1 through July 15, thereby avoiding affecting nesting migratory birds. Some indirect impacts could be expected from minor degradation or loss of habitat important to certain species. These impacts to habitat would be mitigated as much as possible by BMPs required to be included in Storm Water Pollution Prevention Plans (SWPPPs), by following clearing and disturbance guidelines provided by the USFWS, and by compensatory mitigation outlined in any Section 404 Clean Water Act wetland permits, if required for maintenance projects.

Testing activities at Bolio Test Complex have a minor adverse impact on wildlife through noise disturbance. Test and support activities at Texas and Washington ranges and Mississippi Test Complex have a moderate adverse impact on wildlife through noise disturbance, primarily from the SODARs installed at those locations, but also from weapons system testing. Any test or test support activities that might occur during sandhill crane migration periods would have to follow the USAG Alaska INRMP restrictions, thereby minimizing disturbance to cranes. Texas and Washington range testing and support activities also have a minor adverse impact on wildlife and fisheries through permanent loss of terrestrial and aquatic habitat, decreases in habitat quality, impacts to large mammal movement, and impacts to migratory birds and nests. Vehicle testing at the Mobility Test Complex and outlying areas that are used for testing have minor adverse impacts on wildlife and fisheries through permanent loss of terrestrial and aquatic habitat, decreases in habitat quality, impacts to large mammal movement, impacts to migratory birds and nests, and noise disturbance to wildlife. There are no wildlife and fisheries impacts from Main Post CRTC activities.

An assessment of impacts to wildlife from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.12. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.12 Assessment of Wildlife and Fisheries Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs

Routine Action	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 migratory birds/nesting	Noise disturbance	Increased vehicle collision potential	Beneficial	Overall
Routine Tests									
Wheeled Vehicles < 15 Tons	○	○	⊙	⊙	○	⊙	⊙	○	⊙
Wheeled Vehicles > 15 Tons	○	○	⊙	⊙	○	⊙	⊙	○	⊙
Tracked Vehicles	○	○	⊙	⊙	○	⊙	⊙	○	⊙
Unmanned Aerial Systems	○	○	○	○	○	○	⊙	○	○
Small Arms Weapons	○	○	○	○	○	⊙	○	○	○
Large-Caliber Direct Fire Weapons	○	○	○	⊙	○	⊗	○	○	⊗
Large-Caliber Artillery	○	○	○	⊙	○	⊗	○	○	⊗
Missiles and Rockets	○	○	○	⊙	○	⊗	○	○	⊗
Minefield Clearer	○	○	○	○	○	○	○	○	○
Demolitions and Intelligent Munitions	○	○	○	⊙	○	⊗	○	○	⊗
Obscurants & Smoke Generators	○	○	○	○	○	⊙	○	○	○
Camping and Sporting Good-Type Items	○	○	○	○	○	○	○	○	○
Rations	○	○	○	○	○	○	○	○	○
Body Armor and Helmets	○	○	○	○	○	○	○	○	○
Generators	○	○	○	○	○	⊙	○	○	○
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	○	○	○	○	○	○
Radios	○	○	○	○	○	○	○	○	○
Ranging and Lasing Devices	○	○	○	○	○	○	○	○	○
Parachutes and Air Drop Items	○	○	○	○	○	○	○	○	○
Water Storage, Handling and Purification Equipment	○	○	○	○	○	○	⊙	○	○
Petroleum Handling and Storage Equipment, Filters & Separators	○	○	○	○	○	○	⊙	○	○
Clothing (and Boots)	○	○	○	○	○	○	○	○	○
Storage	○	○	○	○	○	○	○	○	○
Routine Test Support Activities									
Target Creation	○	○	○	○	○	○	○	○	○
Target Emplacement	⊙	○	○	○	○	○	○	○	⊙
Cameras (Video, High Speed Video, Still)	○	○	○	○	○	○	○	○	○
Lights	○	○	○	○	○	○	○	○	○
Radar	○	○	○	○	○	○	○	○	○

Table 4.12 Assessment of Wildlife and Fisheries Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)

Routine Action	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 migratory birds/nesting	Noise disturbance	Increased vehicle collision potential	Beneficial	Overall
Use of Conditioning Chambers	○	○	○	○	○	⊙	○	○	⊙
Meteorological Stations	○	○	○	⊙	○	⊙	○	○	⊙
Warm-Up Buildings and Portable Trailers	○	○	○	○	○	⊙	○	○	⊙
Data Collection Instruments	○	○	○	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○	○	○	○
Generators	○	○	○	○	○	⊙	○	○	⊙
Fueling	○	○	○	○	○	○	○	○	○
Communication Connectivity	○	○	○	○	○	○	○	○	○
Surveys and Signage	○	○	○	○	○	○	○	○	○
Equipment Maintenance and Repair	○	○	○	○	○	○	○	○	○
Projects and Maintenance									
Berms Creation and Maintenance	⊙	○	⊙	⊙	○	⊙	○	○	⊙
Building Construction	⊙	○	○	⊙	○	⊙	○	○	⊙
Building Demolition	○	○	○	○	○	⊙	○	○	⊙
Culvert Installation	○	⊙	○	○	○	⊙	○	○	⊙
Fence Installation or Repair	⊙	○	○	⊙	○	⊙	○	○	⊙
Gravel Mining from Existing Borrow Pits	⊙	○	⊙	○	○	⊙	○	○	⊙
Hardstand/Firing Pad Installation	⊙	○	⊙	○	○	⊙	○	○	⊙
Road and Trail Creation and Maintenance	⊙	○	⊙	⊙	○	⊙	⊙	☆	⊙
Target Installation and Maintenance	⊙	○	⊙	⊙	○	⊙	○	○	⊙
Utility Line Creation and Maintenance	○	○	⊙	⊙	○	⊙	○	○	⊙
UXO Surveys for Small Projects and Tests	○	○	○	○	⊙	○	○	○	⊙
Vegetation Clearing	⊙	○	⊙	⊙	○	⊙	○	○	⊙

4.8.2 Action Alternative 1

4.8.2.1 Impact Assessment Breakdown by Project and Impact

The following discussion breaks down the impact assessment of site-specific infrastructure improvements by project and the types of impacts expected from either their construction, their use for testing, or both. Overall impact to habitat from clearing or otherwise impacting

approximately 125 acres of varying vegetation types would be minor. None of the expected wildlife and fisheries impacts would be severe (significant).

The proposed sites for projects BL2, BL3, TX6, MS7, and MTC14 are located within human-modified areas that have previously been disturbed. These projects would not be anticipated to have any adverse impacts to wildlife and fisheries. 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, the noise associated with the construction of these projects would not exceed ongoing daily activity and noise levels. DTA22 would have no adverse impacts on wildlife and fisheries from construction or use.

Minor adverse impacts to wildlife from projects BL1, MS8, MS9, MTC16, MTC17, and MTC18 would primarily be due to noise associated with construction and MS8 would also have periodic noise associated with operational use for weapons firing tests. Projects MTC17 and DTA19 would have a minor adverse impact on wildlife and fisheries from a small decrease in habitat quality in addition to noise during construction.

Projects WA10, WA11, and WA12 all have the potential for moderate adverse impacts from permanent loss of terrestrial habitat (WA12) or noise disturbance during operational use (WA10 and WA11 from weapons firing on these new ranges). Project WA12 also would have minor adverse impacts in all of the other categories because of the nature of the project (10 acres of disturbance including 6 acres of new disturbance). Projects WA10 and WA11 would also have minor adverse impacts in all other categories except to migratory birds. This exception is because less vegetation clearing would be required, and it could easily be accomplished within the USFWS guidelines.

TX5 would cause minor adverse impacts to wildlife and fisheries from permanent loss of terrestrial habitat, decrease of habitat quality, impacts to migratory birds/nesting, noise disturbance and increased vehicle collision potential. There would be no expected impacts to large mammal movement because no fencing will be constructed, and construction and testing activities would be curtailed if large mammals were in the area, per existing INRMP agreements with ADF&G and USFWS.

Project MTC15 is expected to cause minor adverse impacts to wildlife and fisheries from small amounts of permanent loss of terrestrial habitat, impacts to migratory birds/nesting, noise disturbance and increased vehicle collision potential. Project DTA21 would cause minor adverse impacts to wildlife and fisheries from permanent loss of terrestrial habitat, decrease of habitat quality, impacts to migratory birds/nesting, and disturbance to wildlife from noise. DTA20 would have a minor adverse impact on wildlife and fisheries from small amounts of permanent loss of terrestrial habitat, decrease of habitat quality, and noise disturbance during construction.

Minor adverse impacts to wildlife and fisheries could result from project TX4 due to small amounts of permanent loss of terrestrial habitat, noise disturbance, and increased vehicle collision potential. Minor adverse impacts to wildlife and fisheries could result from project WA13 due to small amounts of permanent loss of terrestrial habitat, and noise disturbance during construction.

4.8.2.2 Impact Assessment Breakdown by Resource

This subsection breaks down the impact assessment of site-specific infrastructure improvements from the resource perspective.

a. *Moose and Bison*: Enhancement of Texas Range includes clearing woody vegetation. The plant species that tend to thrive and grow back soonest also tend to be preferred browse for moose, which can have both a minor negative and a minor beneficial impact. Some loss of habitat would be associated with projects that require some permanently cleared vegetation (TX4, TX5, WA10, WA11, WA12, WA13, MTC15, DTA20, and DTA21), representing a minor direct impact. Projects TX4, TX5, TX6, WA10, WA11, WA12, WA13, and DTA19 are within bison calving grounds. Construction would comply with the 2007 agreement with ADF&G, as described in the U.S. Army Garrison Alaska INRMP (USAG Alaska 2007). Minor amount of vegetation clearing and ground disturbance would be associated with these proposed projects and would be expected to have none to minor indirect impacts on bison. In addition to the projects in the calving grounds, projects BL1, BL2, BL3, MS7, MS8, MS9 and DTA22 are within the bison migration area (although the 3 projects within Mississippi Test Complex and BL1 are inside existing fences and unlikely to affect bison migration). No additional fencing would be installed. Currently, no project locations coincide with existing bison habitat plots, and CRTC will continue to avoid these areas when possible. Continued use of the SODAR during winter only could cause some disturbance to moose or other species in the area. Overall, this would be considered a minor impact.

b. *Fisheries*: Proposed projects TX5, WA10, WA11, WA12, DTA19, DTA20, and DTA21 could affect water quality of nearby wetlands, lakes or streams, but minor impacts to habitat quality, and no indirect impacts to fish are expected. Construction projects would be required to follow Fort Wainwright's SWPPP, to include the implementation of BMPs designed to protect water quality of surface waters and wetlands. Species dependant on wetlands as habitat would have a minor indirect impact from construction projects that cannot completely avoid wetlands. This impact would be minimized and mitigated through permit actions as determined by the Army Corps of Engineers, Regulatory and the State of Alaska. Another criterion when evaluating the permanent loss of aquatic habitat is whether permanent structures such as culverts will be installed. Projects TX4, TX5, WA10, WA11, WA12, WA13, MTC15, and DTA21 all may involve the installation of culverts and could result in minor adverse impacts to fisheries from the loss of aquatic habitat in this manner.

c. *Birds*: The U.S. Fish and Wildlife Service recommends time periods for avoiding vegetation clearing in order to protect nesting birds. For Interior Alaska, this is May 1st through July 15th (USFWS 2007). USAG Fort Wainwright and CRTC began to follow these guidelines within the last 5 years, and would continue to avoid affecting bird habitat during nesting season. CRTC construction projects must comply with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Intentional removal or intentional take of a migratory bird or active nest from clearing vegetation is not proposed. Clearing must be planned and conducted around the above listed guidelines. Areas will be surveyed for inactive bald or golden eagle nests. If these are found, CRTC will take specific measures to avoid removing or disturbing the nest. Project TX5 is located in areas that may be important to sharp-tailed grouse for leking.

CRTC would work with USAG Fort Wainwright wildlife biologists to avoid lek sites and preserve habitat when possible. Construction of projects MS7, MS8, MS9, WA10, WA11, and WA13 have the potential to disturb migrating cranes using the Delta River as a roosting area. Construction timing would be coordinated with ADF&G to minimize disturbance per the USAG Alaska INRMP. Use of the direct fire ranges (WA10 and WA11) and use of the environmental conditioning firing chamber (MS8) would require coordinating with ADF&G to limit disturbance during the sandhill crane migration periods if non-winter testing were to occur. Because of these existing agreements that limit disturbance, only a minor adverse impact to birds would be expected.

4.8.3 Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the specific analyses discussed above in sections 4.8.1 and 4.8.2 is no different than the analytical results would be for Action Alternative 2. Changing procedures would not make a difference in the potential type and intensity of impacts to wildlife and fisheries from CRTC testing at DTA.

4.9 CULTURAL RESOURCES

The innate character of cultural resources makes any impact potentially irreversible and the potential loss of data irretrievable. The definitions of significant and insignificant (listed in the bullets below) are based on this general concept. The impact analysis was conducted based on the probability of disturbance to sites considered eligible for listing on the National Register of Historic Places (NRHP) and those sites identified but yet to be evaluated for eligibility for listing on the NRHP. Evaluated sites that were 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.

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 a historic district or National Landmark losing its National Register of Historic Places (NRHP) designation, would represent a significant impact.

The following bullets provide general descriptions of the type of impacts that were considered for 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.

- *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.
- *Loss of historic structure* includes direct impacts that would result in the destruction or demolition of any NRHP eligible historic structure.
- *Alteration of cultural viewshed* includes direct or cumulative impacts that would alter the associated viewshed of a historic property or landscape by altering the feeling, setting, or association of the property by altering the visual landscape associated with that property.
- *Facility construction* includes direct impacts created by construction activities that would affect any historic resources, such as road excavation and grading, 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.

US Army Garrison Fort Wainwright and US Army Garrison Fort Greely will continue implementation of their current Integrated Cultural Resources Management Plans (ICRMP). The ICRMPs contain specific guidelines for the inventory, nomination to the 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. CRTC will also conduct Section 106 consultation under the National Historic Preservation Act (NHPA) regarding the proposed site-specific infrastructure projects and tests that have the potential to disturb cultural resources (such as tests with a ground-disturbing component). 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 implementation of any resulting mitigation measures.

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 site-specific infrastructure improvement projects. The definition of Area of Potential Effect (APE) within this document refers to an estimated buffer that was established around each of the proposed projects sites (as described in Proposed Action Alternative 1 and Action Alternative 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.

4.9.1 No Action

Current testing and test support cause none to minor impacts to cultural resources on DTA. CRTC would continue operating on various ranges and training areas where archaeological

resources have either been identified or are possibly present (but have not yet been surveyed). CRTC must adhere to SOPs and BMPs already in place that guide land use on DTA, particularly regulations detailed in USAG Fort Wainwright Regulation 350-1, Training and Range Operations. Severe adverse impacts can occur if vehicle tests are conducted off road or over known archaeological sites. These impacts are mitigated to none to minor through the use of SOPs such as only driving vehicles on existing roads and trails. When planning driving courses, test officers and the environmental office consult the Environmental Pre-Approval Overlays or the Culturally Restricted Sites map to avoid sensitive areas.

Currently there are no historic structures or buildings on DTA that are formally listed on the NRHP. CRTC's three buildings on Fort Greely were determined to be eligible for the National Register under a Cold War historical context. In 2000, Fort Greely and the SHPO entered into a Memorandum of Agreement (MOA) concerning these structures. Under the MOA, Fort Greely prepared a Historic American Building Survey, which allows the Army to transfer, remodel, rehabilitate, or demolish Buildings 605, 608, 612, and others without consultation with the SHPO (FGA DPW 2006). Nevertheless, in the future, if a resource has the potential for eligibility under NRHP, any adverse effects to the resource would be discussed and coordinated with the SHPO pursuant to 36 CFR Part 800 of the NHPA.

Weapons fire can also cause ground disturbance at the projectile impact point. Impact areas are not surveyed for archaeological resources due to the danger of unexploded ordnance, so a quantification of this impact is not possible. As a result, the impact to archaeological resources within the impact area is unknown. The impacts that could occur at the firing point (where the weapon is fired from) would be similar to vehicle testing impacts, representing a none to minor adverse impact, and mitigated through the use of SOPs mentioned above. The firing points are all existing modified and disturbed areas.

It would be unusual for clothing or individual Soldier equipment tests to have an impact on cultural resources at DTA. The potential for adverse impacts is none to minor and would be associated with test support activities, such as disturbance to a footpath from setting up a hiking course, or disturbance that could occur from driving across a drop zone to recover test equipment used in a parachute test. Disturbance from emergency spill cleanup could also occur.

Test support activities that could impact cultural resources would primarily be anything causing ground disturbance, such as installation of targets and range maintenance. These activities are usually confined to ranges that have been surveyed and have no known archaeological sites, or where the sites can be avoided. CRTC must adhere to SOPs and BMPs already in place that guide land use on DTA, particularly regulations detailed in USAG Fort Wainwright Regulation 350-1, Training and Range Operations. Severe adverse impacts can occur if test support activities occur on archaeological sites. These impacts are mitigated to minor through the use of SOPs and BMPs such as only driving vehicles on existing roads and trails, and consulting the Environmental Pre-Approval Overlays or the Culturally Restricted Sites map to avoid sensitive areas.

Most of CRTC's operational areas have been surveyed for cultural resources, which is the first step in knowing whether a proposed action will have an effect. Operational areas that have been surveyed since 2002 are Bolio Test Complex (including the area around the ASP), Texas Range, Mississippi Test Complex, the Mobility Test Complex, and Main Post Fort Greely.

Except for two small areas (totaling less than 20 acres), Washington Range has not been surveyed. The actively used portion of Washington Range is in the Delta River Floodplain where there is a low probability of finding any archaeological sites. Some of the outlying areas that CRTC uses have been surveyed, and some have not, particularly those areas west of the Delta River. These are reviewed on an individual basis as tests or test support operations are developed.

An assessment of impacts to cultural resources from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.13. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.13 Assessment of Cultural Resources Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs							
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial unk = unknown						
	Loss of archaeological site	Degradation of archaeological site	Loss of historic structure	Alteration of cultural viewshed	Facility construction	Impact to Sacred Site	Overall
Routine Tests							
Wheeled Vehicles < 15 Tons	○	⊙	○	○	○	unk	⊙
Wheeled Vehicles > 15 Tons	○	⊙	○	○	○	unk	⊙
Tracked Vehicles	○	⊙	○	○	○	unk	⊙
Unmanned Aerial Systems	○	○	○	○	○	unk	unk
Small Arms Weapons	○	○	○	○	○	unk	unk
Large-Caliber Direct Fire Weapons	○	⊙	○	○	○	unk	⊙
Large-Caliber Artillery	○	⊙	○	○	○	unk	⊙
Missiles and Rockets	○	⊙	○	○	○	unk	⊙
Minefield Clearer	○	⊙	○	○	○	unk	⊙
Demolitions and Intelligent Munitions	○	⊙	○	○	○	unk	⊙
Obscurants & Smoke Generators	○	○	○	○	○	○	○
Camping and Sporting Good-Type Items	○	○	○	○	○	○	○
Rations	○	○	○	○	○	○	○
Body Armor and Helmets	○	○	○	○	○	○	○
Generators	○	○	○	○	○	○	○
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	○	○	○	○
Radios	○	○	○	○	○	○	○
Ranging and Lasing Devices	○	○	○	○	○	○	○

Table 4.13 Assessment of Cultural Resources Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Continued)

Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial unk = unknown						
	Loss of archaeological site	Degradation of archaeological site	Loss of historic structure	Alteration of cultural viewshed	Facility construction	Impact to Sacred Site	Overall
Parachutes and Air Drop Items	○	⊙	○	○	○	○	⊙
Water Storage, Handling and Purification Equipment	○	⊙	○	○	○	unk	⊙
Petroleum Handling and Storage Equipment, Filters & Separators	○	⊙	○	○	○	unk	⊙
Clothing (and Boots)	○	○	○	○	○	○	○
Storage	○	○	○	○	○	unk	unk
Routine Test Support Activities							
Target Creation	○	○	○	○	○	○	○
Target Emplacement	○	○	○	⊙	○	○	⊙
Cameras (Video, High Speed Video, Still)	○	○	○	○	○	○	○
Lights	○	○	○	○	○	○	○
Radar	○	○	○	○	○	○	○
Use of Conditioning Chambers	○	○	○	○	○	○	○
Meteorological Stations	○	○	○	⊙	○	unk	⊙
Warm-Up Buildings and Portable Trailers	○	⊙	○	○	○	unk	⊙
Data Collection Instruments	○	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○	○
Generators	○	○	○	○	○	○	○
Fueling	○	○	○	○	○	○	○
Communication Connectivity	○	○	○	○	○	○	○
Surveys and Signage	○	⊙	○	⊙	○	unk	⊙
Equipment Maintenance and Repair	○	○	○	○	○	○	○
Projects and Maintenance							
Berms Creation and Maintenance	⊙	⊙	○	⊙	⊙	unk	⊙
Building Construction	⊙	⊙	⊙	⊙	⊙	unk	⊙
Building Demolition	○	○	⊙	⊙	⊙	unk	⊙
Culvert Installation	⊙	⊙	○	○	⊙	unk	⊙
Fence Installation or Repair	⊙	⊙	○	⊙	⊙	unk	⊙
Gravel Mining from Existing Borrow Pits	⊙	⊙	○	⊙	⊙	unk	⊙
Hardstand/Firing Pad Installation	⊙	⊙	○	⊙	⊙	unk	⊙
Road and Trail Creation and Maintenance	⊙	⊙	○	⊙	⊙	unk	⊙

Table 4.13 Assessment of Cultural Resources Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)

Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial unk = unknown						
	Loss of archaeological site	Degradation of archaeological site	Loss of historic structure	Alteration of cultural viewshed	Facility construction	Impact to Sacred Site	Overall
Target Installation and Maintenance	⊙	⊙	○	⊙	⊙	unk	⊙
Utility Line Creation and Maintenance	⊙	⊙	○	⊙	⊙	unk	⊙
UXO Surveys for Small Projects and Tests	⊙	⊙	○	○	○	○	⊙
Vegetation Clearing	⊙	⊙	○	⊙	○	unk	⊙

4.9.2 Action Alternative 1

An analysis of cultural resource impacts due to continued testing and test support activities is provided above in section 4.9.1. This analysis is the same for the part of Alternative 1 that deals with continued testing. The second part of Alternative 1 is to modernize and consolidate facilities by conducting site-specific infrastructure improvement projects to help ensure that CRTC's facilities are state-of-the-art and are most effective at testing future military technology. The analysis of impacts to cultural resources from these twenty-two projects is presented below.

Projects involving ground disturbance 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 moderate adverse) impacts following Section 106 of the NHPA pursuant to 36 CFR Part 800 and BMPs listed in appendix E.

Projects BL1, BL2, BL3, TX4, TX6, MS7, MS8, MS9, MTC14, MTC16, MTC17, and MTC18 are anticipated to have no cultural resources impacts. The projects all fall within areas that have been 100 percent surveyed for cultural resources. No cultural resources were identified in the potential APEs. Four additional projects (TX5, MTC15, DTA20, and DTA22) are also anticipated to create no adverse impacts to cultural resources. The potential APEs are within areas that have also been 100 percent surveyed. Six archaeological sites have been identified within the APE of project TX5, but none of the six sites are eligible for listing on the NRHP. MTC15 and DTA20 each have one archaeological site identified within the APE, neither of which is eligible for listing on the NRHP. Due to the scattered and small nature of the footprints for DTA22, it will be possible to avoid all archaeological sites within the overall project outline.

The potential locations for project DTA19 were determined by considering existing utilities that might someday need upgrading, locations of CRTC facilities that might need to be connected to the grid, and current existing proposals for additional utilities. Using these

estimated locations and the APEs, 75 percent have been surveyed for cultural resources. Implementation of DTA19 along with cultural resource BMPs is estimated to create minor impacts to cultural resources. There is one site eligible for NRHP inclusion, six sites not eligible, and six sites that have not been evaluated for inclusion, which would be treated as eligible resources until a full evaluation could be conducted. There is a potential for cultural resources to be identified in the portions of the project APE that fall on unsurveyed lands. Prior to beginning this project, CRTC will conduct a cultural resources survey of the proposed project's APE and consultation with the SHPO.

Projects WA10, WA11, WA12, WA13, and DTA21 are anticipated to create none to minor impacts to cultural resources. The APEs fall entirely within unsurveyed lands, thus there is the potential for cultural resources to be located in these areas. The three project APEs located in the Delta River floodplain (WA10, WA11 and WA13) have a low probability of containing archaeological sites due to their location in a floodplain. Projects WA12 and DTA21 have a higher probability of finding archaeological sites within the potential APEs. Prior to beginning these projects, CRTC will conduct cultural resources surveys of the proposed projects' APEs and will consult with the SHPO.

In all cases, CRTC would work with Cultural Resource managers and the SHPO to minimize impacts to cultural resources and comply with Section 106 of the NHPA. This would typically involve designing facilities to avoid cultural resource sites or selecting alternate locations where cultural resources are not present.

4.9.3 Action Alternative 2

The specific analyses discussed above in sections 4.9.1 and 4.9.2 is no different than the analytical results would be for Action Alternative 2. The impacts to cultural resources from Alternative 2 would be no different from the impacts associated with Alternative 1.

4.10 AIRSPACE MANAGEMENT

Direct impacts are further discussed by the No Action and Action alternatives in sections 4.10.1 through 4.10.3. The following categories are used in assessing potential impacts resulting from the alternatives.

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.

CRTC uses restricted airspace (R2202) over DTA when testing weapons systems or aerial/aviation systems. When CRTC uses restricted airspace, the availability of this airspace for other users is adversely impacted. This is the main criteria for analyzing impacts on airspace

management. CRTC also uses Allen Army Controlled Fire Area (CFA); however, use of a CFA impacts the testing mission rather than the civilian aviation community or other military users. The responsibility lies totally with the CFA user to terminate activities so there is not an impact on aviation. Typically spotter aircraft, radar, or ground lookout positions are used to indicate if an aircraft might be approaching the area. There is no requirement for nonparticipating aircraft to avoid the airspace or to maintain communications with air traffic controllers. The testing mission must be suspended if visibility limits spotting aircraft and whenever aircraft enter the area.

4.10.1 No Action

Current testing and test support cause minor impacts to airspace management through decreasing availability of the airspace for other users and through a slight increase in traffic within local airspace. Weapons systems are the primary types of tests CRTC conducts that requires use of restricted airspace. Airspace closure is closely coordinated with DTA Range Control (and consequently the FAA) as part of the range reservation process. Closures last from a few hours to 2 or 3 days at a time. An individual test might require only a single airspace closure during the course of the test. Sometimes multiple items are fired for the same test, requiring airspace closures as many as ten times over the course of a winter. Testing can restrict airspace from as few as ten or twenty hours per year, to as many as 300 hours. CRTC's use of restricted airspace represents a minor impact on the overall availability of local airspace.

Individual Soldier equipment can also require the use of restricted airspace if aerial components are involved or if aviation systems are being tested (such as parachutes or unmanned aerial vehicles). Usually only one or two non-weapons system tests using restricted airspace are conducted per test season, if at all. Individual Soldier equipment tests have a minor impact on the availability of local airspace. Vehicle testing does not involve use of airspace, and neither does testing of clothing. Support and maintenance activities do not involve impacts to restricted airspace.

Bolio Test Complex, Texas Range, Mississippi Test Complex and Washington Range are all within restricted airspace. The Mobility Test Complex and Main Post are within Class D and E controlled airspace associated with Allen Army Airfield at Fort Greely. If a CRTC test requires the use of restricted or controlled airspace outside of these test complexes and ranges, there are many locations available within the outlying areas. If a test will not involve the use of airspace, the rest of DTA outside of a designated airspace is also available and avoids conflicts with other users.

An assessment of impacts to airspace management from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.14. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.14 Assessment of Airspace Management Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs	
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial
	CRTC use of restricted airspace
Routine Tests	
Wheeled Vehicles < 15 Tons	○
Wheeled Vehicles > 15 Tons	○
Tracked Vehicles	○
Unmanned Aerial Systems	⊙
Small Arms Weapons	○
Large-Caliber Direct Fire Weapons	⊙
Large-Caliber Artillery	⊙
Missiles and Rockets	⊙
Minefield Clearer	○
Demolitions and Intelligent Munitions	○
Obscurants & Smoke Generators	○
Camping and Sporting Good-Type Items	○
Rations	○
Body Armor and Helmets	○
Generators	○
NBC Alarms, Detectors, Masks, Decontamination Systems	○
Radios	○
Ranging and Lasing Devices	○
Parachutes and Air Drop Items	⊙
Water Storage, Handling and Purification Equipment	○
Petroleum Handling and Storage Equipment, Filters & Separators	○
Clothing (and Boots)	○
Storage	○
Routine Test Support Activities	
Target Creation	○
Target Emplacement	○
Cameras (Video, High Speed Video, Still)	○
Lights	○
Radar	⊙
Use of Conditioning Chambers	○
Meteorological Stations	○
Warm-Up Buildings and Portable Trailers	○
Data Collection Instruments	○
Spare Parts, Service Items, POLs	○
Generators	○
Fueling	○

Table 4.14 Assessment of Airspace Management Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)	
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial
	CRTC use of restricted airspace
Communication Connectivity	○
Surveys and Signage	○
Equipment Maintenance and Repair	○
Projects and Maintenance	
Berms Creation and Maintenance	○
Building Construction	○
Building Demolition	○
Culvert Installation	○
Fence Installation or Repair	○
Gravel Mining from Existing Borrow Pits	○
Hardstand/Firing Pad Installation	○
Road and Trail Creation and Maintenance	○
Target Installation and Maintenance	○
Utility Line Creation and Maintenance	○
UXO Surveys for Small Projects and Tests	○
Vegetation Clearing	○

4.10.2 Action Alternative 1

The airspace management impact analysis provided above for the No Action Alternative is equally applicable to the part of this alternative that concerns continued testing. Modernizing facilities through site-specific infrastructure improvement projects will have no effect on airspace management. Projects MTC14, MTC15, MTC16, MTC17, and MTC18 are outside of restricted airspace and will have no adverse impacts. DTA19 and DTA22 are both inside restricted airspace and outside, but will have no adverse impacts. The remaining projects (BL1, BL2, BL3, TX4, TX5, TX6, MS7, MS8, MS9, WA10, WA11, WA12, WA13, DTA20, and DTA21) are all within existing restricted airspace. However, these projects do not propose any changes in airspace designation, and will not have any associated changes in frequency, duration, or timing of restricted airspace use. Consequently, there will be no adverse impacts to airspace management from modernizing facilities.

4.10.3 Action Alternative 2

The specific analyses discussed above in sections 4.10.1 and 4.10.2 is no different than the analytical results would be for Action Alternative 2. The impacts to airspace management from Alternative 2 would be no different from the impacts associated with Alternative 1.

4.11 PUBLIC ACCESS, RECREATION, AND SUBSISTENCE

Direct impacts are further discussed by the No Action and Action alternatives in sections 4.11.1 through 4.11.3. The following categories are used in assessing potential impacts resulting from the alternatives.

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.

For analysis of the impacts to public access, recreation, and subsistence, CRTC used the following general descriptions of the type of impacts:

- *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 operation of a facility for testing.
- *Reduced recreational use* includes an occasional closure of an area due to construction and operation of a facility for testing.
- *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 projects or activities which either reduce or eliminate the subsistence activities within a particular area.

4.11.1 No Action

Current testing and test support cause none to minor (insignificant) impacts to public access, recreation, and subsistence on a regional basis. Test activities would continue primarily in the winter (95% of tests) when there is less demand for recreational use of DTA, and primarily in areas already off limits to public use. Vehicle testing on secondary roads and on trails on DTA usually does not require closure of any training areas, representing no impact to public access. CRTC weapons test activities temporarily close portions of DTA in the Meadows and Windy Ridge road areas once or twice each winter. Closures vary from several hours to several days. Clothing and individual Soldier equipment testing usually does not require any special closures.

Most test set-up and test range maintenance activities do not require closures to the public. Test support for any tests outside of the established off-limits areas may require closures once sensitive equipment is placed on site up through the time that testing is complete. This is not

common and represents a minor impact to the regional availability of recreational activities, access to public lands, or subsistence opportunities. Test range maintenance would have no impact on public access because it can be conducted without the need for additional land use restrictions.

The Bolio Test Complex and the Mississippi Test Complex are fenced and off limits to unauthorized individuals. The test track and administrative area of the Mobility Test Complex are also fenced with restricted access. The portion of the Mobility Test Complex that will be used for the cross-country course would be designated off limits to unauthorized vehicles. Permanently closing this area to all but pedestrian traffic represents a moderate impact to the regional availability of recreational activities, access to public lands, or subsistence opportunities. Texas Range and Washington Range are posted off limits to unauthorized individuals, including for recreation and subsistence. Access to Main Post Fort Greely is under the authority of Fort Greely and is usually off limits to unauthorized individuals. Recreation and subsistence activities for people with access to Fort Greely are further restricted by Garrison rules and regulations. Because of these pre-existing access restrictions to CRTC's operational areas, the outlying areas of DTA are the only places testing and test support activities may have an impact on public access, recreation, and subsistence. Any time tests are planned in the outlying areas that have a security restriction or public safety concern, the training areas that CRTC reserves through DTA Range Control would be placed temporarily off limits to the public. This amounts to a minor impact on the regional availability of recreational activities, access to public lands, or subsistence opportunities.

An assessment of impacts to public access, recreation, and subsistence from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.15. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.15 Assessment of Public Access, Recreation, and Subsistence Impacts from Routine Testing, Support, Projects and Maintenance, 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 (beneficial)	Impact to subsistence activities	Overall
Routine Tests						
Wheeled Vehicles < 15 Tons	○	○	○	○	○	○
Wheeled Vehicles > 15 Tons	○	○	○	○	○	○
Tracked Vehicles	○	○	○	○	○	○
Unmanned Aerial Systems	○	○	⊙	○	○	⊙
Small Arms Weapons	○	○	⊙	○	○	⊙
Large-Caliber Direct Fire Weapons	○	○	⊙	○	○	⊙
Large-Caliber Artillery	○	○	⊙	○	○	⊙
Missiles and Rockets	○	○	⊙	○	○	⊙
Minefield Clearer	○	○	○	○	○	○
Demolitions and Intelligent Munitions	○	○	○	○	○	○
Obscurants & Smoke Generators	○	○	⊙	○	○	⊙
Camping and Sporting Good-Type Items	○	○	○	○	○	○
Rations	○	○	○	○	○	○
Body Armor and Helmets	○	○	○	○	○	○
Generators	○	○	⊙	○	○	⊙
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	⊙	○	○	⊙
Radios	○	○	○	○	○	○
Ranging and Lasing Devices	○	○	⊙	○	⊙	⊙
Parachutes and Air Drop Items	○	○	⊙	○	○	⊙
Water Storage, Handling and Purification Equipment	○	○	⊙	○	○	⊙
Petroleum Handling and Storage Equipment, Filters & Separators	○	○	⊙	○	○	⊙
Clothing (and Boots)	○	○	○	○	○	○
Storage	○	○	○	○	○	○
Routine Test Support Activities						
Target Creation	○	○	○	○	○	○
Target Emplacement	○	○	○	○	○	○
Cameras (Video, High Speed Video, Still)	○	○	○	○	○	○

Table 4.15 Assessment of Public Access, Recreation, and Subsistence Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)

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 (beneficial)	Impact to subsistence activities	Overall
Lights	○	○	○	○	○	○
Radar	○	○	○	○	○	○
Use of Conditioning Chambers	○	○	○	○	○	○
Meteorological Stations	○	○	○	○	○	○
Warm-Up Buildings and Portable Trailers	○	○	○	○	○	○
Data Collection Instruments	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○	○
Generators	○	○	○	○	○	○
Fueling	○	○	○	○	○	○
Communication Connectivity	○	○	○	○	○	○
Surveys and Signage	○	○	○	○	○	○
Equipment Maintenance and Repair	○	○	○	○	○	○
Projects and Maintenance						
Berms Creation and Maintenance	○	○	○	○	○	○
Building Construction	○	○	○	○	○	○
Building Demolition	⊙	○	○	○	○	⊙
Culvert Installation	○	○	○	○	○	○
Fence Installation or Repair	○	⊙	⊙	○	⊙	⊙
Gravel Mining from Existing Borrow Pits	○	○	○	○	○	○
Hardstand/Firing Pad Installation	○	○	○	○	○	○
Road and Trail Creation and Maintenance	⊙	○	○	☆	○	☆
Target Installation and Maintenance	○	○	○	○	○	○
Utility Line Creation and Maintenance	⊙	○	○	○	○	⊙
UXO Surveys for Small Projects and Tests	○	○	○	○	○	○
Vegetation Clearing	○	○	○	○	○	○

4.11.2 Action Alternative 1

Construction of the proposed infrastructure improvement projects would have a beneficial to minor adverse impact overall on the regional availability of recreational activities, access to public lands, and subsistence opportunities. Most of the projects that are planned for the various CRTC test complexes and ranges are already off limits to the public for security and safety reasons. Projects BL1, TX6, MS7, MS8, MS9, MTC14, MTC16, MTC17, and MTC18 are within fenced areas. Projects TX4, TX5, WA10, WA11, WA12, and WA13 are within restricted access ranges that are posted as off limits to the public. Public access would not be additionally adversely impacted by the construction of these fifteen projects. Designating the cross-country course at the Mobility Test Complex (MTC15) as off limits to vehicles would impose new restrictions on approximately 2,500 acres, and represents a moderate adverse impact to public use of this area (pedestrian traffic only). It does not reach the significant level since the closure does not affect an important public access point or eliminate the regional availability of a particular recreational or subsistence opportunity. As this project is developed, agreements with USAG Fort Wainwright will be negotiated to mitigate any adverse affects of limiting access to this area. Protocols would be developed with USAG Fort Wainwright and USARAK Range Control to allow for resource management access and to allow testing and training missions to both be accomplished while protecting the trail resource for test consistency. This might involve restrictions on use of certain trail sections, but will have to be acceptable to both CRTC and the land owners.

The projects planned for the outlying areas of DTA would have an overall minor impact on the regional availability of recreational activities, access to public lands, and subsistence opportunities. Construction of a laser range in DTA West (DTA21) would have a minor impact through reduced opportunities for recreation and subsistence. Current estimates for temporary closures when the range is in use would be for about 62,700 acres. The greatest time of use by the public for that area is during hunting season in September. These two (hunting and testing) demands for land use in DTA West so rarely overlap that the impact from construction of this range would be minor. Projects BL3 and DTA19 might cause a temporary adverse impact to public access during construction. Project BL2 would have no impacts to public access, recreation, or subsistence. Improvements to OP 26 (DTA20) would be within the existing developed area, which is not fenced. Impacts to public access, recreation, and subsistence from this project would be none to minor. DTA22 adds targets within the general area of the existing laser range, which would not increase the existing minor adverse impact due to the occasional closure of approximately 11,200 acres for laser testing. During the first two test seasons since the first set of targets were installed, the area was used 45 days with these areas being closed for 24 days in November, December and January. The other 21 days of use were compatible with recreational use of the area.

4.11.3 Action Alternative 2

The specific analyses discussed above in sections 4.11.1 and 4.11.2 is no different than the analytical results would be for Action Alternative 2. The impacts to public access, recreation, and subsistence from Action Alternative 2 would be no different from the impacts associated with Action Alternative 1.

4.12 NOISE

The impacts of noise from local training and test activities have been expressed as a concern by the surrounding community for many years. The majority of the noise concerns from the community pertain to firing larger caliber weapons, bombing, and low-flying aircraft, particularly at night. The following criteria were used in determining severity of impacts.

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 the 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 to encroach into areas with noise-sensitive land uses was largely determined by a construction site's distance to such areas. Within DTA/Fort Greely, noise-sensitive areas considered for purposes of this analysis included areas open to recreational users and the cantonment area. Outside DTA/Fort Greely, Delta Junction and the general Deltana community bordering the installation 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 to encroach into areas with noise-sensitive land uses was largely determined by a new facility's distance to such areas.

4.12.1 No Action

The noise CRTC contributes to the overall noise on DTA includes small-caliber weapons fire, artillery, demolitions, vehicle operations, and missile and rocket firing. This level represents a minor adverse impact. Test support activities also cause noise similar to general construction noises (heavy equipment working, for example).

CRTC operates a meteorological instrument called a SODAR (Sonic Detection and Ranging) which measures the scattering of sound waves by atmospheric turbulence. It is used to remotely measure wind speed, direction and turbulence of the lower layer of the atmosphere. Without any acoustic shielding, the SODAR's operational noise – a scale of tones - can regularly be heard at distances greater than 2 miles away. There are SODARs at Mississippi Test Complex, Texas Range, and Washington Range.

The primary locations of noise generation for CRTC activities are at the test ranges. For weapons firing and demolitions, Texas and Washington Ranges are the most commonly used, with the Wills Small Arms Complex used less often. Vehicle operations are concentrated at the Mobility Test Complex, but also roads and trails throughout DTA East may be used depending on test requirements. Noise from test support activities also primarily occurs at the test ranges and complexes, including activities at the three buildings on Main Post Fort Greely. Generally, the noises from test events happen during the winter. Test and test support-related noise could occur any time of year, but is more frequent during the winter test season. CRTC-generated noise varies with the quantity of tests being conducted at DTA (see table C-1 in appendix C for a listing of recent tests). To date, CRTC personnel know of no noise complaints filed by the public because of test activities.

An assessment of noise impacts from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.16. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.16 Assessment of Noise Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs					
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial				
	Nature and size of a construction project	Proximity of construction projects to noise-sensitive land uses	Proximity of a new facility to noise-sensitive land uses	Noise disturbance to people and noise-sensitive land uses (operations)	Overall
Routine Tests					
Wheeled Vehicles < 15 Tons	○	○	○	⊙	⊙
Wheeled Vehicles > 15 Tons	○	○	○	⊙	⊙
Tracked Vehicles	○	○	○	⊙	⊙
Unmanned Aerial Systems	○	○	○	⊙	⊙
Small Arms Weapons	○	○	○	⊙	⊙
Large-Caliber Direct Fire Weapons	○	○	○	⊙	⊙
Large-Caliber Artillery	○	○	○	⊙	⊙
Missiles and Rockets	○	○	○	⊙	⊙
Minefield Clearer	○	○	○	○	○
Demolitions and Intelligent Munitions	○	○	○	⊙	⊙
Obscurants & Smoke Generators	○	○	○	○	○
Camping and Sporting Good-Type Items	○	○	○	○	○
Rations	○	○	○	○	○

Table 4.16 Assessment of Noise Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Continued)

Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial				
	Nature and size of a construction project	Proximity of construction projects to noise-sensitive land uses	Proximity of a new facility to noise-sensitive land uses	Noise disturbance to people and noise-sensitive land uses (operations)	Overall
Body Armor and Helmets	○	○	○	○	○
Generators	○	○	○	⊙	⊙
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	○	○
Radios	○	○	○	○	○
Ranging and Lasing Devices	○	○	○	○	○
Parachutes and Air Drop Items	○	○	○	⊙	⊙
Water Storage, Handling and Purification Equipment	○	○	○	⊙	⊙
Petroleum Handling and Storage Equipment, Filters & Separators	○	○	○	⊙	⊙
Clothing (and Boots)	○	○	○	○	○
Storage	○	○	○	○	○
Routine Test Support Activities					
Target Creation	○	○	○	○	○
Target Emplacement	⊙	○	○	○	⊙
Cameras (Video, High Speed Video, Still)	○	○	○	○	○
Lights	○	○	○	○	○
Radar	○	○	○	○	○
Use of Conditioning Chambers	○	○	○	○	○
Meteorological Stations	⊙	○	○	⊙	⊙
Warm-Up Buildings and Portable Trailers	⊙	○	○	⊙	⊙
Data Collection Instruments	○	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○	○
Generators	⊙	○	○	⊙	⊙
Fueling	⊙	○	○	○	⊙
Communication Connectivity	○	○	○	○	○
Surveys and Signage	⊙	○	○	○	⊙
Equipment Maintenance and Repair	○	○	○	○	○
Projects and Maintenance					
Berms Creation and Maintenance	⊙	○	○	○	⊙

Table 4.16 Assessment of Noise Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)					
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ⊕ = beneficial				
	Nature and size of a construction project	Proximity of construction projects to noise-sensitive land uses	Proximity of a new facility to noise-sensitive land uses	Noise disturbance to people and noise-sensitive land uses (operations)	Overall
Building Construction	⊙	⊙	○	○	⊙
Building Demolition	⊙	⊙	○	○	⊙
Culvert Installation	⊙	⊙	○	○	⊙
Fence Installation or Repair	⊙	⊙	○	○	⊙
Gravel Mining from Existing Borrow Pits	⊗	⊙	⊙	○	⊗
Hardstand/Firing Pad Installation	⊙	⊙	⊙	○	⊙
Road and Trail Creation and Maintenance	⊙	⊙	⊙	○	⊙
Target Installation and Maintenance	⊙	○	○	○	⊙
Utility Line Creation and Maintenance	⊙	⊙	○	○	⊙
UXO Surveys for Small Projects and Tests	⊙	○	○	○	⊙
Vegetation Clearing	⊗	⊙	○	○	⊗

4.12.2 Action Alternative 1

The overall levels of noise impact from site specific projects at DTA would range from none to minor. All projects are well within the installation boundary and would not contribute to long-term significant levels of noise impacts outside of the installation. Most of the impacts would occur from construction activities and would temporarily impact recreational users of DTA during the course of construction (Projects BL1, BL2, BL3, TX4, TX5, TX6, MS7, MS8, MS9, WA10, WA11, WA12, WA13, MTC14, MTC15, MTC16, MTC17, MTC18, DTA19, DTA20 and DTA22). New range construction (TX4, WA10, WA11, and DTA21) would result in noise from weapons firing however, these projects would not result in increased testing or a relocation of testing, and therefore there would be no net increase or change in noise levels. Firing on these ranges would result in minor noise levels to the community of Delta Junction. Several projects would result in somewhat increased vehicle movement resulting in minor noise for any recreational users in the area (TX4, MTC15, DTA20, and DTA21). Outside of temporary impacts associated with construction, overall noise levels would be commensurate with the noise levels detailed in the no action alternative because the amount and types of testing conducted by CRTC will not change.

4.12.3 Action Alternative 2

Changing how environmental impacts are analyzed would not significantly affect impacts associated with noise. This procedural change would not alter types of testing being conducted or facilities constructed. CRTC would still comply with all applicable noise regulations.

4.13 LAND USE, ENERGY AND UTILITIES

Direct impacts of the proposed action to land use, energy, and utilities were analyzed using the following categories listed in table 4.1.

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, CRTC used the following 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 operation of a proposed facility.
- *Increased utility demand* includes an increased demand for utilities resulting from construction and operation of a proposed facility.

Overall, only minor changes to land use are expected as a result of the Proposed Action. Additional demand for energy and utilities would be minor. Routine testing, test support activities, and facilities upgrades will have little impact on land use, energy, or utilities.

4.13.1 No Action

Current testing and test support cause none to minor impacts to land use since these actions are compatible with the existing military land uses on DTA and Fort Greely. All military land users coordinate their activities through the DTA Range Control scheduler which minimizes potential land use conflicts. No impacts to adjacent land use occur from testing or test support.

Under the No Action Alternative, CRTC would only increase demand for either energy or utilities by a minor amount when buildings are constructed, targets are installed or additional utility lines are installed (considered as routine projects and maintenance, not as part of the planned projects analyzed in Action Alternative 1). Demand for energy and utilities would

decrease if buildings are demolished. Overall environmental impacts would be similar to those experienced in the last five years. No land use changes would be needed, energy demands would remain relatively stable, and utilities would not need upgrades beyond regular maintenance. Demand for energy and utilities on main post by CRTC would remain the same under the No Action Alternative.

An assessment of impacts to land use, energy and utilities from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.17. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.17 Assessment of Land Use, Energy and Utilities Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs				
Routine Action	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
Routine Tests				
Wheeled Vehicles < 15 Tons	○	○	○	○
Wheeled Vehicles > 15 Tons	○	○	○	○
Tracked Vehicles	○	○	○	○
Unmanned Aerial Systems	○	○	○	○
Small Arms Weapons	○	○	○	○
Large-Caliber Direct Fire Weapons	○	○	○	○
Large-Caliber Artillery	○	○	○	○
Missiles and Rockets	○	○	○	○
Minefield Clearer	○	○	○	○
Demolitions and Intelligent Munitions	○	○	○	○
Obscurants & Smoke Generators	○	○	○	○
Camping and Sporting Good-Type Items	○	○	○	○
Rations	○	○	○	○
Body Armor and Helmets	○	○	○	○
Generators	○	○	○	○
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	○
Radios	○	○	○	○
Ranging and Lasing Devices	○	○	○	○
Parachutes and Air Drop Items	○	○	○	○
Water Storage, Handling and Purification Equipment	○	○	○	○

Table 4.17 Assessment of Land Use, Energy and Utilities Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs & BMPs (Concluded)

Routine Action	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
Petroleum Handling and Storage Equipment, Filters & Separators	○	○	○	○
Clothing (and Boots)	○	○	○	○
Storage	○	○	○	○
Routine Test Support Activities				
Target Creation	○	○	○	○
Target Emplacement	○	○	○	○
Cameras (Video, High Speed Video, Still)	○	○	○	○
Lights	○	○	○	○
Radar	○	○	○	○
Use of Conditioning Chambers	○	○	○	○
Meteorological Stations	○	○	○	○
Warm-Up Buildings and Portable Trailers	○	○	○	○
Data Collection Instruments	○	○	○	○
Spare Parts, Service Items, POLs	○	○	○	○
Generators	○	○	○	○
Fueling	○	○	○	○
Communication Connectivity	○	○	○	○
Surveys and Signage	○	○	○	○
Equipment Maintenance and Repair	○	○	○	○
Projects and Maintenance				
Berms Creation and Maintenance	○	○	○	○
Building Construction	○	⊙	⊙	⊙
Building Demolition	○	☆	☆	☆
Culvert Installation	○	○	○	○
Fence Installation or Repair	○	○	○	○
Gravel Mining from Existing Borrow Pits	○	○	○	○
Hardstand/Firing Pad Installation	○	○	○	○
Road and Trail Creation and Maintenance	○	○	○	○
Target Installation and Maintenance	○	⊙	○	⊙
Utility Line Creation and Maintenance	○	○	⊙	⊙
UXO Surveys for Small Projects and Tests	○	○	○	○
Vegetation Clearing	○	○	○	○

4.13.2 Action Alternative 1

With regard to land use, all projects are located on land that was withdrawn from the public domain for military purposes (USARAK 1999). With one minor exception detailed below, projects are all sited in areas where similar types of military activities currently take place. Examples include creating an 8 km direct fire range at Washington Range and constructing an environmental-conditioning chamber at the Mobility Test Complex. Lands currently open to recreation and subsistence would still be available after implementation of the projects. No additional fencing would be required.

Construction of a laser range in DTA West (DTA21) and installation of permanent laser targets (DTA22) would result in a minor land use change for the associated training areas. Currently, these training areas are open for recreational use. When non-eye safe lasers are fired, recreational use, to include hunting, would have to be temporarily restricted. Restriction may last from a few hours a day to several days. The area might be closed three or four times in a typical winter test season. It is unlikely that these areas would be used during the summer or autumn for laser testing.

Concerning electrical infrastructure demands, the on-going upgrades, and expansions by Doyon Utilities should be sufficient to meet the needs of new CRTC facilities. CRTC, through Doyon, would install new electrical lines to various range facilities that would replace portable generators (Projects WA10, WA11, WA13 and DTA19). This would eliminate the need to transport and burn fuel, but add a minor additional electrical demand to the larger grid. Facility renovation and replacement would increase energy efficiency of affected buildings. This would reduce the demand for electricity and heating fuel, resulting in a minor positive impact. Overall impact to the electrical infrastructure is neutral.

Doyon Utilities also provides water and wastewater services. All of the existing CRTC facilities outside of Main Post are served by septic systems and ground water wells. The Bolio Lake Building 1928 addition (Project BL1), the new facilities at the Mobility Test Complex (Projects MTC16, MTC17, and MTC18), and upgrades of basic infrastructure at Washington Range (Project WA13) would require additional wastewater treatment capacity using septic tanks. Because industrial wastewater discharges from wash racks and oil/water separators cannot be discharged to septic tanks, the Mobility Test Complex maintenance facility would require either a sanitary sewer connection to Fort Greely or a holding tank (allowing wastewater to be pumped and trucked to Fort Greely). Because this facility would replace those on Fort Greely, this would not result in any increase demand for water or the wastewater treatment plants. Overall, impacts to water and wastewater infrastructure would be insignificant (no impact) and transparent to the local community.

In the next ten years, increasing communications needs associated with ever-expanding requirements for data connectivity necessitate constant upgrade to the Center's communication infrastructure. Specifically, various network upgrades on the ranges and various test complexes (Projects BL1, BL3, TX6, MS7, MS8, WA10, WA11, WA13, MTC14, MTC15, MTC16, MTC17, MTC18, DTA19, and DTA20) would result in minor increases to bandwidth requirements. Corporate telecommunications companies provide the Army network connectivity

to locations outside Fort Greely and DTA; there would be minor additional bandwidth demand on these companies. Increased demand for bandwidth by the Army would likely result in additional capacity being installed, benefiting the local community. This would be a minor positive impact.

4.13.3 Action Alternative 2

Using enhanced environmental review procedures would help identify larger cumulative impacts associated with CRTC testing and infrastructure development, should any occur. When considered with USARAK and other local projects, utility planners will be better able to identify future capacity requirements. Overall, this is a minor positive impact.

4.14 HUMAN HEALTH, SAFETY, AND HAZARDOUS SUBSTANCES

CRTC used the following categories from table 4.1 to assess the intensity of potential direct impacts resulting from each alternative:

Minor to Moderate (insignificant) – (a) The degree to which activities affect, or pose the potential to affect, the health and safety of persons on and off-post. (b) The degree to which activities increase the potential for environmental or human exposure to hazardous materials and waste.

Severe (significant) – (a) Activities that violate established Federal, State, and local health and safety laws and regulations would represent a significant impact. (b) Activities that violate applicable regulations or that seriously threaten or cause exposure to hazardous substances capable of causing imminent and substantial endangerment to human health and the environment would represent a significant impact.

The following bullets provide general descriptions of the type of impacts used in the human health, safety, and hazardous substances analysis:

- *Health and safety risk to people on and off-post (construction)* includes all health and safety risks to CRTC personnel, military, any other personnel, and the general public from construction activities
- *Health and safety risk to people on and off-post (operations)* includes all health and safety risks to CRTC personnel, military, any other personnel, and the general public from testing and test support activities
- *Hazardous materials or waste exposure risk (construction)* includes exposure risks to the environment or people during construction
- *Hazardous materials or waste exposure risk (operations)* includes exposure risks to the environment or people from testing and test support activities

- *Improvement to health and safety conditions (beneficial)* includes projects or conditions that improve the occupational safety and health of employees or of the general public

To analyze the impacts of continued cold regions environmental testing (see section 4.14.1), observed impacts of past training and testing activities were used to judge expected impacts from continued routine testing and test support activities. For the infrastructure improvement projects (see section 4.14.2), impacts were analyzed using the best available information about the proposed site-specific projects

4.14.1 No Action

CRTC uses hazardous materials and generates hazardous waste during most of its test activities. Vehicle testing requires vehicle maintenance. Garage activities (e.g. tire changes, oil changes, battery charging, etc) require fuels, lubricants, solvents, adhesives, batteries and other products. Testing of weapons inherently involves discharging ammunition into the berms and impact areas. Depending upon the type of munitions, this could result in the release of heavy metals (e.g. lead) or energetic substances into soils. Nonetheless, the Army has conducted studies on the types of munitions fired at CRTC and previously found no significant impacts associated with the routine firing of conventional weapons (CRREL 2001b). CRTC does not and will not fire munitions containing radioactive materials such as depleted uranium. Weapons testing also requires that weapons be cleaned using solvents and lubricants. Small equipment tests vary considerably in the amount of hazardous materials used and wastes generated. A heater test burning propane will result in the generation of no hazardous wastes. A test of a laser locating module might result in the disposal of lithium batteries used to power the system. For this reason, the amount of waste generated from year to year will vary with the type and intensity of tests being conducted.

CRTC follows all state, Federal, Army, and installation laws and policies pertaining to the management of hazardous materials and hazardous waste. Hazardous materials (e.g. latex paint, lubricating aerosols, or car batteries) are carefully controlled within the Center to ensure they are stored properly, thereby preventing spills and releases to the environment. Hazardous and non-hazardous wastes are collected by a contractor and manifested off-site to an appropriate disposal facility. Because CRTC and other tenants within DTA generate little hazardous waste, EPA rules classify the Army within DTA as a conditionally exempt small quantity generator (less than 100 kilograms of hazardous waste on average per month or 1000 kilograms at any one time). Tenants on Main Post Fort Greely, to include CRTC, fall under the definition of a small quantity generator as well, given the small amounts of hazardous waste generated.

CRTC complies with all state, Federal, Army, and installation rules pertaining to spill response and countermeasures. CRTC maintains spill supplies at its facilities and on its test sites. Should a chemical or oil spill occur, it is quickly contained, containerized, and removed from the site as waste. In general, CRTC does not manage large quantities of hazardous materials – so the potential for spills is minimal. On average, CRTC has spilled less than 10 gallons of oil or fuels per year.

CRTC has little impact on local highway safety. CRTC routinely drives vehicles on trails and roads within DTA. Because its maintenance facilities are located on Main Post, CRTC must sometimes drive test vehicles to and from the test sites to Main Post Fort Greely on the Richardson Highway. Tracked vehicles would be transported to Main Post on a tractor trailer. On rare occasions, test personnel will drive vehicles on the highway for testing purposes – usually during commercial automotive testing or testing of GPS systems. CRTC personnel comply with all state and Federal highway safety standards when they do so.

Occupational safety of employees would remain the same under this alternative. Facilities would not be modernized, fire code violations would not be corrected, and the risks of injury to personnel and visitors would remain unchanged. For this reason, continuing with the No Action alternative would result in minor negative impact to safety.

Under the No Action Alternative, cold regions testing would continue at the present locations and rates. Negative impacts to human health, safety, and hazardous substances would be similar to those experienced in the last five years – which have been insignificant (minor).

An assessment of impacts to human health and safety, and impacts of hazardous substances from each routine test, test support action, and routine project and maintenance activities (described in appendix C) is detailed in table 4.18. The analysis was conducted on each type of impact described at the beginning of this section, and considered impacts of the routine actions with the SOPs and BMPs already in place (listed in appendix E).

Table 4.18 Assessment of Human Health, Safety, and Hazardous Substances Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs						
Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial					
	Health and safety risk to people on and off-post (construction)	Health and safety risk to people on and off-post (operations)	Hazardous materials or waste exposure risk to the environment or people (construction)	Hazardous materials or waste exposure risk to the environment or people (operations)	Improvement to health and safety conditions (beneficial)	Overall
Routine Tests						
Wheeled Vehicles < 15 Tons	○	⊙	○	⊙	○	⊙
Wheeled Vehicles > 15 Tons	○	⊙	○	⊙	○	⊙
Tracked Vehicles	○	⊙	○	⊙	○	⊙
Unmanned Aerial Systems	○	○	○	⊙	○	⊙
Small Arms Weapons	○	○	○	○	○	○

Table 4.18 Assessment of Human Health, Safety, and Hazardous Substances Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Continued)

Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial					
	Health and safety risk to people on and off-post (construction)	Health and safety risk to people on and off-post (operations)	Hazardous materials or waste exposure risk to the environment or people (construction)	Hazardous materials or waste exposure risk to the environment or people (operations)	Improvement to health and safety conditions (beneficial)	Overall
Large-Caliber Direct Fire Weapons	○	○	○	⊙	○	⊙
Large-Caliber Artillery	○	○	○	⊙	○	⊙
Missiles and Rockets	○	⊙	○	⊙	○	⊙
Minefield Clearer	○	○	○	○	○	○
Demolitions and Intelligent Munitions	○	⊙	○	⊙	○	⊙
Obscurants & Smoke Generators	○	○	○	⊙	○	⊙
Camping and Sporting Good-Type Items	○	○	○	⊙	○	⊙
Rations	○	○	○	○	○	○
Body Armor and Helmets	○	○	○	○	○	○
Generators	○	○	○	⊙	○	⊙
NBC Alarms, Detectors, Masks, Decontamination Systems	○	○	○	⊙	○	⊙
Radios	○	○	○	⊙	○	⊙
Ranging and Lasing Devices	○	○	○	⊙	○	⊙
Parachutes and Air Drop Items	○	○	○	○	○	○
Water Storage, Handling and Purification Equipment	○	○	○	⊙	○	⊙
Petroleum Handling and Storage Equipment, Filters & Separators	○	○	○	⊙	○	⊙
Clothing (and Boots)	○	○	○	○	○	○
Storage	○	○	○	○	○	○
Routine Test Support Activities						
Target Creation	⊙	○	⊙	○	○	⊙
Target Emplacement	○	⊙	○	⊙	○	⊙
Cameras (Video, High Speed Video, Still)	○	○	○	○	○	○
Lights	○	⊙	○	○	○	⊙
Radar	○	⊙	○	○	○	⊙
Use of Conditioning Chambers	○	○	○	○	○	○
Meteorological Stations	○	○	○	○	○	○

Table 4.18 Assessment of Human Health, Safety, and Hazardous Substances Impacts from Routine Testing, Support, Projects and Maintenance, and Implementation of SOPs and BMPs (Concluded)

Routine Action	Type and Intensity of Impact: ○ = none ⊙ = minor ⊗ = moderate ● = severe ☆ = beneficial					
	Health and safety risk to people on and off-post (construction)	Health and safety risk to people on and off-post (operations)	Hazardous materials or waste exposure risk to the environment or people (construction)	Hazardous materials or waste exposure risk to the environment or people (operations)	Improvement to health and safety conditions (beneficial)	Overall
Warm-Up Buildings and Portable Trailers	○	⊙	○	⊙	○	⊙
Data Collection Instruments	○	○	○	○	○	○
Spare Parts, Service Items, POLs	○	⊙	○	⊙	○	⊙
Generators	○	⊙	○	⊙	○	⊙
Fueling	○	⊙	○	⊙	○	⊙
Communication Connectivity	○	○	○	○	○	○
Surveys and Signage	○	○	○	○	○	○
Equipment Maintenance and Repair	○	⊙	○	⊙	○	⊙
Projects and Maintenance						
Berms Creation and Maintenance	⊙	⊙	⊙	○	○	⊙
Building Construction	⊙	○	⊙	○	○	⊙
Building Demolition	⊙	○	⊗	○	☆	⊗
Culvert Installation	⊙	○	⊙	○	○	⊙
Fence Installation or Repair	○	○	○	○	○	○
Gravel Mining from Existing Borrow Pits	⊙	⊙	⊙	⊙	○	⊙
Hardstand/Firing Pad Installation	⊙	○	⊙	○	○	⊙
Road and Trail Creation and Maintenance	⊙	○	⊙	○	☆	⊙
Target Installation and Maintenance	⊗	⊙	⊙	⊙	○	⊗
Utility Line Creation and Maintenance	⊙	○	⊙	○	○	⊙
UXO Surveys for Small Projects and Tests	○	⊗	○	⊙	☆	⊗
Vegetation Clearing	⊙	○	⊙	○	○	⊙

4.14.2 Action Alternative 1

Facility construction and other range improvements, as described in table 2.2, would result in only a minor temporary increase in the use of hazardous materials, primarily during the construction process. Paints and adhesives are used during building construction; these are

generally used to depletion and do not result in the generation of hazardous waste. Heavy equipment used during construction might leak, resulting in small spills of petroleum, antifreeze, or battery acid. These would be cleaned up in accordance with local procedures.

A few of the projects in table 2.2 would result in additional or decreased hazardous materials usage and waste generation. Demolition of the Quonset hut at Texas Range (Project TX6) would result in the generation of construction debris. Due to the age of the building and its prior use as a maintenance facility, there is a possibility that some of this construction debris could be contaminated with petroleum products or antifreeze. The building is also likely painted with lead-based paint, which would be disposed of in accordance with RCRA requirements. Construction of a controlled-climate firing chamber at Mississippi (Project MS8) would be similar to that of other facilities constructed; however, the cold chamber itself would require refrigerants. Because historic contamination has been found in the vicinity of the construction site, there is the possibility that construction could unearth additional contamination that would have to be removed and remediated in accordance with applicable standards. Remediation of discovered contamination would be a positive impact. Demolition of the old storage building at Mississippi (Project MS9) would result in generation of construction debris and possibly asbestos- or lead-containing waste. Removal of the asbestos would be a positive impact for the health and safety of employees, but removing asbestos, adding it to the waste stream, and potential disposal by landfilling would be considered a minor negative impact, resulting in an overall neutral impact. Upgrades to electrical infrastructure on the ranges (Project WA10, WA11, WA13, and DTA19) would decrease the need to use portable generators; this would result in fewer spills of fuel on test sites. This would be a minor positive impact. Construction of a new maintenance facility at the Mobility Test Complex (Project MTC16) would require that a holding tank be installed to capture wastewater from the oil/water separator, potentially resulting in spills of industrial wastewater during shipment. This wastewater would have to be pumped and trucked to Fort Greely for disposal at the wastewater treatment plant. Alternatively, a direct connection to the Fort Greely sewer system could be plumbed (provided sufficient funding), minimizing any potential wastewater spills.

Consolidating CRTC's maintenance operations from Buildings 612 and 605 would also result in the move of hazardous materials, and associated waste generation, from Fort Greely to DTA, potentially moving DTA from a conditionally exempt small generator status to a small generator status. Further development at OP26 (Project DTA20) would result in additional use of hazardous materials associated with heavy equipment and vehicle maintenance at this site. These include batteries, fuels, oils, aerosols, and lubricants. A minor increase in spills associated with heavy equipment use and maintenance is possible. Overall, because the amount of testing would remain the same, it is not expected that this alternative would result in an increase in the amount of hazardous waste generated once facilities are upgraded. Impacts related to hazardous materials and wastes would be minor.

In general, safety for CRTC employees and visitors would be improved if this alternative were implemented. During construction and/or renovation, buildings would be upgraded to meet current fire and life safety codes, as well as energy efficiency. Demolition projects (Projects TX6 and MS9) would eliminate existing life safety and health hazards. Overall, these projects would have a minor positive impact on health and safety.

In summary, these projects represent a neutral to minor positive impact to management of hazardous substances and protection of public health and safety as compared to the No Action alternative.

4.14.3 Action Alternative 2

Changing how environmental impacts are analyzed would not significantly affect hazardous materials or safety issues. CRTC would use systematic approach to analyze which chemicals could be substituted to prevent pollution or waste generation. This would represent a minor improvement over Action Alternative 1. CRTC would still comply with all applicable life safety, health, and waste management regulations.

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SECTION 5. CUMULATIVE EFFECTS ANALYSIS

Though certain direct and indirect impacts related to the proposed action 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) CRTC evaluated the potential cumulative impacts of the Action Alternatives 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 PEA (Quick Look, Analysis and Discussion, and Detailed Analysis). The level of analysis taken was based on Quick Look questions outlined in the 2007 U.S. Army Environmental Center (USAEC) NEPA Analysis Guidance Manual. Quick look questions were used to determine if detailed cumulative effects analyses was needed for each resource or issue. If the answers to the quick look questions were not adverse, the likelihood of significant cumulative impacts was small and no further analysis was necessary. If the answer to a quick look question was less certain, a second level of analysis (Analysis and Discussion) was conducted. A third, more rigorous analysis (Detailed Analysis) was not needed for the resources and issues covered in this PEA. It would be used for issues that have definite, potentially significant, incremental impacts.

This cumulative effects analysis (CEA) considers direct and indirect impacts determined from the alternatives analysis presented in section 4; SOPs and BMPs that would apply and mitigate the impacts (see appendix E); the answers to the quick look questions; and the past, present, and future projects listed in table 5.1 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 CRTC, USARAK, or other Federal, state, and local projects outside of Army actions were identified as contributors to cumulative effects for the DTA region (table 5.1). In addition, this analysis takes into consideration the current and projected levels of military activity in Alaska analyzed in previous NEPA documents (see section 1.6). The No Action Alternative represents the existing baseline after all planned and previously analyzed actions have been implemented. This alternative considers that current testing and test support activities, including limited maintenance, will continue, but that no infrastructure improvements will be made. This PEA provides a comprehensive programmatic analysis of cold regions testing, test support activities and likely foreseeable infrastructure improvement projects, which provides a good basis for predicting likely future CRTC projects. The likelihood, therefore, of additional and future

foreseeable CRTC projects beyond those considered within this PEA to contribute to adverse cumulative effects beyond those projects presented in table 5.1 is low.

Table 5.1 Past, Present, and Future Actions within the Donnelly Training Area Region		
Major Project or Activity	Time Frame	Spatial Extent (if known)
Past Military Actions		
Testing of military equipment and materiel	1940s to present	Fort Greely; DTA
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, ensuring public access to of military lands for recreation	1960s to present	DTA
Buildings and Facilities	1970s to present	Fort Greely cantonment; DTA
U.S. Air Force training	1940s to present	Airspace
Recent and future Military Actions		
Missile Defense Agency Infrastructure	2003 to present and beyond	Fort Greely
CRTC Mobility Test Complex, construction and use	2003 to present and beyond	DTA East
Jarvis North Fire Mitigation Program	2003 to present	DTA East
BAX/CACTF Training Facility, construction and use	2006 to 2035	DTA East
33-Mile Loop Road Upgrades	2001 to 2009	DTA East
DTA East Mobility and Maneuver Upgrades	2008 to present	DTA East
INRMP Projects and Management	1998 and beyond	DTA
ICRMP Management	2000 and beyond	DTA
ITAM Projects	1999 and beyond	DTA
Stryker Brigade, Airborne Brigade and other Army training	2004 and beyond	DTA
U.S. Air Force training	present and beyond	Airspace
U.S. Air Force Joint Advance Weapons Scoring System Installation at Oklahoma Range, construction and use	Present	DTA
Range Complex and training land upgrades	2010 and beyond	DTA
Alaskan Command's JPARC Master Plan, Modernization and Enhancement	2011 and beyond	Throughout region
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	1920s to 1948 (construction) / 1920s to present (use)	Throughout region
Richardson Highway Upgrade (addition of passing lanes)	2005-2006	Throughout region

Table 5.1 Past, Present, and Future Actions at Donnelly Training Area (Concluded)		
Major Project or Activity	Time Frame	Spatial Extent (if known)
Trans-Alaska Pipeline	1973 to 1976 (construction) / 1973 to present (operation, maintenance)	Throughout region
Delta-Clearwater Watershed Project	Late 1990's to present	Clearwater River watershed
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 (including agricultural lands)	present and beyond	Throughout private lands
ARRC Northern Rail Extension Project – North Pole to Delta Junction	Medium potential to begin construction within the next 10 years	Throughout region, including DTA West
Natural Gas Pipeline	Unknown	Throughout region
Richardson and Alaska Highways future maintenance and upgrades	Current and beyond	Delta Junction region
Delta Agricultural Project	Current and beyond	Delta Junction region
Multiple use land management	Current and beyond	Throughout region
Subsistence	Current and beyond	Throughout region
Recreation	Current and beyond	Throughout region
LEGEND: ARRC – Alaska Railroad Corporation BAX/CACTF – Battle Area Complex/Combined Arms Collective Training Facility ICRMP – Integrated Cultural Resources Management Plan INRMP – Integrated Natural Resources Management Plan ITAM – Integrated Training Area Management JPARC – Joint Pacific Alaska Range Complex MTC – Mobility Test Complex		

5.1 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 Analysis Guidance Manual (USAEC 2007) to determine the potential for cumulative impact from the No Action and Action Alternatives. The resources or issues in which quick look analysis is appropriate are presented in this section. The resources and issues that rate a more in depth Analysis and Discussion are presented in section 5.2.

5.1.1 Soils and Permafrost

Section 4.2 defines the significance threshold for soils and permafrost, with a severe adverse cumulative impact resulting from uncontrolled and irreparable erosion causing permanent loss of soils, and/or soil loss or compaction that precludes restoration of native vegetation. Uncontrolled

or unmanaged melting of permafrost (ice masses), or irregular subsidence also would represent significant impacts. Adverse impacts would occur on greater than 5 percent of soils within DTA East. The geographic scope for soils and permafrost is limited to the installation boundaries. Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

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 table 5.1. A discussion of cumulative soils impacts follows table 5.2.

Table 5.2 Quick Look Questions: Soils and Permafrost	
Answer	Question
No	Would the proposed action result in a significant impact to soil resources?
Yes	Does the proposed action fall within an area covered by an existing soil survey?
Yes	Is the proposed site effectively managed as part of an installation ITAM program?
No	Does the proposed action increase the level of intensity of military activity at DTA?
No	Would the implementation of the proposed action jeopardize soil stability and increase erosion potential beyond the construction and stabilization period?
No	Are there other potential impacts to soil resources that individually or collectively could result in significant cumulative effects?
No	Is the site highly eroded and characterized by gullies and/or poor vegetative cover?
No	Are there sensitive downstream land uses, and has sedimentation/pollution been a downstream issue in the past?
No	Will permafrost be significantly impacted? <i>Permafrost will be avoided as much as feasible for site selection. BMPs will be used to mitigate any impacts.</i>
No	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (1) Quick Look	

CRTC determined that the No Action and Action Alternatives would cause minor to moderate adverse impacts to soils at DTA (see section 4.2). Past activities within DTA have adversely affected soil resources and present and future activities will likely continue to affect DTA soil resources. As indicated in table 5.1, development of range lands and military training and testing have occurred within DTA and Fort Greely since the late 1940's and continue into the present with increased Soldier population and training requirements as a result of Department of Defense and Department of the Army initiatives such as Transformation, Grow the Army, and Missile Defense. These activities have led to development of the Fort Greely cantonment and training/testing infrastructure within DTA rangelands. According to GIS data presented in the USAG Alaska Ranges PEA, approximately 3 percent of the lands within DTA's approximate 635,600 acres have been impacted from military activities with a small amount of additional degradation from recreational activities.

Development and use of Army lands for training, testing, and missile defense will likely continue into the future, however, no additional training and testing growth is anticipated at this

time. Additional missile defense infrastructure development is not expected to increase soils impacts, since any new growth will be limited to existing developed areas. Future foreseeable military activities, including testing, brigade training, and continued development of the missile defense program, along with continued recreational use of DTA lands would continue to cause disruption to soils. Continued regional development of the surrounding communities and lands is likely. Past degradation and adverse impacts of future Army actions would likely continue to be less than significant. Based on answers to the quick look questions above, no further analysis and discussion is required; the No Action and Action Alternatives would not result in a significant adverse cumulative impact to soils and permafrost at DTA.

5.1.2 Air Quality and Greenhouse Gases

Section 4.3 defines the significance threshold for air quality and greenhouse gases; accordingly a severe adverse cumulative impact would cause an exceedance of regulatory thresholds. The geographic scope for air quality and greenhouse gases is limited to the installation boundary and local communities (Delta Junction, Big Delta, farming areas in Tanana Loop, Clearwater, and the Alaska Highway). Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to air quality and greenhouse gases. Overall, minor adverse cumulative impacts would result from implementation of the proposed actions in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative air quality and greenhouse gases impacts follows table 5.3.

Table 5.3 Quick Look Questions: Air Quality and Greenhouse Gases	
Answer	Question
No	Is the installation located completely, or partially, in a designated non-attainment area or maintenance area relative to compliance with ambient air quality standards?
Yes	Will the proposed action emit a criteria type of pollutant and/or hazardous air pollutants during its construction and/or operational phase?
No	Will such emissions exceed "de minimis" standards, as designated in federal or state air quality regulations?
Yes	Are there any sensitive receptors of air pollutant effects associated with the installation (examples of such receptors include forests, agricultural crops, threatened or endangered plant or animal species, and human beings with breathing difficulties or other respiratory illnesses)? <i>Wetlands could be considered sensitive receptors.</i>
Yes	Are there wide variations in the monthly and/or seasonal patterns of atmospheric dispersion conditions at the installation? <i>Winter inversions can impact atmospheric dispersion. Prevailing wind direction and intensity changes seasonally.</i>
No	Within the last five years, has the installation been subject to Notices of Violations (NOVs) or fines relative to Clean Air Act requirements?
No	Are there any concerns that Federal and state source-oriented permits may not be up to date, and are there any specified conditions not being met?
No	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (1) Quick Look	

CRTC determined that the No Action and Action Alternatives would cause minor adverse impacts to air quality and greenhouse gases at DTA (see section 4.3). Past activities within DTA have contributed minor adverse impacts to air quality and greenhouse gas emissions and present and future activities will likely continue to affect air quality and greenhouse gases in the DTA and Delta Junction area. As indicated in table 5.1, infrastructure development, military training, and cold regions testing have occurred within DTA and Fort Greely since the late 1940's and continue into the present with increased Soldier population and training requirements as a result of Department of Defense and Department of the Army initiatives such as Transformation, Grow the Army, and Missile Defense. These activities all contribute to on-going air quality and greenhouse gas impacts, including the criteria pollutants, carbon Monoxide (CO) and Particulate Matter (PM10, i.e. dust, and PM2.5). These emissions do not exceed de minimis standards. DTA and the surrounding communities are not within or near a Non-Attainment area or Maintenance area, meaning that the Federal actions discussed in this PEA are not subject to the General Conformity Rule (40 CFR Part 93 Subpart B). General Conformity is designed to ensure that Federal actions do not impede local efforts to control air pollution.

The 2010 USAG Alaska Ranges PEA conducted an in-depth analysis of greenhouse gas issues relating to vegetation removal, concluding that the cumulative impact on global carbon dioxide levels and effects on climate change cannot be quantified, but that the overall impact to greenhouse gases would likely be insignificant on a global scale. These conclusions apply equally to the analysis presented in the CRTC PEA covering the potential effects on greenhouse gases from vegetation removal anticipated in the Proposed Action.

Current training, testing and missile defense activities will likely continue into the future, however, no additional training and testing growth is anticipated at this time. Additional missile defense infrastructure development is not expected to increase unpermitted air quality impacts. Current community development, highway infrastructure, and Trans-Alaska Pipeline operation will also continue to contribute to minor decreases in air quality and increases in greenhouse gases. Future foreseeable military activities, along with all other non-military sources of emissions, including the Northern Rail Extension Project and a natural gas pipeline would continue to cause minor decreases in air quality and increases in greenhouse gases. Based on answers to the quick look questions above, no further analysis and discussion is required; the No Action and Action Alternatives would not result in a significant adverse cumulative impact to air quality and greenhouse gases in the DTA and Delta Junction region.

5.1.3 Fire Management

Section 4.7 outlines the significance threshold for fire management; accordingly a severe adverse cumulative impact would be inconsistent with goals and objectives contained within the Integrated Wildland Fire Management Plan or would pose a risk exceeding response capacity. The geographic scope for fire management includes the installation boundary, adjacent state and Federal lands, and adjacent communities. Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

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 in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative fire management impacts follows table 5.4.

Table 5.4 Quick Look Questions: Fire Management	
Answer	Question
No	Would the proposed action result in a significant adverse impact to fire management?
Yes	Does the proposed action involve development of new facilities or firing ranges that could pose a fire risk?
Yes	Is the proposed site managed as Full or Critical fire management zones? <i>All DTA areas east of the Delta River are managed as Full, with Main Post Fort Greely managed as a Critical Fire Management Zone.</i>
No	Does the proposed action increase the level of intensity of military activity on DTA?
Yes	Does the area contain high levels of flammable vegetative “fuels”?
Yes	Has fire management been an issue in the past in the area? <i>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.</i>
No	Will fire risk be significantly impacted?
Yes	Has past activity in this area increased fire risk? <i>Beyond natural causes of fire (lightening), military training activities have increased the risk of fire.</i>
No	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?
No	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (1) Quick Look	

CRTC determined that the No Action would cause minor adverse impacts and the Action Alternatives would cause minor to moderate adverse impacts to fire management at DTA (see section 4.7). Past activities within DTA have contributed minor adverse impacts to fire management and present and future activities will likely continue to affect fire management in the DTA and Delta Junction area. As indicated in table 5.1, infrastructure development, military training, and cold regions testing have occurred within DTA and Fort Greely since the late 1940’s and continue into the present with increased Soldier population and training requirements as a result of Department of Defense and Department of the Army initiatives such as Transformation, Grow the Army, and Missile Defense. These activities all affect the likelihood or potential severity of wildfire starts, and response capabilities to a minor degree.

Current training, testing and missile defense activities will likely continue into the future, however, no additional training and testing growth is anticipated at this time. Additional missile defense infrastructure development is not expected to impact fire management. Current community development, highway infrastructure, and Trans-Alaska Pipeline operation will also continue to contribute to minor impacts in fire management. Future foreseeable military

activities, along with all other non-military actions, would continue to cause minor impacts to wildfire management. Based on answers to the quick look questions above, no further analysis and discussion is required; the No Action and Action Alternatives would not result in a significant adverse cumulative impact to fire management in the DTA and Delta Junction region.

5.1.4 Airspace Management

Activities that reach the significance threshold for airspace management are those that would require substantial modification of existing airspace designations or cause overutilization of regional airspace (section 4.10). The geographic scope for airspace management is the Special Use Airspace (both Restricted Airspace and Military Operations Areas) over DTA, Fort Greely, and the adjoining land parcels. Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to airspace management. Overall, minor adverse cumulative impacts would result from implementation of the proposed actions in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative airspace management impacts follows table 5.5.

Table 5.5 Quick Look Questions: Airspace	
Answer	Question
No	Are the current airspaces subject to over utilization?
Yes	Are public concerns about airspace usage and environmental consequences (e.g., strikes on migratory birds) being routinely expressed?
Yes	Are future actions by non-military and other military entities expected, and would they cause impacts on airspace resources? <i>Allen Army Airfield, Missile Defense Agency at Fort Greely, and the BAX-CACTF all could increase airspace usage, and have in the recent past. JPARC is expected to increase restricted airspace designations.</i>
No	Will the proposed action cause increased usage of existing airspace, and will such usage cause over utilization?
No	Are there non-military uses of current airspaces and are conflicts being articulated? <i>Many small aircraft private pilots have expressed concerns to the USAF and USAG Fort Wainwright.</i>
No	Will the proposed action require new airspace designations or expansions in existing airspace?
No	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (1) Quick Look	

CRTC determined that the No Action and Action Alternatives would cause minor adverse impacts to airspace management at DTA (see section 4.10). Past activities within DTA have contributed minor adverse impacts to airspace management and present and future activities will likely continue to affect airspace management in the DTA and Delta Junction area. As indicated in table 5.1, the U.S. Air Force and Army have been training and testing since the 1940's into the present time, and utilizing airspace throughout that time. In addition, Missile Defense, Trans-

Alaska Pipeline surveillance, Federal, and state fire-fighting operations, and other government and private (commercial and personal) aviation interests continue to put demands on the airspace and have a minor impact on airspace management.

Current Army and Air Force training, testing and missile defense activities will likely continue into the future. In the near future, the Alaskan Command (ALCOM) is proposing modernization and enhancement of the Joint Pacific Alaska Range Complex, which consists of all land, air, and sea training areas used by the Army, Navy, and Air Force in Alaska, including DTA and R2202. Additions and changes to Restricted Areas and Military Operating Areas in the DTA and Delta Junction region, both structural and operational are expected. A draft Environmental Impact Statement is due in late 2011, and will outline several options that include proposed airspace changes. It is expected that there will be an increase in the quantity of airspace usage by the Air Force and Army, that the hours of operations may change, and that there may be an increase in the overall amount of restricted airspace in Alaska, particularly around DTA. Additional missile defense infrastructure development is not expected to further impact airspace management. Current community development and Trans-Alaska Pipeline operation will also continue to contribute to minor impacts to airspace management. Future foreseeable military activities, along with all other non-military actions, would continue to cause minor to moderate impacts to airspace management. Based on answers to the quick look questions above, no further analysis and discussion is required. Contributions associated with the No Action and Action Alternatives would not result in a significant adverse cumulative impact to airspace management in the DTA and Delta Junction region.

5.1.5 Public Access, Recreation and Subsistence

Section 4.11 defines the significance threshold for public access, recreation, and subsistence as 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. The geographic scope for 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 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

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 table 5.1. A discussion of cumulative public access, recreation, and subsistence impacts follows table 5.6.

Table 5.6 Quick Look Questions: Public Access, Recreation and Subsistence	
Answer	Question
No	Would the proposed action result in a significant impact to public access, recreation, or subsistence (availability of any subsistence resources)?
No	Are any areas within the project's footprint considered to be critical or very important for access and recreation within the region of influence or subsistence access or resource sustainability?
No	Does the proposed action reduce public access, the amount of land available, or the amount/timing of lands available for recreational activities, or reduce land availability or change the timing of availability for subsistence activities?
No	Have past activities in the area resulted in negative impacts to public access and recreation or subsistence resources?
No	Could the proposed action lead to further projects in the area that could negatively impact public access, recreation or subsistence resources?
No	<i>Is additional cumulative effects analysis needed?</i>
<i>CEA Level: (1) Quick Look</i>	

CRTC determined that the No Action Alternative would cause none to minor adverse impacts and the Action Alternatives would cause minor adverse impacts to public access; recreation and subsistence at DTA (see section 4.11). As indicated in table 5.1, Army acquisition of lands encompassing DTA and past and current training activities have caused portions of the range lands to either be restricted to public access (i.e., Texas Range) or periodic closures during testing operations and training exercises (i.e., ground operations, air drops, etc.). The passage of the Sikes Act in 1960 sanctioned public access, recreation, and subsistence activities within military reservations, including Fort Greely (and what is now DTA).

Current and future training and testing activities at DTA would result in temporary closures of training areas to public access, recreation, and subsistence activities. Overall public access, recreation, and subsistence activities would be maintained; therefore, only minor adverse cumulative impacts would be anticipated. Based on answers to the quick look questions above, no further analysis and discussion is required. The No Action and Action Alternatives would not result in a significant adverse cumulative impact to public access, recreation, and subsistence.

5.1.6 Noise

Section 4.12 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 noise includes the installation boundary and the adjacent communities. Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

The following quick look questions were used to assess the potential for adverse significant cumulative noise impacts. Overall, minor adverse cumulative impacts would result from implementation of the proposed actions in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative noise impacts follows table 5.7.

Table 5.7 Quick Look Questions: Noise	
Answer	Question
No	Will the proposed action create noise zones (Zones I, II, or III) that will extend off the installation?
No	Does the proposed action increase the level of intensity of military activity on DTA?
No	Does the proposed action include the use of noisier equipment (or munitions) than that historically used at DTA?
No	Are there any (1) human populations or (2) populations of sensitive animal species within the noise zones?
Yes	Has the adjacent civilian community (nearest the location of the proposed action) complained about noise associated with past or on-going activities? <i>DTA receives relatively few noise complaints each year, often due to Air Force aircraft flying over the area.</i>
No	Are there local or regional controversies over noise levels at the installation that would indicate the need for CEA?
No	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (1) Quick Look	

CRTC determined that the No Action and Action Alternatives would cause minor adverse impacts to noise. As discussed in section 4.12 and in the quick look questions, past military training and testing activities have created elevated noise levels within DTA rangelands and airspace. Increased development of range projects such as the BAX/CACTF and increased development of land within adjacent communities has increased the potential for military activities at DTA to cause adverse noise conditions to adjacent communities. These impacts, however, have been mitigated through training and testing protocols that designate locations and times, and require public notifications for nighttime operations to avoid community impacts. In addition, future projects that may result in a potential change in noise contours extending off installation boundaries would require noise modeling by the U.S. Army Public Health Command. Based on answers to the quick look questions above, no further analysis and discussion is required; the No Action and Action Alternatives would not result in a significant adverse cumulative impact to noise.

5.1.7 Land Use, Energy, and Utilities

Section 4.13 defines the significance threshold for land use, energy and utilities as activities that create energy, water, or sewer demand in excess of existing supply or that require substantial changes to regional development planning. The geographic scope for land use, energy, and utilities includes the installation boundaries and adjacent communities. Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

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 table 5.1. A discussion of cumulative land use, energy, and utilities impacts follows table 5.8.

Table 5.8 Quick Look Questions: Land Use, Energy and Utilities	
Answer	Question
No	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	Are land use controls utilized within the RPMP?
Yes	Is there extensive usage of on-post lands for recreational purposes?
Yes	Is there continuing cooperation and collaboration regarding land usage between the installation, tenants, local and regional governmental agencies and other stakeholders?
No	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	Is there any evidence of current or anticipated encroachment or urban sprawl that might have implications relative to on-post land usage?
No	Will the proposed action require on-post land use classification changes that exceed plus or minus five percent? <i>The only potential for land use changes is the cross-country course at the Mobility Test Complex, which would amount to 4% of DTA East at most.</i>
Yes	Is there an existing sustainability program for the installation, and does it address sustainability considerations in site selections?
No	Does the installation currently have contiguous buffer zones or conservation easements?
Yes	Have energy prices in the region been rising?
No	Does the proposed action expand installation demands for regional energy?
No	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (1) Quick Look	

CRTC determined that the No Action Alternative and the Action Alternatives would cause minor adverse impacts to land use, energy and utilities at DTA (see section 4.13). As indicated in table 5.1, Army acquisition of lands encompassing DTA changed the land use within the installation boundaries to military land uses (cantonment area and range training lands). Development and growth at DTA and Fort Greely have occurred within existing installation boundaries and far enough away from adjacent sensitive land uses to avoid conflict and reduce visual impacts. This past and present development has also required increasing use of energy over time and the addition and extension of utilities.

Future development and use of Army lands for training and testing will likely continue into the future, however, no additional growth is anticipated at this time, and no changes to existing land uses or conflicts with adjacent land uses are expected. Possible future development of missile defense at Fort Greely may increase energy and utility demands, but no changes to existing land uses or conflicts with adjacent land uses are anticipated. Fort Greely is planning and implementing multiple projects, such as new building envelopes that improve energy efficiency of old structures. These projects will result in reductions in energy and utility demand, helping to offset any increases from future development. Continued regional development of the Delta Junction area is likely to occur into the future, however, no major developments adjacent to DTA lands are expected for the near future. 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 Action Alternatives would not result in a significant adverse cumulative impact to land use, energy, and utilities.

5.1.8 Human Health, Safety, and Hazardous Substances

Section 4.14 outlines the significance thresholds for human health, safety, and hazardous substances. Activities that violate established health and safety laws would represent a significant impact. 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 also represent a significant impact. The geographic scope is limited to the installation boundaries and adjacent communities. Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to human health, safety, and hazardous substances. Overall, minor adverse cumulative impacts would result from implementation of the proposed actions in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative impacts follows table 5.9.

Table 5.9 Quick Look Questions: Human Health, Safety, and Hazardous Substances	
Answer	Question
No	Would the proposed action result in a significant impact to human health or safety?
Yes	Would the proposed action be in compliance with EO13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i> ?
Yes	Will the proposed action occur on an existing installation?
Yes	Are all aspects of the proposed action covered by an existing Spill Prevention, Control, and Countermeasure Plans (SPCCP)?
Yes	Have project proponents taken steps to eliminate the use and potential release of hazardous materials?
No	Are there any existing regional concerns related to chemical contamination of ground or surface waters?
Yes	Are the surrounding air quality control regions considered "attainment areas" under provisions of the CAA?
No	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (1) Quick Look	

CRTC determined that the No Action Alternative and the Action Alternatives would cause minor adverse or beneficial impacts to human health, safety, and hazardous substances. As discussed in section 4.14 and in the quick look questions, the potential exists for adverse impacts to human health, safety, and hazardous substances due to training and testing activities at DTA. Increased private development of land within the adjacent community and recreation and subsistence activities within DTA rangelands all increase the human health and safety concerns during training and testing exercises. People encountering contamination or unexploded ordnance (UXO) is also a human health and safety concern. Both contamination and UXO

remain a primary concern as well during construction of the site-specific infrastructure improvement projects in rangelands due to the history of Army activity and potential for contaminated soils and possible presence of UXO. These increased risks, however, are reduced through adherence to regulations and guidance documents discussed in section 4.14 during existing and future construction activities, training, and testing operations 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 small arms ranges) to recreational and subsistence users, continued implementation of the USARTRAK recreation system, and well demarcated impact and small arms complex boundaries would help safeguard human health and safety for these users. The surrounding community is continuing to improve public knowledge of and compliance with state and Federal laws pertaining to the management of hazardous materials and waste, which helps to offset any increases in the use of hazardous materials or generation of wastes by the Army. Based on answers to the quick look questions above, no further analysis and discussion is required; the No Action and Action Alternatives would not result in a significant adverse cumulative impact.

5.2 ANALYSIS AND DISCUSSION CUMULATIVE EFFECTS ANALYSIS

5.2.1 Surface Water and Floodplains

Section 4.4 outlines the significance threshold for surface water and floodplains; accordingly, a severe adverse cumulative impact would result in the introduction of pollutants that cumulatively 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 include the installation boundary, immediate downstream users of these resources, and down gradient floodplains. Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

The following quick look questions were used to assess the potential for adverse significant cumulative impacts to surface water and floodplains. Overall, minor to moderate adverse cumulative impacts would result from continued cold regions testing, with potential moderate cumulative impacts from continued testing and implementation of the site-specific infrastructure projects in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative surface water and floodplain impacts follows table 5.10.

Table 5.10 Quick Look Questions: Surface Water and Floodplains	
Answer	Question
No	Would the proposed action result in a significant impact to surface water?
Yes	Does the proposed action involve development within a floodplain? <i>Site-specific infrastructure projects WA10, WA11, and WA13 involve development within floodplain areas (also see section 4.4).</i>
No	Are there seasonally flooded areas within the footprint?
Yes	Are streams, lakes, or ponds present within the footprint? <i>MTC15 runs adjacent to ponds, TX4 and TX5 could have streams or ponds w/in footprint, WA12 crosses drainages, DTA21 crosses streams, DTA19 crosses streams and ponds (see section 4.4).</i>
No	Does the proposed action increase the level of intensity of military activity on DTA?
No	Are there other potential impacts to surface water that individually or collectively could result in significant cumulative effects?
No	Could the proposed action lead to future projects or activity in the area that could negatively affect surface water?
Yes	Does the proposed action involve clearing vegetation within 75 feet of open water? <i>The proposed action involves the potential for disturbance within a 75-foot buffer; however a minimal 75-foot buffer would be maintained from all open water.</i>
No	Have negative impacts to surface water been an issue in the past?
Yes	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (2) Analysis and Discussion	

No Action Alternative

Past activities within DTA and Fort Greely have adversely impacted surface water and floodplain resources and present and future activities have the potential to affect these resources. As indicated in table 5.1, development of rangelands and military training and testing has occurred within DTA and Fort Greely since the 1940's and continues into the present. Recent increases in Soldier population in Alaska have translated into increased training requirements and development as a result of Army and DOD initiatives such as Transformation, Grow the Army, and Missile Defense. These activities have led to development of the cantonment at Fort Greely and training/testing infrastructure within DTA rangelands, including constructing roads which required the placement of bridges across streams and the use of culverts to direct surface water flows. Past disturbance of soils from training and development of infrastructure with impervious surfaces, both within DTA/Fort Greely and adjacent communities has also resulted in sedimentation into surface waters from storm water runoff and increased surface water flows during storm events, which when combined with regional development, have also contributed to minor stream quality degradation. However, as stated in section 3.4, no 303(d) listed waters or impaired waters occur within the DTA area.

Future foreseeable military use of DTA and Fort Greely would have the potential to cause adverse impacts to surface waters. Military activities including testing would increase the potential for soil disturbance and the potential for sedimentation into adjacent surface waters. As discussed in section 3.4, however, Jarvis 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 Alaska Pollutant Discharge Elimination System (APDES) and storm water pollution prevention measures continue to be implemented. In addition, increased development and impervious surfaces, particularly likely to occur on Fort Greely and in the Deltana area, would increase the potential for more storm water runoff into adjacent surface waters. USAG Fort Wainwright monitoring and management of range and training lands, however, would continue to reduce overall adverse impacts from USARAK activity on rangelands. Testing impacts would be minor, but would also be monitored and addressed as needed. In addition, existing and future compliance with APDES including storm water management and pollution prevention would offset cumulative adverse impacts associated with storm water volume and pollutant runoff associated with military activities. APDES requirements would also apply to private development within adjacent communities which share watersheds with DTA and Fort Greely, which would also counteract the likelihood of cumulative adverse impacts to surface waters. Efforts to replace topsoil and reseed large acreages on Fort Greely that were originally cleared for missile defense construction will also help to prevent storm water pollution through protecting soil resources.

Past and present military and community development within floodplains for the Delta River and old or alternate channels of Jarvis Creek could cause minor to moderate adverse impacts through the placement of structures (primarily buildings, roads, berms and culverts) that have the potential to affect floodwater channels/flow and possibly floodwater elevations. Future foreseeable military and community development (table 5.1) within floodplains would be more limited than in the past, but some siting and project development is still expected to occur across or within floodplains, which has the potential to cause a minor to moderate adverse cumulative impact.

Action Alternative 1

As stated in section 4.4, minor to moderate adverse impacts to surface waters and floodplains could be anticipated from Action Alternative 1, which includes impacts associated with continued testing and the site-specific infrastructure improvement projects. 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 surface waters and floodplains.

Action Alternative 2

Because the overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures, the expected cumulative adverse impacts to surface waters and floodplains would be the same for both alternatives. Changing procedures would not make a difference in the type or intensity of impacts to surface water resources and floodplains between the action alternatives.

5.2.2 Wetlands

The significance threshold considered a severe adverse cumulative impact for wetlands would be an unpermitted loss of jurisdictional wetland or the loss of more than ten percent of an

installation's wetland resources, as outlined in section 4.5. The geographic scope for wetlands is limited to the installation boundary and adjacent undeveloped private, state, and Federal lands. Past, present, and reasonably foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

The following quick look questions were used to assess the potential for significant adverse cumulative impacts to wetland resources. Overall, minor adverse cumulative impacts would result from implementation of the proposed action, in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative wetland impacts follows table 5.11.

Table 5.11 Quick Look Questions: Wetlands	
Answer	Question
No	Would the proposed action result in a significant loss of wetlands (consider fill in wetlands, conversion of wetlands to upland by other than filling, and disturbance to wetlands)?
No	Are DTA's wetlands subject to a significant decrease in overall size due to the proposed action and other military actions?
No	Does a wetland delineation exist for the proposed action footprint? <i>National Wetland Inventories exists for all of DTA East and part of DTA West, providing a baseline for planning. Specific delineation maps would be required prior to any ground-breaking.</i>
Unknown	Are any wetlands in the vicinity of the proposed action considered to be particularly ecologically important? <i>The Section 404 consultation/permit process will determine this through functional assessments, but it is likely that there would be some higher valued (ecologically important) wetlands, including riverine areas and floodplains, permanent and semi-permanent emergent areas, riparian areas, and other sensitive wildlife habitats that lie within any wetlands.</i>
Yes	Have past actions caused negative potential impacts to wetland resources in the area? <i>USAG Fort Wainwright, USAF, CRTC, and Fort Greely impacts to wetlands have been moderate.</i>
Unknown	Are future actions by non-military and other military entities expected and would they cause impacts on wetland resources?
Yes	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (2) Analysis and Discussion	

No Action Alternative

Past activities within DTA and Fort Greely have adversely impacted wetlands and present and future activities have the potential to effect wetland resources. As indicated in table 5.1, development of rangelands and military training and testing has occurred within DTA and Fort Greely since the 1940's and continues into the present. Recent increases in Soldier population in Alaska have translated into increased training requirements and development as a result of Army and DOD initiatives such as Transformation, Grow the Army, and Missile Defense. These activities have led to development of the cantonment at Fort Greely and training/testing infrastructure within DTA rangelands, and combined with regional development, have led to some regional loss of wetlands. Although the total 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 the Delta Agricultural areas, Delta Junction, Fort Greely, and DTA East.

Since 1996, CRTC, DPW, and Range Control have obtained approximately 30 permits, plus modifications, from the Corps of Engineers Regulatory Office for construction in DTA areas that contained wetlands. These range land improvement projects range from a collective training range, to firebreaks, roads, and utilities. Wetland impacts on DTA since 1996 total 154 acres, with large projects being fire protection (85 acres of habitat conversion from spruce to hardwoods) and the BAX\CACTF (25 acres of fill for roads, utilities, and target berms). Seven of these permits were for CRTC projects including expansion of a helipad, creation of a firing pad, and burial of utilities. Total wetland impacts for these projects were 3.1 acres.

Future foreseeable military use of DTA training and testing lands has the potential to cause adverse impacts to wetlands. Training and testing would increase the potential for wetland degradation through soil disturbance and vegetation crushing. In addition, future development within DTA, Fort Greely, and adjacent communities would continue to pose the potential for wetland loss and degradation. Active monitoring and restoration of range lands by USAG Fort Wainwright, and permitting and mitigation in compliance with Section 404 requirements of the Clean Water Act for Army and private development alike would continue to reduce the significance of and the occurrence of cumulative adverse impacts to wetland resources. Additionally, in 2008 changes to the Corps of Engineers regulatory guidance and implementation with regard to Section 404 of the CWA is resulting in fewer total impacts to wetlands.

Action Alternative 1

As stated in section 4.5.2, much less than 1 percent of existing wetlands within DTA could be impacted by the site-specific infrastructure improvement projects. This percentage, even when 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.

Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the expected cumulative adverse impacts to wetlands would be the same for both alternatives. Changing procedures would not make a difference in the type or intensity of impacts to wetlands between the action alternatives.

5.2.3 Vegetation

Section 4.6 outlines the significance threshold for vegetation, which specifies that a severe adverse impact would occur if activities 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 on an installation's vegetative resources, segment habitat such that regional wildlife species are jeopardized, or eliminate a habitat type from an

installation or region. The geographic scope for vegetation includes the DTA boundary and adjacent undeveloped private, state, and Federal lands. Past, present, and future foreseeable actions include activities as presented in table 5.1.

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 action in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative vegetation impacts follows table 5.12.

Table 5.12 Quick Look Questions: Vegetation	
Answer	Question
No	Would the proposed action result in a significant loss of vegetation?
Yes	Does the proposed action involve a new disturbance, or does it extend beyond the existing disturbance boundaries?
Yes	Has a forest stand map or a vegetation communities map been created for the area?
Yes	Is the proposed site effectively managed as part of an installation ITAM program?
No	Does the proposed action increase the level of intensity of military activity on DTA?
Yes	Will the proposed action affect salvageable timber?
Variable	Is the site characterized by poor vegetative cover or high erosion?
No	Are there any threatened or endangered plant species?
Likely	Are there any sensitive plant communities or plant species of concern in the area? <i>State-listed rare species likely occur in the project footprints by the areas have not all been surveyed.</i>
Unknown	Would a significant amount of rare plant habitat be impacted by the proposed action?
Yes	Would the proposed action result in the potential introduction or spread of any highly invasive plant species?
Yes	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?
Yes	<i>Is additional cumulative effects analysis needed?</i>
<i>CEA Level: (2) Analysis and Discussion</i>	

No Action Alternative

Past activities within DTA and Fort Greely have adversely impacted vegetation and present and future activities have the potential to effect vegetation. As indicated in table 5.1, development of rangelands and military training and testing has occurred within DTA and Fort Greely since the 1940's and continues into the present. Recent increases in Soldier population in Alaska have translated into increased training requirements and development as a result of Army and DOD initiatives such as Transformation, Grow the Army, and Missile Defense. These activities have led to development of the cantonment at Fort Greely and training/testing infrastructure within DTA rangelands, and combined with regional development, have led to some regional loss of vegetation. These losses came from construction of facilities, fragmentation through construction of linear infrastructure (i.e., roads, utilities, fences), and conversion of native communities to grasslands (such as drop zones) and agricultural use near the installation. According to the USAG Alaska Range PEA, GIS mapping determined 21,750

acres or 3 percent of available lands at DTA have been impacted by human activity, representing vegetation loss or a degree of vegetation degradation. The greatest losses of vegetation have occurred within the developed areas of the Delta Agricultural areas, Delta Junction, Fort Greely, and DTA East.

Future foreseeable military use of DTA training and testing lands would have the potential to cause additional vegetation loss and degradation of vegetation communities. Training and testing would increase the potential for degradation of vegetation through crushing and soil disturbance during training exercises and testing operations. In addition, future development within DTA, Fort Greely, and adjacent communities would continue to pose the potential for reduction of regional vegetation. Active monitoring of range lands and restoration of degraded areas by USAG Fort Wainwright, would continue to reduce overall adverse impacts from military activity on DTA which would also counteract the likelihood of cumulative adverse impacts to existing vegetation resources from current Army operations and future projects.

Action Alternative 1

As stated in section 4.6.2, less than 1 percent of existing vegetation within DTA could be impacted by the site-specific infrastructure improvement projects. This percentage would not break the threshold for significance based on acreage of vegetation loss. The site-specific infrastructure improvement projects would be evaluated and mitigated to ensure that local rare or sensitive populations are not eliminated, regional native plant species are not eliminated, habitat segmentation is minimized, individual habitat types are not eliminated, and non-native plant species propagation is minimized so as not to cross the significance thresholds established in table 4.1 (section 4.1). In addition, building projects in certain areas may increase the chances of additional construction in those same areas and may increase activity there, also increasing the potential for impacts to plant populations and wildlife habitat. These impacts would also be minimal and would not break the significance threshold. Alternative 1, combined with the past, present, and foreseeable future actions discussed above would constitute an overall minor cumulative adverse impact to vegetation.

Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the expected cumulative adverse impacts to vegetation would be the same for both alternatives. Changing procedures would not make a difference in the type or quantity of impacts to vegetation between the action alternatives.

5.2.4 Wildlife and Fisheries

Section 4.8 outlines the significance threshold for wildlife and fisheries; accordingly a severe adverse cumulative impact would reduce regional wildlife populations below state management levels, would cause discernable 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 boundary and adjacent undeveloped

private, state, and Federal lands. Past, present, and foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

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 alternatives in combination with the past, present, and future projects identified in table 5.1. A discussion of cumulative wildlife and fisheries impacts follows table 5.13.

Table 5.13 Quick Look Questions: Wildlife and Fisheries	
Answer	Question
No	Would the proposed action result in a significant impact to any wildlife or fish species identified as management priorities by the installation's Ecosystem Management plan?
No	Does the proposed action involve development which would cause significant loss of preferred habitat for management priority species?
No	Does the proposed action increase the level of intensity of military activity on DTA?
No	Is habitat for a species of concern being affected?
Yes	Are there special interest management areas (see Fort Greely and DTA INRMP 2002-2006) in the vicinity that could be affected by the proposed action? <i>Bison and Crane special interest areas (see section 4.8)</i>
Yes	Have previous projects in this area affected the same species or habitats that could be affected by the proposed action?
Yes	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?
Yes	<i>Is additional cumulative effects analysis needed?</i>
<i>CEA Level: (2) Analysis and Discussion</i>	

No Action Alternative

Past activities within DTA and Fort Greely have adversely impacted habitat and future activities have the potential to affect habitat. As indicated in table 5.1, development of rangelands and military training and testing has occurred within DTA and Fort Greely since the 1940's and continues into the present. Recent increases in Soldier population in Alaska have translated into increased training requirements and development as a result of Army and DOD initiatives such as Transformation, Grow the Army, and Missile Defense. These activities have led to development of the cantonment at Fort Greely and training/testing infrastructure within DTA rangelands, and combined with regional development, have led to some regional loss of habitat. These losses came from construction of facilities, fragmentation through construction of linear infrastructure (i.e., roads, utilities), and conversion of native communities to grasslands (such as drop zones) and agricultural use near the installation. According to the USAG Alaska Range PEA, GIS mapping determined 3 percent of available lands at DTA have been impacted by human activity that would likely represent some habitat loss or degree of habitat degradation. The greatest losses of and changes to habitat have occurred within the developed areas of the Delta Agricultural areas, Delta Junction, Fort Greely, and DTA East.

Future foreseeable military use of DTA training and testing lands would have the potential to cause additional habitat loss and degradation of habitat. Training and testing would increase the potential for degradation of habitat through wildland fires, or through vegetation crushing and soil disturbance during training exercises and testing operations. In addition, future development within DTA, Fort Greely, and adjacent communities would continue to pose the potential for reduction of wildlife habitat on a regional basis. Cumulative adverse impacts to wildlife and fisheries from current Army operations and future projects would be minor.

Action Alternative 1

As stated in section 4.8.2, less than 1 percent of existing habitat within DTA could be impacted by the site-specific infrastructure improvement projects. Even concentrating more activity and possibly more development in these areas would not be considered more than a minor adverse impact. This impact when 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.

Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the expected cumulative adverse impacts to habitat would be the same for both alternatives. Changing procedures would not make a difference in the impacts to wildlife and fisheries between the action alternatives.

5.2.5 Cultural Resources

The significance threshold for cultural resources is outlined in section 4.9. A severe adverse cumulative impact would result in unmitigated loss of cultural resource sites or result in a National Landmark or historic district losing National Register of Historic Places (NRHP) designation. The geographic scope for cultural resources is limited to the installation boundaries. Past, present, and foreseeable future actions include activities dating from the 1940s when Army activities began, through the present and future foreseeable activities as presented in table 5.1.

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 action in combination with the past, present, and future projects identified in table 5.1. Many of the answers to the questions are unknown at this time because the process of surveying for cultural resources and evaluating sites found during surveys for inclusion on the NRHP is only partially done, depending on past project priorities and funding. Unsurveyed areas must be surveyed as part of Section 106 consultation. Where surveys have been done and have identified cultural resources, sites are avoided to the greatest extent possible and mitigated as required by 106 consultation, reducing the potential impact to minor. In addition, the Army actively continues to survey its remaining unsurveyed rangelands for cultural resources. A discussion of cumulative cultural resources impacts follows table 5.14.

Table 5.14 Quick Look Questions: Cultural Resources	
Answer	Question
No	Would the proposed action result in a significant impact to any cultural resources?
Mostly	Has the area of the proposed project been surveyed for cultural resources?
Some	Does the proposed action affect any cultural resources that have not been evaluated for National Register eligibility? <i>Not all identified cultural resources sites have been evaluated.</i>
Unknown	Are any sites eligible for listing on the National Register? <i>Not all areas have been surveyed and not all identified sites have been evaluated.</i>
No	Are any of the identified cultural resources contributing elements to an eligible or listed National Historic Landmark, or cultural landscape?
No	Are any resources covered by previously existing cultural resource Programmatic Agreements or Memorandums of Agreement?
Yes	Are there other potential impacts to cultural resources that individually or collectively could result in significant cumulative effects? <i>There is a high concentration of archaeological sites in DTA and activities from other projects and activities could result in negative impacts to prehistoric sites in the area (without mitigation).</i>
Unknown	Is the project located in or near an Alaskan Native cemetery, traditional cultural property to sacred site?
Yes	<i>Is additional cumulative effects analysis needed?</i>
CEA Level: (2) Analysis and Discussion	

No Action Alternative

Past activities within DTA have adversely impacted cultural resources and future activities have the potential to affect cultural resources. As indicated in table 5.1, development of rangelands and military training and testing have occurred within DTA and Fort Greely since the 1940's and continues into the present. Recent increases in Soldier population in Alaska has translated into increased training requirements and development as a result of Army and DOD initiatives such as Transformation, Grow the Army, and Missile Defense. These activities have led to development of the cantonment at Fort Greely and training/testing infrastructure within DTA rangelands. This infrastructure development, along with training and testing activities, has resulted in past disturbance to cultural 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.

Future foreseeable military use of DTA would have the potential for additional disturbance to cultural resources. Training exercises and testing operations would increase the potential for disruption of soils and disturbance to archaeological sites. In addition, future development within DTA and Fort Greely would continue to pose the potential for degradation or loss of non-evaluated cultural resources. The potential for future impacts, however, would be reduced as USAG FWA, and CRTC as needed, would continue to survey for archaeological potential, and gaps in data would continue to be filled over time, reducing areas of uncertainty. The closure of these gaps will allow military planners and cultural resources staff to locate projects and military training and testing activities within DTA rangelands in a way that minimizes future impact 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.

Action Alternative 1

As stated in section 4.9.2, one eligible archaeological site and eight not eligible sites within DTA could be impacted under the site-specific infrastructure improvement projects; however, impacts would be reduced or avoided through coordination with the USAG Fort Wainwright Cultural Resources Manager and consultation with the SHPO. 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 to moderate cumulative adverse impact to cultural resources.

Action Alternative 2

The overall difference between Alternative 1 and Alternative 2 is the use of Current NEPA Procedures versus Enhanced Environmental Planning Procedures. As a result, the expected cumulative adverse impacts to cultural resources would be the same for both alternatives. Changing procedures would not make a difference in the impacts to cultural resources between the action alternatives.

SECTION 6. LIST OF PREPARERS AND CONTRIBUTORS

This programmatic environmental assessment was prepared by CRTC staff. Below are backgrounds of personnel who either prepared or edited this assessment.

Clark, Ellen

B.A. Biology

Years Experience: 17

Kingston, Michael

U.S. Army, Combat Still Photographer, Graphics, Video

Years Experience: 39

Nuckols, Michael

B.A. Environmental Science

Years Experience: 16

Schultz, Merri

B.A. Graphic Design and Marketing

Years Experience: 6

Zachgo, Clara

B.A. Political Science Pre-Law

Years Experience: 7

SECTION 7. REFERENCES

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APPENDIX A.AGENCY COORDINATION

1. Example Agency Scoping Letter



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY YUMA PROVING GROUND
COLD REGIONS TEST CENTER
P.O. BOX 665
Delta Junction, AK 99737

February 5, 2010

Safety and Environmental Office

Ms. Jewel Bennett
U.S. Fish and Wildlife Service
Fairbanks Fish and Wildlife Field Office
Conservation Planning Assistance
101 12th
Fairbanks, AK 99701-6237
Ave, Room 110

Dear Ms. Bennett:

The US Army Cold Regions Test Center (CRTC), in compliance with the National Environmental Policy Act of 1969 (NEPA), is preparing a programmatic environmental assessment (PEA) that will analyze certain proposed actions supporting CRTC testing activities and their affect on US Army Garrison Fort Wainwright's Donnelly Training Area (DTA) and US Army Garrison Fort Greely (Fort Greely). Enclosure 1 is a map showing the general location of CRTC's area of operation, to include facilities, in relationship to DTA, Fort Greely, and the surrounding area. CRTC proposes to improve and consolidate their facilities at DTA, and to continue cold-weather environment testing of military equipment. Upgrades to CRTC facilities are needed to ensure that facilities are state of the art, provide maximum ability to test future military technology, and enable CRTC to effectively test new defense systems in a natural environment, emphasizing extreme cold and sub-arctic conditions. These projects would be constructed, if and when they are funded, over a 10-year timeframe and would not occur all within the same construction season. CRTC is developing a PEA that addresses the following two related proposed actions:

a. Proposed Action 1: Modernize and consolidate test facilities. The PEA will identify known and foreseeable site-specific construction projects supporting the modernization and consolidation of the CRTC testing mission in Alaska. Enclosure 2 lists the proposed projects. Modernization will be achieved by construction of new buildings or upgrades to existing

APPENDIX A. AGENCY COORDINATION

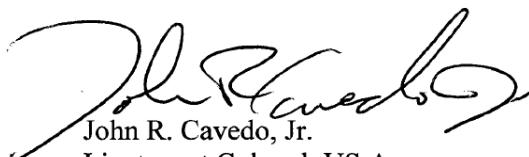
buildings within DTA to replace outdated or unsafe facilities, and installation of associated infrastructure upgrades. Consolidation will occur as these new facilities are built within DTA, replacing buildings currently located on the Main Post of Fort Greely. The objective is to center testing operations at the Bolio Lake Complex, Texas Range, Mississippi Complex, Washington Range, and the Mobility Test Complex within DTA.

b. Proposed Action 2: Continue testing of materiel and equipment in a real-world, cold weather environment. The PEA will identify routine and regular CRTC cold weather tests and the support activities required, including preparation, set-up, and minor range maintenance projects. A list of routine test types and support activities is included in Enclosure 3.

This letter is being submitted to introduce the proposed projects and request any input or concerns from your agency. Please submit comments within 30 days of the stamped date on this letter to assist us in development of the PEA. CR TC will provide a copy of the Draft PEA (anticipated May 2010) for your agency's review and comment.

The point of contact for this action is Ms. Ellen Clark, CRTC Environmental Data Analyst, 907-873-4803, or email ellen.m.clark@us.army.mil.

Sincerely,



John R. Cavedo, Jr.
Lieutenant Colonel, US Army
Commanding

2. Agency Scoping Response - USFWS

From: Bob_Henszey@fws.gov
Sent: Wednesday, March 03, 2010 10:38 AM
To: Clark, Ellen M CTR USA
Cc: Jewel_Bennett@fws.gov
Subject: Programmatic Environmental Assessment for Donnelly Training Area & Fort Greely

Dear Ms Clark:

The U.S. Fish and Wildlife Service has reviewed the scoping request in preparation for the US Army Cold Regions Test Center's programmatic environmental assessment (PEA) for the Donnelly Training Area and Fort Greely.

There are no threatened or endangered species in the project area, thus the Service does not expect project-related activities to adversely impact listed species. This letter constitutes informal consultation under the Endangered Species Act. Preparation of a Biological Assessment or further consultation regarding this project is not necessary at this time.

We have no comment at this time, other than the CRTC should be aware of our recommended time periods for avoiding vegetation clearing (http://alaska.fws.gov/fisheries/fieldoffice/anchorage/pdf/vegetation_clearing.pdf). We may have additional comments for the Draft PEA, and for individual projects during the Corps' permitting process if the projects require wetland fill.

We appreciate this opportunity for early comment. Please contact Jewel Bennett (907-456-0324, jewel_bennett@fws.gov) or me should you have any questions concerning these comments.

Sincerely,
Bob Henszey

Robert J. Henszey, Fish & Wildlife Biologist
Conservation Planning Assistance
US Fish & Wildlife Service
101 12th Avenue, Room 110
Fairbanks, AK 99701
Phone: 907-456-0323, Fax: 907-456-0208
Bob_Henszey@fws.gov

3. Example Agency Letter and Notice of Availability



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY YUMA PROVING GROUND
COLD REGIONS TEST CENTER
P.O. BOX 31350
Delta Junction, AK 99731

January 10, 2012

Safety and Environmental Office

Alaska Department of Fish and Game
Division of Habitat
Attn: Robert McLean
1300 College Road
Fairbanks, AK 99701-1551

Dear Mr. McLean:

The U.S. Army Cold Regions Test Center (CRTC) has prepared a draft *Programmatic Environmental Assessment (PEA)* and draft *Findings of No Significant Impact (FNSIs)*. The PEA and FNSIs analyze certain proposed actions supporting CRTC testing activities and their affect on US Army Garrison Fort Wainwright's Donnelly Training Area (DTA) and US Army Garrison Fort Greely (Fort Greely). CRTC proposes to continue its test mission, improve and consolidate its facilities at DTA, and implement enhanced environmental review procedures for these activities. Modernization and consolidation of CRTC's facilities is required to ensure the most effective testing of new defense systems. Soldiers need assurance that future military technology has been field tested for proper performance, safety, and dependability.

CRTC has prepared a PEA to evaluate the potential environmental impacts in accordance with the National Environmental Policy Act (NEPA). The draft PEA and draft FNSIs are available at http://www.yuma.army.mil/mhub_documents.shtml for review for 30 days. Please submit comments no later than February 11, 2012. A scoping letter was sent to your agency in February 2010, and this draft PEA is the next step in that process and your opportunity to comment on the proposals.

If you have any questions, the point of contact for this action is Mr. Michael Nuckols, CRTC Environmental and Safety Specialist, 907-873-1245, or email at michael.nuckols@us.army.mil.

Sincerely,

A handwritten signature in black ink, reading "John R. Cavado, Jr.", is positioned above the typed name.

John R. Cavado, Jr.
Lieutenant Colonel, US Army
Commanding

<p align="center">U.S. Army Cold Regions Test Center</p> <p align="center">Notice of Availability</p> <p align="center"><i>Draft Programmatic Environmental Assessment: Army Testing, Infrastructure Improvement and Enhanced Environmental Procedures, Donnelly Training Area, Fort Wainwright and Fort Greely</i></p>	
<p>The Commander of the Cold Regions Test Center (CRTC), along with the Fort Wainwright Garrison Commander and Fort Greely Garrison Commander announce the availability of a draft Programmatic Environmental Assessment (PEA) and draft Findings of No Significant Impact (FNSI). CRTC has prepared a draft PEA to consider the potential environmental effects of continued test operations and infrastructure improvements by CRTC on Army lands (Fort Greely and Fort Wainwright's Donnelly Training Area) as well as enhanced environmental procedures for reviewing environmental impacts. The draft PEA analyzes potential consequences associated with the Proposed Actions including alternatives and a No Action Alternative.</p> <p>The draft PEA and draft FNSI are available for review for 30 days, from January 12 to February 11, 2012. A paper copy is available at the Delta Junction Public Library, 2291 Deborah Street, or upon request. The document is also available here: http://www.yuma.army.mil/mhub_documents.shtml.</p> <p>Requests for further information or submittal of public comments must be received no later than February 11, 2012. Comments received will be reviewed and relevant issues will be addressed and incorporated into a revised PEA. If no comments are received during the public comment period, the original PEA will become the final PEA.</p>	
<p>Send written comments to: Mr. Michael Nuckols U.S. Army Cold Regions Test Center PO Box 31350 Fort Greely, Alaska 99731</p>	<p>For more information or to submit comments electronically: Phone: (907) 873-1245 e-mail: michael.nuckols@us.army.mil</p>

4. Agency Public Comment and Response to Comment

From: Bob_Henszey@fws.gov
Sent: Friday, February 10, 2012 4:40 PM
To: Nuckols, Michael S CIV (US)
Cc: Jewel_Bennett@fws.gov
Subject: Cold Regions Test Center Draft Programmatic Environmental Assessment
FNSI

Dear Mr. Nuckols:

The U.S. Fish and Wildlife Service has reviewed the Cold Regions Test Center (CRTC) Draft Programmatic Environmental Assessment (PEA) and Draft Finding of No Significant Impacts (FNSI). CRTC proposes to continue operations within Donnelly Training Area, Fort Wainwright, and Fort Greely. Over the next ten years, the amount of testing activity will be similar to that performed by CRTC over the previous ten years. CRTC will, however, pursue a course of action focused upon modernizing and consolidating its facilities and ranges. This action consists of 22 site-specific projects that are either new construction (8) or upgrades to existing facilities and ranges (14). CRTC also proposes a systematic, comprehensive approach to environmental review of their actions.

The Service commends the CRTC for proposing a programmatic environmental assessment approach, and we do not object to the FNSI. Before the FNSI is signed, however, we would appreciate the Crane special interest area discussed in Section 4.8 as Table 5.13 indicates. A word search for “crane” only shows the one reference in Table 5.13.

We appreciate this opportunity for comment, and look forward to reviewing projects affecting wetlands during the Corps’ wetland permitting process. Please contact Jewel Bennett (907-456-0324, jewel_bennett@fws.gov) or me should you have any questions concerning these comments.

Sincerely,
Bob Henszey

Robert J. Henszey, Fish & Wildlife Biologist
Conservation Planning Assistance
US Fish & Wildlife Service
101 12th Avenue, Room 110
Fairbanks, AK 99701
Phone: 907-456-0323, Fax: 907-456-0208
Bob_Henszey@fws.gov

APPENDIX A. AGENCY COORDINATION

This section provides a summary of CRTC's response to the comment that was received from the U.S. Fish and Wildlife Service. No other agency, tribal or public comments were received. In this final PEA, CRTC added text in section 3.8, Wildlife and Fisheries, to give background information on cranes in the DTA. CRTC conducted an impact assessment of its actions on sandhill cranes and added text in both the No Action (4.8.1) and the Action Alternative 1 (4.8.2.2 c) sections. Because of existing agreements between the Army and the Alaska Department of Fish and Game that limit military disturbance during sandhill crane migration periods, and because CRTC's test season would rarely overlap with these migration periods, only a minor adverse impact to birds would be expected from testing or construction of the site-specific projects.

APPENDIX B.SITE-SPECIFIC INFRASTRUCTURE IMPROVEMENT PROJECTS

Table B–1 Infrastructure Improvement Construction Projects		
Project Name	Project Description	Figure Reference No.
Construct an Addition to Building 1928 <i>Upgrade</i>	Construct a major two-floor addition of approximately 15,600 square feet to Bolio Test Complex's central building (Building 1928) and move all of the headquarters personnel to the Bolio Test Complex. This would allow the center to consolidate personnel and activities into one central location, facilitating greater efficiency. It would likely include additional offices, a small warehouse for shipping and receiving, and a videoconferencing center. A new barracks would be constructed and the dining facility would receive a major expansion. Office trailers and temporary buildings would be removed. Improvements to the septic, electrical power, heating fuel storage, the boiler, and parking spaces with vehicle electrical outlets and outdoor lighting would all be needed to support additional personnel and activity at this location.	BL1
Repair or Renovate Obstacle Test Course <i>Upgrade</i>	The existing obstacle test course would be renovated or repaired as needed to meet current specifications. Wooden obstacles need to be replaced, foot paths need to be graded and have wood chips or gravel installed. Brush needs to be cleared back to original limits. New signs would be installed. This test course is accessible via a short walk from the Bolio Test Complex. This enables Soldiers to test individual equipment while expending minimal test support resources.	BL2
Storage and Logistics Support Facility at Tennessee <i>New Construction</i>	Construct an office and warm warehouse space to support the cold storage test activities at Tennessee Range, located near the Bolio Test Complex. The building would be constructed in a previously cleared area adjacent to two cold storage buildings erected in 2005. The new building would be 2000 square feet with concrete driveways, a loading dock, test item processing area, power, and communications lines. Minor site grading would be completed to drain water away from the foundation of the building.	BL3
Develop a cross country firing course <i>Upgrade</i>	Existing and new trails in Texas Range would be further developed into a cross-country course to test firing capabilities of tactical vehicles while moving across a variety of terrains. An old course developed in the 1980's for M1 Tank testing would also be revitalized with brush cutting and minor erosion repair (<1 acre). The trail specifications for both new and upgrades to cross country courses are to leave the surface soils and roughness unimproved where possible. The width needs to be a minimum of 13 feet to accommodate vehicles in size up to an M1A1 tank. Trail sections that are impassable due to the presence of mud a majority of the summer may be hardened with gravel to facilitate maintenance. A cross country course at Texas Range would provide the ability to test off-road driving and weapons firing at the same time. The cross country course being developed at the Mobility Test Complex serves a different purpose and is not within a firing range or adjacent to an impact area.	TX4

APPENDIX B. SITE-SPECIFIC INFRASTRUCTURE IMPROVEMENT PROJECTS

Table B-1 Infrastructure Improvement Construction Projects (Continued)		
Project Name	Project Description	Figure Reference No.
Enhance Texas Range <i>New Construction</i>	Expand the existing facility to provide support for remotely operated systems, small arms, and direct fire systems. Current capabilities are limited and do not take advantage of computer technologies. Install permanent remotely operated and computerized pop-up targets. Construct concrete blast shelters for better test observations during munitions testing. Upgrade target line access road, which is 1 mile long, by clearing brush from shoulders, adding gravel where mud holes have developed and grading. Clear woody vegetation, including approximately 30 acres forested with larger balsam poplar, aspen, birch, and some spruce. Maintain existing target berms by clearing woody vegetation that is obstructing line of sight, facing with soil and replanting grasses for easier maintenance.	TX5
Construct Minor upgrades at Texas Test Complex <i>Upgrade</i>	Minor upgrades to infrastructure are needed at the Texas maintenance and administration area to continue modernization of the facilities and technology. Projects include new secondary containment and a pole shed for the existing fuel tank, upgrades to the information networks and power supply, and demolition of the existing Quonset hut. The Quonset hut's concrete foundation most likely would be left on site. If not, the area would be leveled and compacted to serve as a parking area or storage area. New gravel would be brought in only if the existing material is not sufficient.	TX6
Meteorological Equipment <i>Upgrade</i>	At the Mississippi Test Complex, incremental facility and equipment upgrades will occur as technology evolves. These improvements would involve work inside existing buildings that are 10 years old or less. Some equipment would need to be installed elsewhere around the site within existing disturbed and fenced area. Communication and power cables would usually need to be installed underground to connect meteorological equipment to computer systems and facilities within buildings at Mississippi. Meteorology is a key component in test planning and execution, and data gathering and analysis of test results.	MS7
Construct Environmental Conditioning Firing Chamber <i>New Construction</i>	Construct a controlled-climate firing chamber to support year-round testing of projectiles at the Mississippi Test Complex. An environmental chamber would allow temperature conditioning just prior to firing into the impact area. Existing gravel areas within Mississippi would be leveled and new graded gravel material brought in to serve as a foundation pad for this new structure. Currently, testing of projectiles is constrained by ambient air temperature. This project would increase CRTC's capacity for testing outside of the usual test season.	MS8
Demolish Old Storage Building <i>Upgrade</i>	Demolish the oldest building at the Mississippi Test Complex that does not meet code. The concrete foundation most likely would be left on site. If not, the area would be leveled and compacted to serve as a parking area or storage area for large equipment or CONNEX containers. New gravel would be brought in only if the existing material is insufficient.	MS9

APPENDIX B. SITE-SPECIFIC INFRASTRUCTURE IMPROVEMENT PROJECTS

Table B-1 Infrastructure Improvement Construction Projects (Continued)		
Project Name	Project Description	Figure Reference No.
Create 8 km Direct Fire Range Upgrade	Upgrades to Washington Range to support the firing of longer-range weapons systems up to distances of 8 kilometers (5 miles). Creation of an 8 km direct fire range would enable CRTC to perform instrumented tests of long-range direct fire weapons under controlled, repeatable test and firing conditions. Advanced technology requires more precise instrumentation and tracking, and currently CRTC is limited to conducting detailed weapons performance analysis at ranges less than 5 kilometers (3.1 miles). The project includes upgrades to targetry, electrical, meteorological, and communications infrastructure along the 8 km firing corridor.	WA10
Create 10 km Direct Fire Range Upgrade	A 10-kilometer (6.2-mile) direct fire range at Washington Range would provide the capability to fire, precisely track and acquire test data on long-distance projectiles, such as missiles. In order to achieve the 10 km distance needed, areas on the other side of the Delta River would need to be accessed. Infrastructure in addition to the 8 km direct fire range upgrades would include construction of access roads and utilities that cross the Delta River. Construction areas would need to be cleared of surface and, in some cases, subsurface unexploded ordnance. Targetry, communications and electrical infrastructure along the 10 km corridor would be needed.	WA11
Create New OP 12 Access New Construction	Extend Meadows Road south to Washington Range at OP 12 using the route of an existing trail where feasible. This road extension would require an engineered survey, which would include the best route that avoids wetlands and unstable soils where possible. The survey would also determine the best route from the bluff down into the floodplain avoiding steep grades as much as possible. Specifications would be similar to existing secondary gravel roads such as Windy Ridge Road or the Old Richardson Highway. Road surface width would be about 40 feet, with shoulders and vegetation cleared another 5-6.5 feet on each side for a total disturbance width of up to 53 feet. The length would depend on the survey, but is estimated to be 2.6 miles, with about 40% being previously cleared area and existing trail. The purpose is to provide access to the southern end of Washington Range that is outside of the impact area and surface danger zones. This would enable more efficient operations and improve range safety.	WA12
Upgrade Support Infrastructure Upgrade	Conduct upgrades to basic infrastructure at Washington Range. Electrical upgrades include night and winter lighting and permanent power sources to replace generators. Install permanent pop-up targets. Replace portable latrines with permanent water and septic systems at OP 12. Replace or improve the OP 11 test observation building (communications, electrical, heating, lighting, insulation), and create earthen berms around the OP 11 and OP 12 test observation buildings. Improvements to the test support infrastructure at Washington Range are needed for CRTC to meet its requirement to adequately test and evaluate U.S. military weapons. Current infrastructure at Washington Range is at bare minimums for testing and does not fully support testing of modern weapons systems.	WA13

APPENDIX B. SITE-SPECIFIC INFRASTRUCTURE IMPROVEMENT PROJECTS

Table B–1 Infrastructure Improvement Construction Projects (Continued)		
Project Name	Project Description	Figure Reference No.
Short-term Minor Enhancements <i>Upgrade</i>	Gradually consolidate vehicle testing and maintenance from Bolio Test Complex Building 1930 and Texas Range to the Mobility Test Complex as existing facilities are equipped and building space allows. Upgrade snow and ice making as technology improves. Make incremental changes to communications network as technology develops. Install additional power infrastructure and lights around the test track. Build overhead cover and spill containment berms for existing fuel tanks.	MTC14
Develop and Enhance Cross-Country Courses <i>Upgrade</i>	Existing cross country trails located south and east of the test track would continue to be developed as “off-road” courses. Some sections would be hardened to accommodate summer use. Baseline trail conditions (surface, soils, slope and other characteristics) will be recorded. Equip with wireless communications, video cameras, and directional signs. Install signposts, monuments, and Carsonite posts. Maintain by repairing any degradation observed, but no improvements above baseline conditions would be conducted. This cross-country course would be utilized during all seasons, depending on test plan specifications. Pursue designation of this area (approximately 2500 acres) as restricted (pedestrian only) access to prevent unauthorized use of the course. This would help prevent unintentional modifications to the course from recreational or other military users. Currently, the Center only has minimal capability to conduct the off road portions of vehicle mobility tests under consistent, known conditions. Defining the courses, making moderate upgrades, and recording the trail conditions is required for developing a more robust off road mobility test capability.	MTC15
Construct New Consolidated Maintenance Facility <i>New Construction</i>	Construct a new consolidated facility through the Major Military Construction program. Move all vehicle testing and maintenance operations, Allied Trades functions, and instrumentation operations to the Mobility Test Complex. This would provide a centralized support area, eliminating much of the time spent daily driving between facilities. A new building would also be more efficient and would be designed to accommodate current technologies and test center-specific requirements. The facility would house offices, instrumentation lab areas, drive through maintenance bays, wash bay, repair area, machine shop area, comsec/arms vaults, POL storage, battery charging and storage, hazardous materials storage, restrooms, break room, and other related work areas. It would incorporate state-of-the-art computer controlled metalworking and fabrications, woodworking, paint booths, and glass working areas. Although exact building dimensions have not been determined, the approximate size needed is 21,000 square feet. There is plenty of cleared land adjacent to the existing administrative area within the fence. Buildings 605, 608, and 612 would then be turned over to Fort Greely for their use.	MTC16

APPENDIX B. SITE-SPECIFIC INFRASTRUCTURE IMPROVEMENT PROJECTS

Table B–1 Infrastructure Improvement Construction Projects (Continued)		
Project Name	Project Description	Figure Reference No.
Energy Storage and Test Facility <i>New Construction</i>	Construct a 10,000 square foot facility to test multiple energy generation and storage devices. This facility would support, but not be limited to, hybrid technology, fuel cells, batteries and directed energy. As in the commercial industry, the advantages of electrical dynamic vehicle controls, drive-by-wire technology, and alternative energy will be implemented by the military, and testing and development of these military applications is relatively new and requires specialized test areas and equipment. The facility would include personnel body wash, explosion proof lighting, liquid and solid chemical containment, wash bay, waste processor and recycler, fire suppression and explosion resistant construction. The facility would also include internal and external connections for system testing in a controlled environment, or exposed to extreme outside conditions. This facility would be located in previously burned and cleared areas adjacent to the existing administrative area within the Mobility Test Complex fence.	MTC17
Construct an Environmental-Conditioning Chamber <i>New Construction</i>	To accommodate year-round automotive testing, a controlled-climate chamber with integral split-chassis dynamometer would be installed at the Mobility Test Complex. Testing could be conducted in a controlled cold climate (or warm temperatures during winter) allowing better troubleshooting of vehicle failures or performance. Other test facilities, equipment, personnel, etc would be more fully utilized by the ability to conduct some degree of year-round automotive testing. Test schedules would not necessarily be dictated by the constraints of ambient air temperatures. Building dimensions would be 50 feet by 30 feet on a pad sized about 73 feet by 65 feet in previously cleared land adjacent to the existing administrative area within the fence.	MTC18
Minor Utility Upgrades <i>Upgrade</i>	Improve utilization of the outlying areas in DTA East by improving the electrical and communications infrastructure to keep up with the current state of the art. Options include adding 30 small wireless data towers, remote cameras, and upgrade the network backbone as needed. Installation would be through plowing in cable for underground power and communications and using an auger to install poles for above ground utilities. Some utility corridors would be hydro-axed or brushed every few years for maintenance.	DTA19
OP 26 Improvements <i>Upgrade</i>	In coordination with the U.S. Air Force and USAG Fort Wainwright, upgrade facilities at OP 26 in DTA West to support long-distance weaponry testing. Install a pre-fabricated steel building for storage of generators and vehicles during test season. Construct hardwired or wireless networks for encrypted data and voice communications. Facilities are needed at this remote location to support long-range weapons and other remote tests. Currently, there is only one small barracks-style building and storage CONEXes, but no permanent storage areas big enough to house large heavy equipment.	DTA20

APPENDIX B. SITE-SPECIFIC INFRASTRUCTURE IMPROVEMENT PROJECTS

Table B–1 Infrastructure Improvement Construction Projects (Concluded)		
Project Name	Project Description	Figure Reference No.
Construct a Laser Range <i>New Construction</i>	Develop a directed energy weapons/laser range in DTA West using natural terrain features as a backstop to limit the air and surface danger zones. Firing points and targets would be constructed by minimal vegetation clearing and addition of gravel. Winter trails would be developed for access where none exist. Gravel would most likely be obtained from Delta Creek at the existing permitted Air Force gravel extraction site. Temporary air and surface danger zones would be defined, and this would probably be the most constraining factor in determining locations for the targets and firing points. This project would provide for the longest distances and least number of restrictions (encroachment) to testing these kinds of weapons systems. Currently, CRTC has a very limited capability to test directed energy weapons and/or equipment with lasers.	DTA21
Install Permanent Laser Targets in DTA East <i>Upgrade</i>	Upgrade an existing small-scale laser target range that is located in DTA East. The lasing points are located on Windy Ridge with temporary and permanent targets scattered across training areas 520, 521, 525, 526, 527, 528, 529, and 530. Replace temporary laser targets with permanent ones by installing 4-inch diameter poles in the ground for attaching targets. Add 15-20 more targets, within the existing footprint (from 0.3 mile to 6.2 miles) away from the lasing points). Most of these targets are needed at the 0.3 to 2.5 mile distances. Install small cemented survey markers to allow for precise placement of temporary 3-D targets such as mock tanks and vehicles. Lasing and target site access would be via existing roads and trails or will be accessed on foot in summer and SUSV in winter.	DTA22

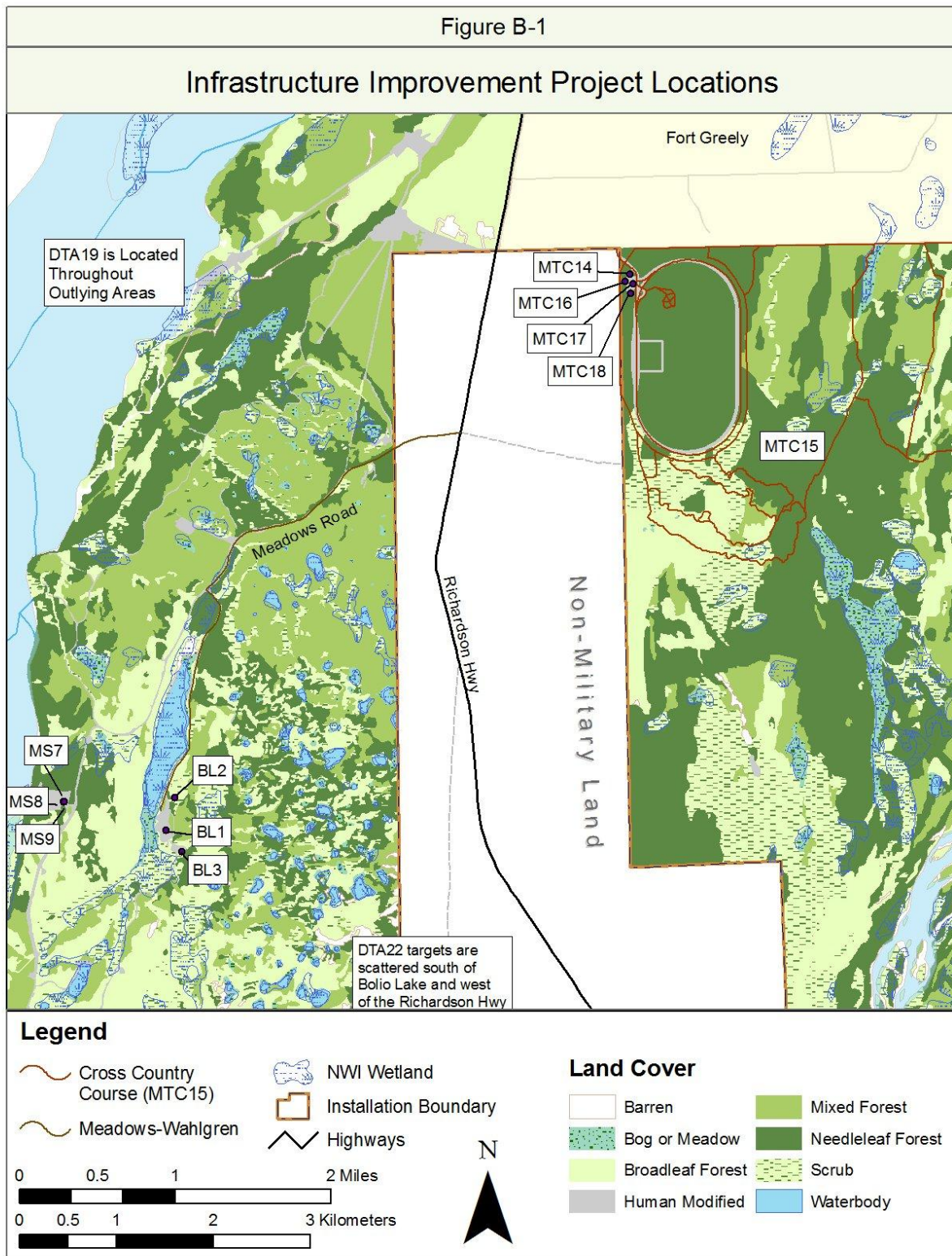


Figure B-1 Map of Project Locations Along the Richardson Highway.

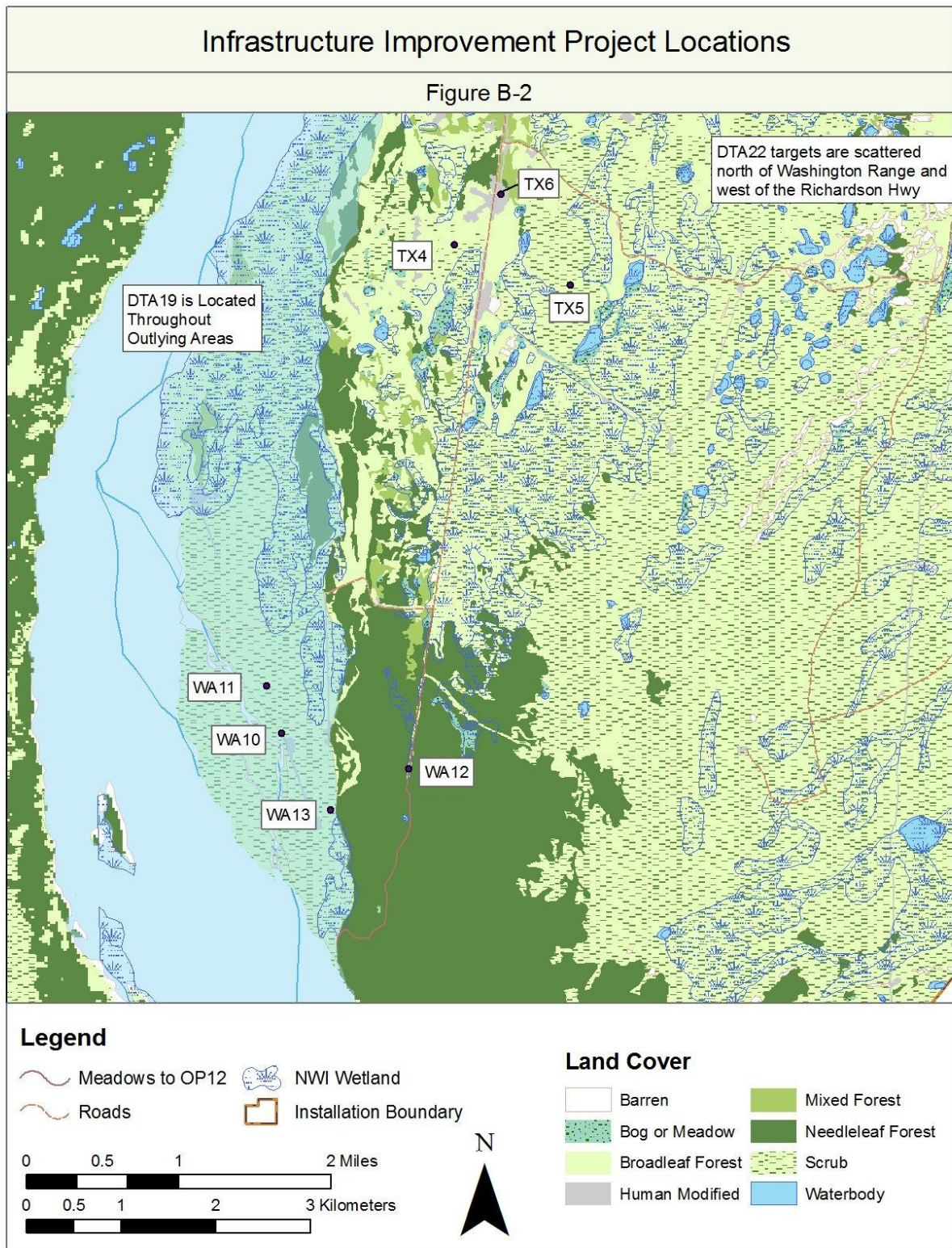


Figure B–2 Map of Project Locations Along the Delta River.

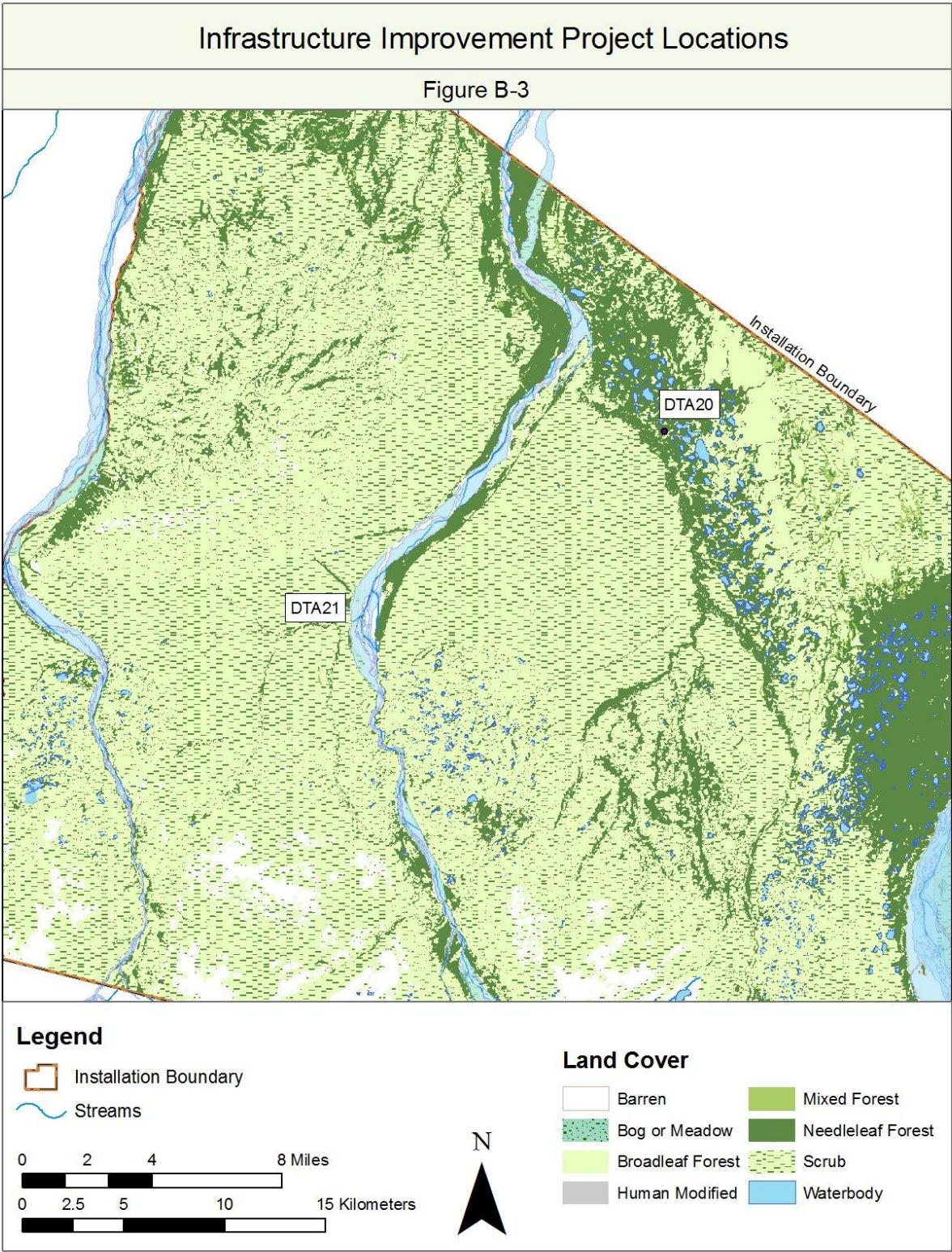


Figure B-3 Map of Project Locations along Delta Creek.

APPENDIX C.DESCRPTION OF CRTC’s ROUTINE TESTS, SUPPORT ACTIVITIES, PROJECTS AND MAINTENANCE ACTIVITIES

Routine Tests

Clothing (and Boots): Clothing tests are primarily human factors tests. CRTC evaluates whether the average – as well as the exceptionally large or small – Soldier can wear cold weather clothing articles. Skin temperature measurements provide data on a piece of clothing’s insulating capability. Personnel participating in durability testing might be asked to complete routine tasks (e.g. moving a drum, getting into a vehicle, etc). The amount of wear and tear is documented, and participants are asked about clothing fit and comfort. Camouflage capability against snow-covered surfaces might be evaluated. Personnel might participate in cross-country movements to determine if the garments change (hinder) their performance.

Occasionally, CRTC conducts clothing storage tests. Items are stored for long durations of time in unheated shelters. Articles are withdrawn and tested, looking in particular for dry rot or other deterioration.

Individual Soldier Equipment (and Related Systems): Individual Soldier equipment can range from small personal items (e.g. canteens) to sophisticated equipment (e.g. guided parachutes, laser-locating and designating modules). The following list was generated by reviewing tests conducted from 2000 to 2010, and from the list of Test Operating Procedures (see appendix G), which represents a comprehensive summary of inventory items that might be tested: small personal items, camping-type items, sporting good-type items, rations, body armor and helmets, generators, nuclear, biological or chemical (NBC) alarms and detectors, NBC (or BC) protective masks, NBC decontamination systems, radios, ranging and lasing devices, air drop items, parachutes, water storage, handling, and purification equipment, collapsible petroleum storage reservoirs, fuel filters and separators, petroleum handling equipment.

The basic test methodology remains the same for any of these Soldier items that might be tested. Upon receipt of the item(s), it is inspected for obvious flaws or shipping damage. A review of pertinent literature and procedures is conducted, with an eye to safety of use. These safety reviews provide preliminary data on likely cold weather performance. Examples of this review could include a determination of whether there is a potential for an accumulation of toxic gases or the possibility of contact frostbite due to the presence of exposed metal surfaces. Test methodology for NBC equipment would be conducted only with benign simulants, not actual agents.

Basic functionality testing provides considerable data to item managers. Items are operated in the cold in accordance with manufacturer guidelines. Basic data is collected on the item while it is operating. Cumulative wear and tear, overall performance in a cold environment, and adherence to performance specifications are measured. Examples of data collected include measurements of core and surface temperature, energy consumption, accuracy of readings (for measuring devices), or metal stress. Generally, CRTC will test dozens of the same item to account for normal statistical error. The operation is usually repeated for multiple iterations for the same reason.

Human factors testing is usually incorporated into functionality testing. Tests are designed to gauge whether a broad range of Soldiers can use the item in a cold regions environment, particularly while wearing arctic clothing. In general, CRTC invites Soldiers from Fort Greely or Fort Wainwright to use the equipment. These Soldiers represent a random sampling of the larger Soldier population. Anthropometric data such as height, weight, and gender are collected. Soldiers are sometimes asked to complete questionnaires on the item. On occasion, CRTC will ask Soldiers to complete cognitive or physical fitness tests to determine level of mental or physical fatigue after using the item.

CRTC frequently conducts storage testing on Soldier items. CRTC stores components in unheated shelters near the Bolio Test Complex. The equipment is then allowed to acclimate to ambient conditions throughout the year. Random samples are withdrawn each year for testing either at CRTC or at another test center outside Alaska. This testing provides the Army information on deterioration that might occur due to dry rot, freeze/thaw cycles, condensation, oxidation, and similar processes.

Vehicles (and Related Systems): Vehicles tested at CRTC can include wheeled vehicles, both smaller (under 15 tons) and larger (over 15 tons), tracked vehicles, and unmanned aerial vehicles and components known collectively as unmanned aerial systems (UAS). It can be helpful to classify test vehicles in one of these categories when considering the environmental impact of testing that vehicle.

CRTC identifies safety and health hazards associated with transporting, operating and maintaining a given vehicle in a cold region. When a vehicle is first received at the center, test personnel conduct a thorough inspection of the vehicle to identify any obvious safety deficiencies. Types of tests range from measurements of any combustion gases within the cab of a vehicle to inspections of walking surfaces for ice buildup.

CRTC conducts limited human factors studies to determine if a broad variety of Soldiers (e.g. different heights, strength) can safely and effectively operate the equipment. One frequent human factors test conducted in the cold regions provides data on whether a vehicle can be safely and efficiently operated while wearing bulky cold weather clothing. Test personnel wearing winter clothing are asked to enter and exit the vehicle; their performance is timed. Personnel might be asked to press buttons or turn knobs while wearing gloves or mittens.

Environmental tests provide data on how vehicles operate in a cold climate. CRTC personnel connect special testing instruments and install data recorders in the test vehicles that can then log all kinds of performance information. Test personnel then drive the instrumented vehicles on a variety of surfaces (hard surface roads, secondary roads, and trails). Typically, test vehicles are driven 3000 miles per test, evenly divided between each class of surfaces. Usually a test support vehicle, such as a pick-up or sport utility vehicle, accompanies the test vehicle. Environmental testing occurs primarily in the winter. When vehicle testing continues into spring or summer, driving routes are restricted to paved or graveled roads, and may even be suspended during breakup depending on the size of the vehicle. Detailed data is collected on each vehicle. Performance tests answer basic questions such as maximum speed, fuel economy, oil consumption, power consumption, acceleration, and operating temperature. Common tests unique to the cold regions include heater and defroster performance, measurement of the time it

takes for an engine to reach operating temperature in extreme cold, and traction on ice-covered surfaces.

CRTC often collects data on the reliability, availability, maintainability, and durability of test vehicles. Detailed information is collected that provides decision-makers information on how easily a vehicle is maintained in a cold climate. Examples of data collected include the number of minutes to perform routine maintenance tasks or the frequency of required oil changes.

Weapons Systems (and Related Systems): Weapons systems include small arms, large-caliber direct fire, large-caliber artillery (indirect fire), missiles and rockets, grenade launchers, smoke munitions and smoke generating equipment, demolitions and intelligent munitions, and minefield clearers. Tests in this category also include the ammunition for each of these systems.

CRTC identifies safety and health hazards associated with firing weapons systems in a cold climate. Hazards might include exposed metal triggers on small arms that could result in frostbite in extreme cold, combustion gases accumulating in vehicles after weapons are fired, or subtle performance problems associated with shrinkage of different materials in the cold. Generally, these faults are identified by visual inspection by trained personnel. Human factors are evaluated as part of the safety review. A review might determine if Soldiers of various heights might have difficulty stowing a weapon or loading ammunition into a weapon from on an ice-covered surface. CRTC also collects limited data on the reliability, availability, maintainability, and durability of weapon systems. Time to clean or load a weapon might be measured in a cold climate.

CRTC conducts trials that evaluate functionality and, in most cases, the accuracy of a weapon system. Functionality is evaluated by following step-by-step operational procedures in the weapon's manual. [These are the same procedures that would be followed by Soldiers.] The weapon is fired repeatedly. Test personnel record the number of successful firings and/or misfires. If accuracy data is needed, CRTC fires the weapon at a fixed or moving target. Fixed targets are generally made of canvas or plywood and marked with a grid system. The target is filmed during firing and the results later electronically scored. CRTC then completes a statistical summary for the project manager that details how accurate the weapon was. Project managers will then compare these results to those obtained during temperate, tropical, desert, and laboratory testing.

Ranges used include the Wills Small Arms Complex, Lampkin Range, Mississippi Range, the firing points along Meadows Road, Texas Range, and Washington Range. Firing only occurs into the existing impact areas. Sometimes weapons systems that need longer range distances between firing and impact points are tested utilizing observation points or temporary firing points in DTA West near the Oklahoma Impact Area. On rare occasions, CRTC may establish temporary impact areas for non-DUD producing munitions. Occasionally, testing takes place at the Fort Wainwright small arms ranges. Upon completion of firing activities, range residue is removed and recycled in accordance with Army requirements. Any misfired ammunition is returned to the Ammunition Supply Point for further processing. Munitions fired into the impact area that do not explode are noted and flagged for demolition by an Explosive Ordnance Disposal unit.

Another type of testing that CRTC conducts is storage testing. CRTC stores ammunition and weapon components in unheated shelters at the Fort Wainwright, Fort Greely, and Bolio Lake ammunition supply points. The equipment and ammunition is allowed to acclimate to ambient conditions throughout the year. Random samples are withdrawn each year for testing outside Alaska (e.g. firing of the weapon for accuracy or function). This provides the Army information on deterioration that might occur due to dry rot, freeze/thaw cycles, condensation, oxidation, and similar processes.

Test Preparation

Written Test Plan: When a Project Management (PM) office has a requirement, the PM approaches CRTC and requests test services. After defining a general scope of services and providing funds, PM shops work directly with CRTC's personnel on development of a test plan. Each test is assigned a test officer, who usually writes this plan. This plan details the piece of equipment/materiel to be tested, the types of data to be collected, how the equipment will be tested, maintenance procedures, and other pertinent data.

Sometimes, PM offices will conduct a "safari" test at CRTC. The PM will already have a test plan and will bring personnel, usually from another test center, to conduct the test. In these cases, CRTC only provides support to the testers to include the use of its facilities and personnel as needed, and writes an event plan that details the support that will be provided.

Risk Assessment: During the planning phase, a risk assessment is conducted of the potential safety hazards. A Hazard Assessment Working Group meeting is held to come to a consensus on the potential hazards unique to testing the item at CRTC, and what mitigations are required to minimize potential risks to CRTC personnel and the general public. These mitigating actions (such as wearing hearing protection, or designating maximum vehicle speeds) must be followed during testing.

Range Control Coordination: CRTC follows local U.S. Army Alaska range regulations, directives, and guidance. Preliminary coordination with DTA Range Control is completed during test planning. CRTC schedules any range or training areas that might be required with DTA Range Control. The CRTC test officer may request that airspace restrictions be temporarily emplaced for certain test events. For each test, CRTC test officers submit range packets to the local DTA Range Control for coordination, review, and approval. This package includes a description of the operation in general, maps showing surface danger zones (for weapons firing) and/or routes to be followed (for vehicles), dates and times, airspace requirements, participating personnel and their qualifications, the types and quantities of ammunition to be used, safety risk assessments, target requirements, special communication requirements, special frequencies required (and associated approval documents), and other pertinent information. Range Control conducts a review for compliance with safety, environmental, and training regulations as described in USAG Fort Wainwright Regulation 350-1. This package is then revised to reflect changes resulting from scheduling conflicts or other issues. Once the final package is completed, it is formally approved and scheduled by Range Control. Based upon the information submitted in this package, Range Control monitors test activities as they occur for compliance. Upon completion of testing, Range Control inspectors inspect the range for compliance with local policies.

Routine Test Support Activities

Target Creation: A primary duty of the Test Support Division (TSD), allied trades shop is to fabricate targets. These targets can be simple wood and canvas screens or elaborate mockups of enemy vehicles. Targets are generally made out of wood, decommissioned vehicles of various types (including tanks and meaning that have been cleared of all fluids and other potentially hazardous fluids or materials), or container expresses (CONEXs). Materials also consist of empty dumpsters, empty 55-gal drums, and poles for attaching targets. Occasionally, operational vehicles of various types are sometimes needed to test live capabilities.

The targets can be used as stationary targets or remotely controlled or pre-programmed moving targets, which are either hard wired into the power grid or powered with generators. Boresight targets are sometimes needed in different locations since boresight retention is often a test objective. Other specialized target needs are identified during the test planning phase and communicated to TSD for construction and placement. During the summer prior to test season, allied trades personnel will set up these targets on the ranges. Often, targets require a heat signature – so heating pads are placed into the target to simulate a vehicle engine. These would then be powered with generators or hard power.

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 line of sight. Sometime targets are flown out to remote areas and simply set down in a naturally cleared area and used as longer distance targets. Vegetation will have to be periodically maintained via mechanical clearing.

On rare occasions, CRTC might install permanent targets as part of a planned range infrastructure improvement. These are further discussed later in this appendix.

Cameras: CRTC's TSD instrumentation staff also collects photographic imagery during tests to include still imagery, videography, and high-speed videography. Instrumentation personnel ensure that the proper cameras and lighting are available and in good repair. Often, these camera setups can be quite involved and must be installed at test locations months in advance. Allied trades may need to fabricate installation devices for specific camera set-ups. High intensity lights — a necessity for high-speed videography — require that the instrumentation staff work closely with the maintenance staff to ensure that electrical or fuel demands will be met. Instrumentation staff may also work with the allied trades shop to fabricate lighting set-ups for these specialized high intensity lights.

Lights: In addition to high intensity lights mentioned above, maintenance section personnel will set up portable light towers that provide general ambient lighting during tests.

Radar: During some tests, CRTC's instrumentation staff operates two radar systems that run at a frequency of 10.535 GHz with average output power of 60 watts. Access within the main beam of the antenna is controlled and posted with RF warning signs for ranges up to 40 feet. In addition, CRTC sometimes receives muzzle velocity radars with some test items.

Use of Conditioning Chambers: In Building 608 is a conditioning chamber (or cold chamber), that is essentially a large refrigerator of about 200 square feet. It is chilled using compressors with Freon. CRTC TSD also has a smaller portable chamber that is also cooled with compressors to temperature condition components in the field. It is approximately 60 square feet and attached to a trailer for portability. Generators that run compressors with liquid nitrogen or Freon are also attached to the trailer. The portable chamber can be used if ammunition needs to be below a certain temperature for testing, but the weather has been too warm. The test may still be able to go forward if the test items can be conditioned on-site using a portable chamber.

Meteorological Stations: The CRTC TSD meteorological section is charged with providing long and short-range forecasts to test personnel. This section is responsible for recording meteorological data during testing. They also maintain permanent meteorological stations located at the Bolio Test Complex, the Mississippi Test Complex, Texas Range, Main Post Fort Greely, and at long-term storage test sites. Often, this section must set up temporary meteorological stations at test sites, as requested by the test officer. Power is sometimes supplied to these temporary meteorological stations using solar installations. Occasionally, power is drawn from the electrical grid (if nearby) or more rarely, diesel powered generators.

Warm-Up Buildings (Shelters) and Portable Trailers: The allied trades section in the past has fabricated warm-up shelters from CONNEX shipping containers for use on the ranges. TSD is responsible for placing these portable warm-up buildings, or ensuring that existing shelters are ready for use at test locations. TSD may also be requested to position office trailers near the test site to serve as a temporary base of operations for test personnel running the test and collecting data. These buildings have diesel-powered generators for heat and electricity. Occasionally, CRTC asks the Directorate of Public Works to connect these to existing hard power supplies, if available. The maintenance section also ensure that vehicle parking areas and head bolt heater outlets are available at test sites (should there be a requirement to park support vehicles need at a test site for longer than a few hours in frigid temperatures).

Data Collection Instruments: Test officers will ask CRTC's instrumentation staff to outfit equipment to be tested with various data-gathering instruments. Prior to testing, instrumentation staff will determine what types of data are required and select monitoring equipment to be installed on the test item. Once selected, they will ensure that equipment is properly calibrated and available. Upon arrival of test equipment at CRTC; instrumentation personnel install this equipment into or on the test item. This instrumentation will be used to automatically gather data for test officers during the conduct of the test. Types of data include temperatures within and on the surface of the equipment, mechanical stresses, chemical concentrations, electrical currents, voltage, speed, acceleration, fuel consumption, noise levels, electromagnetic field strength, and other parameters.

Spare Parts, Service Items, POLS: The Test Support Division ensures that spare parts, service items, POLs, and other items are available prior to the start of the test. The TSD supply section plans for shipping and receiving of all test items and related support equipment. In so doing, CRTC personnel comply with all local, state, and federal environmental, transportation and safety regulations.

Generators: Often, there is no electrical power available at test sites. The maintenance section of TSD maintains and emplaces portable generators that might be temporarily needed to power other equipment. During the test season, the maintenance section might move a single generator around multiple times to support a number of different tests and power requirements. This section also fuels these generators.

Fueling: Equipment is fueled in both CRTC's support compounds and on the ranges. CRTC personnel bring fuel to equipment in small cans or portable tanks mounted onto vehicles. Personnel comply with local spill contingency requirements when fueling, as dictated by Fort Wainwright and Fort Greely permits. This includes actions such as observing for spills, having spill kits available, notifying support agencies if a spill occurs, and cleaning up the spill should one occur.

Communications Connectivity: The TSD information management section ensures that adequate voice and data capability exists at a given test site or office location prior to the test. The TSD makes final network connections to existing infrastructure as needed. Furthermore, this shop ensures that adequate computer hardware is available at the test site. Occasionally, CRTC will request additional fiber optic or copper lines be installed at that location, as detailed later in this document.

Surveys and Signage: Sometimes specific routes need to be designated and followed during vehicle testing. This might require that the maintenance section install route signs and/or location markers, including distance markers. Often, CRTC will survey the location for precise placement of markers.

Equipment Maintenance and Repair: The maintenance section of TSD is responsible for all equipment maintenance and repair for both test items and for equipment that CRTC uses throughout the year. Currently, maintenance activities primarily occur in Building 605, located on Main Post Fort Greely. Future maintenance activities may occur in other buildings or new buildings such as the proposed consolidated maintenance facility to be located at the Mobility Test Complex. Bulldozers, resident tactical vehicles, and other heavy equipment are serviced at this location. Generally, maintenance is completed in the summer in preparation for winter test activities. Often, test officers will specify the need for a very specific piece of equipment that the Maintenance Section must then ensure is available and in good repair for the test. Maintenance activities occur in accordance with Army technical manuals and specifications as well as local environmental and safety policies and regulations.

Routine Projects and Maintenance

DTA Range Control, DPW and their contractors are responsible for and provide general maintenance of all ranges, roads, trails, and building and utility maintenance. Major and minor new construction is typically completed by DPW and its contractors. Fort Wainwright DPW is responsible for those projects within Donnelly Training Area (DTA) while Fort Greely DPW is responsible for those projects within Fort Greely.

Should Range Control or DPW not have personnel available, CRTC might ask its maintenance personnel to do the work as a self-help project. CRTC's self-help projects may be in support of the Center as a whole or may be in support of a specific test requirement.

The types of projects and/or maintenance performed for CRTC – whether performed by contract, USAG Fort Wainwright personnel, or the CRTC workforce – are described below.

In executing these projects, CRTC and DPW (and its contractors) work together to ensure that various permit and legal requirements are met. A few selected examples include Alaska Pollution Discharge Elimination System permits, wetland dredge and fill permits, hazardous waste handling procedures, spill contingency procedures, and Migratory Bird Treaty Act restrictions. These legal requirements are discussed elsewhere within this document.

Berm Creation & Maintenance: CRTC may need new berms constructed on DTA ranges. 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 typically faced with 12 inches to 18 inches 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. Often, berms are installed with dozers (CAT D4-D9) or an excavator (CAT 320). Finished berms may be vertically track-walked by a dozer then seeded and fertilized.

Building Construction: Many of the projects CRTC would undertake involve construction of new facilities. Proposed facilities could take many forms: heated, unheated, overhead cover, offices, shop areas, storage, testing facilities, testing laboratories, etc. Most projects require connection to the electrical grid (but not all) and, if designed for occupancy, water and septic. Some projects require the renovation, improvement, or alteration of existing facilities. Nonetheless, there are some common attributes in relation to how they would be constructed and executed.

When a need is identified, CRTC develops a conceptual scope and requests funding for the project from the Army and ultimately Congress. Often, NEPA documentation is completed prior to funding such that if funding is approved, the project may move quickly into the design and construction phase. Depending upon the complexity of the project, CRTC might request funding to design the project and then have a separate funding request to construct it in subsequent fiscal years. Smaller projects, funded out of the Center's overhead, might occur in a single year.

Once it appears that funding is likely or present, CRTC submits a request to DPW to construct the project using a work order. If NEPA documentation has not already been completed, a NEPA study is performed and approved by the Director of Public Works. Other environmental permitting is completed and obtained at this time. CRTC works closely with DPW to develop a design for the facility to include site layout, site access, utility connections, building layout, materials, life safety requirements, and construction methods. The final design is approved by CRTC and DPW.

DPW oversees construction on the installation, including contractors working directly for DPW or through the U.S. Army Corps of Engineers (USACE) for DPW (for major military construction exceeding \$750,000). Once a contractor is selected, the Army holds a pre-work conference that allows the contractor and the Government to review the specifications and plan for how the work will be accomplished. As work proceeds, the contractor's performance is monitored by a Construction Inspector from DPW who ensures that the contractor is constructing the facility per the specified design and that it is being built according to code.

On rare occasions, DPW or CRTC employees might perform the work – particularly for minor renovations or other small projects. Examples include the installation of partition walls or minor soundproofing.

Initial site work to prepare for construction might require removing vegetation, re-grading and shaping land, installing new access roads, and installing temporary utility connections. At this time, the contractor will work to control water flow and erosion across the site.

Once the site is prepared, actual construction would begin. Construction methods would vary by project. Shop-type buildings are typically constructed on insulated concrete pads and are typically pre-fabricated metal buildings that may be erected quickly. Office-type buildings are often wood frame construction over an insulated crawl-space. Large projects tend to be reinforced masonry. When wells and septic systems need to be updated or new ones constructed, State ADEC regulations govern the design and installation to protect human health and the environment. In all cases, projects are designed and constructed in accordance with national and Alaska design standards.

Building construction projects are designed to include features related to energy-efficiency and water-efficiency. Parking areas for projects within DTA tend to be surfaced with permeable gravel while those on Main Post Fort Greely are typically paved. In the future, it is probable that projects will incorporate more “green” building features – such as solar panels, super-high-efficiency windows, grey-water re-use systems, super-insulated building envelopes, or biomass heating.

Due to Alaska's short building season, contractors often make efforts to weatherize a building as quickly as possible. The frame may be constructed with roofing, siding materials, and insulation applied prior to completion of interior masonry or other interior features. This allows crews to heat the building and continue working into the winter.

Once structural components are in place and the building is weatherized, contractors may then construct interior partition walls or other features. From there, drywall is hung or finish masonry applied in accordance with national standards. Finish materials are then applied.

As construction proceeds, the DPW construction inspector periodically reviews the contractor's work. As work is completed satisfactorily, the Army may provide a partial payment to the contractor. Once the project is done, it is inspected and either accepted or rejected by the Army. If accepted, final payment is made. If rejected, the contractor is given a list of items to fix. Once the items are fixed, final payment is made. After DPW accepts the project, it is then signed over to CRTC.

Building Demolition: Often, outdated structures must be demolished to make way for new projects or to remove a safety hazard. Typically, CRTC would ask that DPW or its contractors demolish structures rather than performing the work in-house. On rare occasions, CRTC might demolish structures using its own staff. In these cases, CRTC would first request permission from the DPW to demolish the structure. Upon approval, CRTC would determine whether the State Historic Preservation Office considers the building to be historic and if there are any cultural resource restrictions. If not, CRTC would then work closely with DPW contractors to remove lead and asbestos from the structure. Once lead and asbestos concerns have been resolved, DPW power and utilities crews would cut utility connections to the structure, capping them as necessary to protect public health and safety. Building demolition would commence. Personnel might use heavy equipment to demolish the structure or might demolish it by hand. Hand demolition would occur when portions of the building are to be salvaged and reused. Waste generated from demolition would then be taken trucked to a construction and demolition landfill for disposal. During demolition, personnel might need to control dust by spraying water.

Culvert Installation: Occasionally, CRTC needs to control drainage at test sites through the installation of culverts or similar drainage controls. Culverts are used to maintain and facilitate natural drainage patterns and are often associated with trails and roads. CRTC personnel rarely install culverts as a self-help project, typically relying upon DPW or its contractors to perform the task. Sand-bags might also be used as a temporary measure to direct water.

Corrugated metal pipe (culvert) might be installed in areas where drainage requires passage under a road and are associated with ditching and other hydraulic features that enhance or maintain area hydrology.

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 drainage will designate the diameter of the 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.

Precast concrete culverts might be used in lieu of CMP. Installation methods would be similar to CMP. Sandbags might be used to create temporary walls. Sandbags are created by filling sandbags with sand or other earth material in order to create a barrier or wall to divert drainage. Sandbags might also be used for erosion control.

Fence Installation and Repair: Gates, fencing and posts are used to enclose an area for security purposes. The existing chain link fencing around CRTC's operational complexes may need to be repaired or extended as new facilities are developed. The typical fence used at CRTC facilities is 8 foot or 10 foot tall chain link with barbed wire across the top. The fence posts are usually steel

tubing set in concrete footings or driven directly into the ground. Temporary fencing might be used to control access to a test set-up or to control snow drifting. Plastic fencing is designed for temporary purposes, such as containing snow drifts or keeping people away from construction, sensitive, or dangerous areas. Typically orange (sometimes red or green), this fencing is in an open-weave pattern also described as a woven plastic mesh or chain link style. Plastic temporary fencing is usually 4 to 8 feet in height. Metal fence posts are driven into the ground and the temporary fencing is attached. Typically, it would not be left in place longer than 1 year. Snow fencing should be rolled up and stored during the summer to prevent degradation of the material.

Gravel Mining from Existing Borrow Pits: CRTC personnel might need to obtain gravel material on a small scale from existing borrow pits located within Donnelly Training Area. DPW establishes pit boundaries and specifies extraction areas, overburden dumps and stockpile areas. As DPW develops pits, they ensure adequate drainage through the strategic placement of berms, ditches and culverts.

DPW opens borrow pits by removing overburden which it piles nearby. Users of the pit remove gravel aggregate 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 about 20 feet into gravel deposits and loosely pile the material on the surface. The third method of gravel excavation is by the use of scrapers (CAT 627/631).

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.

For self-help projects, CRTC would coordinate with DPW on use of these borrow sites, but would not develop new pits. CRTC would not be responsible for pit reclamation unless coordinated with DPW as a condition of gravel extraction.

CRTC often uses pit-run gravel but sometimes screens it for aggregate size or percentages. CRTC has no plans to crush gravel in-house; however, this could be contracted by DPW.

Hardstand/Firing Pad Installation: Hardstands are created to provide a stable ground surface for test activities and allow for sustainable repeated use. CRTC would typically only have reason to construct a hardstand for the following activity:

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 0.5 to 1 acre on an access trail. They can be a series of smaller pads on the access trail with cleared areas for digging in adjacent to the pads. If the pad is designed for towed artillery, CRTC might include access trails/turn-arounds that are large enough to accommodate vehicle-trailer combos.

Construction of firing points involves standard site preparation, clearing of vegetation for pads and access, leaving perimeter buffers and islands when plans call for a series of small 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 pit-run 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, or other contouring to specified crown slopes; and use a 2:1 shoulder. Typical maintenance includes: remove damaged trees in danger of falling, mowing/brush-hogging when the nearby vegetation gets tall enough to interfere with firing operations (over 5-6 feet tall), grade out any ruts or potholes that develop, add additional classified material, and snow removal.

Road and Trail Creation and Maintenance: Generally, routine trail and road maintenance is performed by the DPW support services contractor. As needed to support test activities, CRTC maintenance staff might grade or repair existing trails and make minor repairs over short distances with the approval and guidance of DPW. Upgrades exceeding in-house capabilities (such as widening or gravel resurfacing) would be contracted through DPW.

Maintenance and Minor Improvements: Roads and trails with minor impairments (including but not limited to intrusions, potholes, cuts, washboards or soft areas less than 6 inches in depth) are graded and smoothed by cut and fill operations. CRTC might re-establish the crown (-2 percent) on two way roads and single lane roads with widths greater than 12 feet. Personnel might re-establish the inslope and outslope where appropriate. V-ditches would be cut to drainage elevation along both sides of entire road length with side slopes not exceeding 2:1.

Areas where grading or cut/fill operations result in a depth of 3 inches or more of loose material will be compacted to 95% by wheel attachment (i.e., “Follow-me-wobbly”) or roller. Army personnel will ensure adequate moisture during compaction by spraying water.

Major Improvements and New Roads: CRTC might repair roads and trails with significant impairments (i.e., intrusions, potholes, cuts, washboards or soft areas 6 inches or greater in depth) over short distances. Maintenance personnel might add fill material equivalent in specification to previously or currently installed material. Fill material will be site specific and include appropriate pit-run and classified manufactured gravel. Fill material would be placed in compacted 6 inches lifts to meet a compaction standard of 95 percent. Drainage features, including crown, inslope/outslope, ditching and side slopes, would be re-established where appropriate.

Several of CRTC’s proposed projects involve installation of new trails or roads. One example is the proposed extension of Meadows Road to Observation Point 12 (WA12). In general, construction of new trails other than those specifically listed in this document is beyond the scope of this PEA.

The crown on roads and trails will be established at -2 percent on two way roads and single lane roads with widths greater than 12 feet. V-ditches would be cut to drainage elevation along both sides of entire road length with side slopes not exceeding 2:1.

Areas where grading or cut/fill operations result in a depth of 3 inches or more of loose material will be compacted to 95% by wheel attachment (i.e., “Follow-me-wobbly”) or roller. Personnel will ensure adequate moisture during compaction by spraying water. Fill material will be site specific and include appropriate pit-run and classified manufactured gravel.

Target Installation and Maintenance: In general, permanent target installation as listed in this section is for the proposed enhancements to Texas Range (Projects TX4 and TX5). Standard in place target (SIT) emplacement utilizes a concrete emplacement with a geo-textile/gravel drainage layer, heavy 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 emplacements are 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. Provisions must be made to prevent natural slope drainage from entering the emplacement, which can be difficult to achieve. The potential to disturb UXO 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. Line of sight between the soldier/firer and the target emplacement may not be possible utilizing the natural terrain. Below-grade emplacements will also gather snow, sand, dirt, trash, and any windblown objects which can cause maintenance problems. Covers may be installed to help keep debris from accumulating in the emplacement, but due to the high winds that can occur at DTA, site-specific cover designs are needed.

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 not 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 or brush-hogging when the nearby vegetation gets tall enough to interfere with operations (over 5-6 feet tall). Hardened areas may need repair of potholes and placement of additional classified material, and snow removal may be required for target access roads and target mechanisms.

Utility Line Creation and Maintenance: CRTC uses Ethernet based networks and electrical power from the larger electrical grid. In general, CRTC submits work orders to DPW or 59th Signal so that their contractor(s) can make connections to the electrical grid or the data network. On occasion, CRTC might work with these contractors. For example, CRTC might bury network cable itself, allowing the contractor to terminate the final connection to their grid.

Ethernet networks are comprised of a combination of fiber optics and copper based systems maximizing the use of commercial off the shelf electronic components and standards. Because Ethernet networks are powered, they also require connections to the electrical grid.

Electrical power distribution conforms to the Architectural Engineering Institute (AEI) and Unified Facilities Criteria (UFC) 3-550-03FA.

Burial methods are similar for electrical and data cabling. Downrange power distribution and data cable shall be direct buried or run underground in conduit. The direct burial cable is typically encased in a bed of sand or select backfill. If soil conditions and the project type warrant, cable may also be "plowed" in.

Power and data cables are sometimes installed in the same trench, maintaining specific separation distances. Direct burial data cables and secondary power cables must maintain a 4-inch separation distance. Direct burial data and secondary power cables and primary power cables must maintain an 11-inch separation distance.

UXO and environmental issues will be considered in determining routes before trenching to minimize disturbance of affected areas. The designer should will route trenches along access roads and maintenance trails as much as practical to minimize disturbance. Concrete encased duct banks are frequently used when trenching underneath roads to protect cables from compaction.

Particularly on ranges, actual depth of the cables shall be deep enough to prevent damage from projectile penetration or vehicles driving over the installation. Minimum cover requirements of

National Fire Protection Association (NFPA) 70 and Institute of Electrical & Electronics Engineers C2 (IEEE C2) will be met.

UXO Surveys for Small Projects and Tests: Often, small projects or tests are located in Impact Areas where there is the possibility of encountering unexploded ordnance (UXO). In these cases, CRTC requests that an Explosive Ordnance Disposal (EOD) unit provide a surface clearance of any dangerous items. Several CRTC personnel are also certified to conduct limited surface clearances of UXO. Clearances of surface UXO is closely coordinated with Range Control and carefully documented.

Subsurface clearance is sometimes required when digging in an impact area. Examples include the installation of telephone poles for targets or to install fiber optic cable. Trained CRTC personnel utilize an AN/PSS-14 mine detector within DTA ranges and impact areas to detect subsurface unexploded ordnance (UXO).

Prior to performing any subsurface excavation in any Impact Area in Donnelly Training Area (DTA), the Cold Regions Test Center (CRTC) will do the following:

- a. CRTC will complete a dig permit, to be signed and approved by Director of Public Works.
- b. Trained CRTC personnel will survey for and clear surface UXO from the proposed site. Surface survey results will be documented, with copies of the findings provided to DTA Range Control and the CRTC Commander.
- c. Prior to actual subsurface clearance, two licensed operators will conduct a trial run in a mock setup. If the trial run is 100 percent successful, they will begin the mission. During this trial run, the operators will determine the maximum effective search depth for the soil type.
- d. The AN/PSS-14 operators will complete the subsurface UXO clearance operation in the proposed search area. The operators will conduct the operation in accordance with Army Technical Manual 5-6665-373-12&P, the CRTC Subsurface Unexploded Ordinance Clearance SOP and United States Army Alaska Regulation 350-1.
- e. To ensure accuracy, the area will be swept by a second operator using a second detector.
- e. In the event that subsurface UXO is identified, the operator will clearly mark the area with yellow survey ribbon and will record the grid coordinates. Under no circumstances will the operator or any CRTC personnel dig, handle, remove, or dispose of any surface or subsurface UXO. CRTC will then coordinate with an appropriate Department of Defense organization that specializes in UXO to remove or destroy the item. Alternatively, CRTC may move the project site to avoid UXO.
- f. If no UXO is found during the search, the operators will report the area clear to the effective search depth. CRTC will then produce a memorandum to the Installation Range Officer stating the date, areas, and results of the search. Should deeper excavation be required, a surface layer of soil may be removed as far down as the effective search depth and additional subsurface clearance operations will then take place before further excavation is performed.

Vegetation Clearing: CRTC clears trees, shrubs, and other vegetation using either hand tools or, for larger jobs, heavy equipment. Often, CRTC will request that Range Control or DPW contractors remove vegetation. Vegetation may be removed to reduce fire risk around buildings, to prevent fencing from becoming overgrown, to create and maintain firing lanes (improve line-of-sight), to prepare a site for construction, or to clear an area for other activities.

Either CRTC or DPW coordinates removal of trees with the USAG Fort Wainwright Forester who provides direction on disposition of the wood and debris. Often, trees are cut to length and piled for personal firewood harvest. Smaller trees and scrubby vegetation are frequently chipped and spread out. More rarely, personnel pile and burn the vegetation, under the supervision of the DPW Forester.

Hand crews may use chain saws, hand saws, and axes to remove trees. Personnel cut vegetation by hand when working in unfrozen wetlands. Where erosion is a concern, hand clearing is used to ensure that the root mass is left in place.

Personnel commonly remove vegetation using heavy equipment. When available, the Army uses a shear blade when removing vegetation. Shear blades 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. Shear blades are used to cut off trees and vegetation at the ground surface when the soil is frozen. Sheared material is rolled into windrows. Shear blades allow for effective stem and trunk cutting with minimal root ball and soil disturbance, minimizing erosion. Shear bladed material can be left to decompose or be piled and burned.

When a shear blade is not available, operators might use a straight blade fitted to the front of a dozers (CAT D4-D9) 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 when CRTC assists DPW with burning operations.

DPW and Range Control commonly use hydro-axe equipment to remove and grind-up vegetation. Personnel may use a masticating head hydro-axe (e.g. Fecon) 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 often performed during frozen and non-frozen soil conditions, depending on soil type and ground moisture.

Personnel might also use a flail head hydro-axe - an attachment onto an excavator (CAT 320) - to remove vegetation. This equipment 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.

Mechanical clearing typically involves large areas and when thinning, results in wide spacing between remaining trees. Mechanical thinning operations are typically conducted when CRTC needs a line-of-sight such as on firing ranges or along overgrown roads and trails.

APPENDIX C. ROUTINE TESTS AND SUPPORT ACTIVITIES

When cutting to the ground level, CRTC prefers to remove vegetation during the winter so as to cause minimal intrusion into mineral soil. Less commonly, personnel clear vegetation in uplands during the summer using a bulldozer, removing most roots and some soil. Roots are removed when a flat, level area is needed such as clearings for new buildings, firing pads, or parking areas.

CRTC or DPW support personnel may mow grass around facilities. Small brush and weeds might also be mown periodically as needed to control growth.

General test categories and the specific tests conducted at CRTC since 2005, grouped by fiscal year to show the variability from year to year in test load and types of tests.

Table C–1 Tests by Category 2005-2010		
Fiscal Year	Major Tests	General Test Category
2005	Armored Support Vehicle (ASV)	Vehicle
	Hybrid Electric Family of Modern Tactical Vehicles (FMTV), summer test	Vehicle
	Stryker Engineer Support Vehicle (ESV)	Vehicle
	Stryker Infantry Carrier Vehicle (ICV)	Vehicle
	Joint Service General Purpose Mask (JSGPM)	Individual Equipment
	M56E1GS Smoke Generator	Individual Equipment
	Storage testing	various
2006	Stryker Mobile Gun System (MGS)	Vehicle and Weapons System
	Stryker Infantry Carrier Vehicle (ICV)	Vehicle
	Selectable Lightweight Attack Munition (SLAM)	Weapons System
	Spider XM155 Networked Munition System	Weapons System
	Modular Boot System (MBS)	Clothing
	Vacca Heated Vest	Clothing
	Joint Service General Purpose Mask (JSGPM)	Individual Equipment
	Joint Services Lightweight Standoff Chemical Agent Detector (JSLSCAD)	Individual Equipment
	SOFTAPS MC6 Parachute	Individual Equipment
	Wind Supported Aerial Delivery System (WSADS)	Individual Equipment
	Commercial automotive	Vehicle
	Storage testing	various
2007	Stryker NBC Reconnaissance Vehicle (NBCRV)	Vehicle
	USMC Expeditionary Fighting Vehicle (EFV)	Vehicle and Weapons System
	Expeditionary Fire Support System (EFSS)	Weapons System
	Guided Multiple Launch Rocket System (GMLRS)	Weapons System
	Storage testing	various

APPENDIX C. ROUTINE TESTS AND SUPPORT ACTIVITIES

Table C-1 Tests by Category 2005-2010 (Concluded)		
Fiscal Year	Major Tests	General Test Category
2008	Logistics Vehicle System Replacement (LVSF)	Vehicle
	Hybrid Electric High Mobility Multipurpose Wheeled Vehicle (HE-HMMWV)	Vehicle
	SWORFS UGV	Vehicle
	Stryker Mobile Gun System (MGS)	Vehicle and Weapons System
	Expeditionary Fire Support System Internally Transportable Vehicle (EFSS-ITV)	Vehicle and Weapons System
	Magneto Inductive-Remote Activation Munitions System (MI- RAMS) XM40	Weapons System
	XM982 Excalibur	Weapons System
	ACU Improved Combat Trouser	Clothing
	M56E1 Smoke Generator	Individual Equipment
	Advanced Tactical Parachute System (ATPS)	Individual Equipment
	CFV Individual Cold Weather Stove	Individual Equipment
	Enhanced Night Vision Goggle (ENV)	Individual Equipment
	LED lights	Individual Equipment
	Talon Laser Target Locating Module (LTLM)	Individual Equipment
	Thermal Weapons Sight II (TWSII)	Individual Equipment
	Storage testing	various
2009	HWMMV Cargo Heater	Vehicle
	Non-Line of Sight Launch System (NLOS-LS)	Weapons System
	Navy Radio Test (CISCHR)	Individual Equipment
	Mark VIIIE Laser Target Locator Module (LTLM)	Individual Equipment
	Thermal Weapon Sight (TWS) II	Individual Equipment
	Storage testing	various
2010	Armored Support Vehicle (ASV)	Vehicle
	XM1124 Hybrid-Electric High Mobility Multipurpose Wheeled Vehicle (HE-HMMWV)	Vehicle
	Mine Resistant Ambush Protected Vehicles (MRAP)	Vehicle
	M1A2 Abrams System Enhancement Package V2	Vehicle and Weapons System
	Non-Line of Sight Launch System (NLOS-LS)	Weapons System
	XM153 Common Remotely Operated Weapons Station II (CROWS II)	Weapons System
	Lightweight Laser Designator Rangefinder (LLDR)	Individual Equipment
	Commercial Automotive	Vehicle

APPENDIX D.CRTC PROJECT AND TEST CHECKLIST

COLD REGIONS TEST CENTER PROJECT and TEST NEPA REVIEW CHECKLIST

PROJECT or TEST TITLE: _____

WORK ORDER NUMBER (if applicable): _____

DATE: _____

DETAILED DESCRIPTION AND LOCATION:

Enter project grid coordinates or attach a location map.

Enter acreage of footprint disturbance.

Describe type of activity (construction).

Describe type of activity (use).

Describe any other relevant project components.

CRTC environmental staff will complete this checklist, including a detailed description of the proposed project or test (either will be referred to as the “project”). Use of this checklist will help to guide CRTC environmental staff in determining if the project is eligible for tiering off of the CRTC Programmatic Environmental Assessment (PEA). It will also guide the use of appropriate Standard Operating Procedures and Best Management Practices (SOPs and BMPs) that need to be employed to avoid environmental damage. The completed and signed checklist detailing the proposed action and environmental effects of each specific project or test will be forwarded to the USAG Fort Wainwright and/or USAG Fort Greely Environmental offices for their concurrence. CRTC shall maintain this checklist as part of the PEA administrative record.

PROJECT or TEST TITLE: _____

Project Eligibility for PEA Tiering (one of these three criteria must be met in order to use this checklist; otherwise a separate NEPA document is required):

Check all Which Apply

- ☐ The project is an environmental or operational equipment or material test of items that are either in the Army inventory, have already been fielded to troops, or have similar environmental impacts as standard Army inventory items (as described in the CRTC PEA, section 2.1.1.1).
- ☐ The project is a general type of construction project for test support actions as described in the CRTC PEA, sections 2.1.1.3 and 2.1.1.5 OR is a routine maintenance project as listed in section 2.1.1.4.
- ☐ The project is a site-specific infrastructure improvement project listed in appendix B of the CRTC PEA.

Soils and Permafrost

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 or permafrost resulting from the project be greater than those described in section 4.2, Soils and Permafrost, of the *CRTC PEA*?
- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC Army Testing, Infrastructure Improvement and Enhanced Environmental Procedures PEA (CRTC PEA), appendix E – CRTC Standard Operating Procedures and Best Management Practices (SOPs and BMPs) or Fort Greely Environmental Procedures for soil conservation measures. Also refer to Installation Dust Control Plan.*

Comments: _____

Air Quality and Greenhouse Gases

Yes No

- ☐ ☐ Could the project significantly contribute to decreased air quality?
- ☐ ☐ Could the project significantly contribute to increased greenhouse gas emissions?
- ☐ ☐ Could impacts to air quality or greenhouse gas emissions resulting from the project be greater than those described in section 4.3, Air Quality and Greenhouse Gases, of the CRTC PEA?
- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures.*

Comments: _____

PROJECT or TEST TITLE: _____

Surface Water and Floodplains

Yes	No
<input type="checkbox"/>	<input type="checkbox"/> Is the project located within a known floodplain (Executive Order [EO] 11988)?
<input type="checkbox"/>	<input type="checkbox"/> Is any part of the project footprint close enough (typically within 75 feet) to open water bodies so as to require a buffer?
<input type="checkbox"/>	<input type="checkbox"/> Would the project result in ground disturbance of 1 acre or greater or would the project result in increased impervious surfaces? <i>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 storm water pollution prevention plan (SWPPP).</i>
<input type="checkbox"/>	<input type="checkbox"/> Will the project involve either direct or indirect discharge (or runoff) of sediment into a waterway or storm sewer?
<input type="checkbox"/>	<input type="checkbox"/> Will the project result in diversion or obstruction of stream flow?
<input type="checkbox"/>	<input type="checkbox"/> Could the project result in potential impacts to surface water quality?
<input type="checkbox"/>	<input type="checkbox"/> Would the potential exist to impact groundwater outside of parameters described in section 1.5, Scope of Environmental Analysis, of the <i>CRTC PEA</i> ?
<input type="checkbox"/>	<input type="checkbox"/> Could impacts to waters resulting from the project be greater than those described in section 4.4, Surface Water, and Floodplains, of the <i>CRTC PEA</i> ?
<input type="checkbox"/>	<input type="checkbox"/> Was “yes” answered to any of the above questions? <i>If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for protection of water resources.</i>
	Comments: _____

Wetlands

Yes	No
<input type="checkbox"/>	<input type="checkbox"/> Does the project site exhibit any identifying characteristics of a wetland?
<input type="checkbox"/>	<input type="checkbox"/> If “yes”, has a wetland delineation been performed?
<input type="checkbox"/>	<input type="checkbox"/> 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?
<input type="checkbox"/>	<input type="checkbox"/> If “yes”, indicate the extent (linear feet) of waterway impact and acres of wetland impact: _____ Temporary Permanent (circle one).
<input type="checkbox"/>	<input type="checkbox"/> 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)?
<input type="checkbox"/>	<input type="checkbox"/> If “yes”, indicate the acres of wetland impact: _____ Temporary Permanent (circle one).
<input type="checkbox"/>	<input type="checkbox"/> Could impacts to wetlands resulting from the project be greater than those described in section 4.5, Wetlands, of the <i>CRTC PEA</i> ?

PROJECT or TEST TITLE: _____

- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures.*

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 (circle one).
- ☐ ☐ Will the project involve removal of commercial forest products/salvageable timber? If “yes”, indicate the acres of impact: _____
- ☐ ☐ Could impacts to vegetation resulting from the project be greater than described in section 4.6, Vegetation, of the *CRTC PEA*?
- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for vegetation removal and preservation 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 4.7, Fire Management, of the *CRTC PEA*?
- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for fire management measures.*

Comments: _____

PROJECT or TEST TITLE: _____

Wildlife and Fisheries

Yes No

- ☐ ☐ Will the project involve vegetation clearing during the time periods the USFWS Region 7 recommends avoiding in order to protect migratory birds (for Interior Alaska – 1 May through 15 July)?
- ☐ ☐ 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 (e.g. salmon, saltwater species)? *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 fish-bearing stream, 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?
- ☐ ☐ Could impacts to wildlife and fisheries resulting from the project be greater than those described in section 4.8, Wildlife and Fisheries, of the *CRTC PEA*?
- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for wildlife and fisheries protection 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 Fort Wainwright Cultural Resources Manager to determine the answer)?
- ☐ ☐ Could impacts to cultural resources resulting from the project be greater than those described in section 4.9, Cultural Resources, of the *CRTC PEA*?
- ☐ ☐ Are historic structures affected?

PROJECT or TEST TITLE: _____

- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for cultural resource protection 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 4.10 Public Access, Recreation, and Subsistence, of the *CRTC PEA*?
- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for public access, recreation and subsistence measures.*

Comments: _____

Noise

Yes No

- ☐ ☐ Are there sensitive noise receptors (residences, communities, hospitals, etc.) within the area?
- ☐ ☐ Would the project produce noise levels that 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 4.11, Noise, of the *CRTC PEA*?
- ☐ ☐ Was “yes” answered to any of the above questions? *If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for noise reduction and prevention measures.*

Comments: _____

PROJECT or TEST TITLE: _____

Land Use, Energy and Utilities

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Would the project pose a conflict to land use or adjacent land uses?
<input type="checkbox"/>	<input type="checkbox"/>	Would the project require the need for additional utilities to operate, including electrical, sewer, fiber optics, gas, water?
<input type="checkbox"/>	<input type="checkbox"/>	Would the project require any new stationary sources such as generators?
<input type="checkbox"/>	<input type="checkbox"/>	Could impacts to land use, energy, and utilities resulting from the project be greater than those described in section 4.12, Land Use, Energy, and Utilities, of the <i>CRTC PEA</i> ?
<input type="checkbox"/>	<input type="checkbox"/>	Was “yes” answered to any of the above questions? <i>If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for land use, energy and utilities conservation measures.</i>
Comments: _____		

Human Health, Safety, and Hazardous Substances

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Has Range Control determined that the project site needs UXO clearance?
<input type="checkbox"/>	<input type="checkbox"/>	Does the area contain contamination concerns?
<input type="checkbox"/>	<input type="checkbox"/>	Would the project result in an increased risk to the health and safety of Soldiers, CRTC personnel or contractors?
<input type="checkbox"/>	<input type="checkbox"/>	Would the project operations result in an increased risk to the health and safety of the public including recreation users on DTA or people in the surrounding communities?
<input type="checkbox"/>	<input type="checkbox"/>	Does the project involve the modification of facilities or excavation of any kind? If so, work shall be coordinated via the USAG FWA or FGA “Work Clearance Permit” a minimum of five working days prior to mobilization to the site.
<input type="checkbox"/>	<input type="checkbox"/>	Could impacts to human health and safety resulting from the project be greater than those described in section 4.13, Human Health, Safety, and Hazardous Substances, of the <i>CRTC PEA</i> ?
<input type="checkbox"/>	<input type="checkbox"/>	Was “yes” answered to any of the above questions? <i>If “yes”, refer to the CRTC PEA, appendix E – SOPs and BMPs or Fort Greely Environmental Procedures for human health and safety SOPs and BMPs.</i>
Comments: _____		

PROJECT or TEST TITLE: _____

Cumulative Effects

Yes No

- ☐ ☐ Would this project, in combination with past projects tiered off this PEA, cause any resource specific significance threshold to be exceeded?

Comments: _____

Other Considerations

Yes* No

- ☐ ☐ Is a procedure, method, practice, or technique being used for this project that is not listed in appendix C of the *CRTC Army Testing, Infrastructure Improvement, and Enhanced Environmental Procedures PEA*?
- ☐ ☐ Would the potential impacts from the project or test NOT be mitigated by existing BMPs/SOPs listed in appendix E?
- ☐ ☐ 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 Fort Wainwright or Fort Greely NEPA staff should be consulted.***

Prior NEPA

Yes No

- ☐ ☐ Has NEPA for the same test in a previous year been done? If “yes”, title of test and date of REC or checklist: _____

APPENDIX D. CRTC PROJECT AND TEST CHECKLIST

PROJECT or TEST TITLE: _____

WORK ORDER NUMBER (if applicable): _____

FORM COMPLETED BY: _____ **DATE:** _____

USAK Fort Wainwright or Fort Greely 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 CRTC PEA 2010.*

Form Reviewed by: _____

Signature: _____ **Date:** _____

Note: *No other NEPA Review Form is required to supplement the above certification.*

APPENDIX E. CRTC STANDARD OPERATING PROCEDURES AND BEST MANAGEMENT PRACTICES

The following is a list of standard operating procedures (SOPs) and best management practices (BMPs) used by the Cold Regions Test Center (CRTC), and being considered as part of Action Alternatives 1 and 2. SOPs and BMPs have been grouped by general management principles which govern numerous resource areas and by resource-specific topics. The list provided in this appendix applies specifically to those actions that CRTC would undertake.

U.S. Army Garrison (USAG) Fort Wainwright maintains a comprehensive list of SOPs and BMPs adapted and developed over the years from existing protocols and Agency input during prior NEPA scoping and review. There are several sources listing SOPs and BMPs that the Army in Alaska uses, including most recently, the USAG Alaska Range PEA. Additional SOPs and BMPs related to the overall management of USAG Fort Wainwright lands can be found within their 2007-2011 Integrated Natural Resource Management Plan (INRMP). 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. Also, the 2006-2010 Integrated Cultural Resource Management Plan (ICRMP) contains standard procedures for management of cultural resources.

Some of the INRMP standard procedures and practices are directly applicable to the kinds of routine support activities and maintenance that CRTC conducts, however, the overall responsibility for resource management and monitoring falls to the USAG Fort Wainwright and Fort Greely DPW staff. Because CRTC has no direct influence over those actions, SOPs and BMPs relating to resource management are not included here. USAG Fort Wainwright and U.S. Army Garrison Fort Greely policies take precedence over any SOPs and BMPs in this document if they are more stringent.

In addition, both Garrisons have regulations pertaining to pollution control. Fort Greely's Environmental Management System (EMS) protocol addresses various environmental regulations ranging from asbestos to record-keeping. USARAK PAM 200-1 describes waste management practices. Other Fort Wainwright and Fort Greely permits specify operating procedures (e.g. Title V air permit, NPDES/APDES permits). CRTC complies with the requirements of these programs and permits.

General Resource Management	Overall resource management at the project planning phase considers a broad spectrum of resources.
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SOPs used during the project planning and implementation process, and test planning and operations include:

- CRTC will implement basic EMS principles (ISO 14001) during the planning, support and conduct of testing to help maintain environmental sustainability.
- CRTC will continue using environmental limitations overlays to protect vulnerable habitats when siting projects to minimize construction in sensitive areas and to indicate areas where vehicle testing is and is not allowed.
- CRTC will continue to follow existing chain of command procedures regarding project development. The standard procedures would be modified to include the CRTC Project and Test NEPA Review Checklist (appendix D):
- If the checklist indicates that the project may not fall within the scope of this PEA, USAG FWA or FGA Environmental (NEPA) staff will determine what appropriate level of NEPA analysis should be performed prior to funds being spent on construction.
- Projects that are contracted through the local Directorates of Public Works (Garrison Fort Wainwright or Fort Greely) will follow their internal environmental procedures.

BMPs used during the project planning and implementation process, and test planning and operations include:

- To the extent possible, alignment of new roads, access trails or utility corridors will take advantage of existing roads and pathways.
- Clear and grade only those areas necessary for building activities and equipment traffic: use an exact footprint during site planning.
- Those practices contained within the current Fort Wainwright or Fort Greely INRMP such as construction site waste management, control of allowable non-storm water discharges, material management, minimize offsite vehicle tracking of sediments, sanitary/septic disposal, waste disposal, site stabilization, and structural controls to prevent erosion.

Soil Resources	Soil stability is important for maintaining sustainable range use for testing 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.
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SOPs to avoid soil erosion include:

- During the project planning phase, CRTC reviews 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).

- Comply with the Alaska Pollutant Discharge Elimination System General Permit for Discharges from Large and Small Construction Activities, Permit Number: AKR100000.

BMPs to prevent or control soil erosion include:

Project Construction

- Avoid permafrost and highly erodible soils whenever possible.
- Maximize footprint disturbances within areas of existing or previously disturbed soils.
- 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.
- When possible, conduct tree and vegetation removal activities 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.
- Restoration of disturbed areas by implementing industry standard BMPs and techniques as detailed in the ITAM program.

Test Operations

- Minimize impacts caused by off-road vehicle use by timing, as much as is practical, and schedule testing 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.
- Consider using existing cleared areas and existing disturbed areas for ground-disturbing testing such as tests of demolitions, minefield clearers and intelligent munitions.

<p>Air Quality and Greenhouse Gases</p>	<p>The Clean Air Act authorizes the EPA to establish air quality standards to protect public health. Air quality at DTA and Fort Greely meets these air quality standards, with the largest issues relating to both human-caused and naturally occurring dust. Greenhouse gases generated by Federal agency actions are currently regulated by Executive Orders 13423 and 13514. The Army is obligated to incorporate more energy efficient systems in new facilities and explore viable alternative energy sources.</p>
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SOPs to meet air quality standards and reduce greenhouse gas emissions for both construction and test activities:

- Garrison Fort Greely or Fort Wainwright DPW will evaluate proposed construction projects 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 USAG Fort Greely or

Fort Wainwright current Title V operating permits and assesses the need to obtain a permit modification.

- Control dust emissions during construction on site per each Garrison’s Dust Control Plan to include: pre-grading planning, pre-grading watering, chemical stabilizers, wind fencing/sheltering, wind awareness, cover haul vehicles, reduced speed limits/vehicular trips during construction.

BMPs to meet air quality standards and reduce greenhouse gas emissions for both construction and test activities:

- Connect to hard power whenever possible, to avoid using generators.
- Consider demolishing old, inefficient buildings, particularly when new buildings are constructed (i.e. replacement instead of adding to the inventory).
- Design greater efficiency and energy savings into plans for new buildings.

<p>Surface Water and Floodplains</p>	<p>Section 404 of the Clean Water Act (CWA) regulates activities which directly affect surface water resources and Alaska Pollution Discharge Elimination System (APDES) 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.</p>
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SOPs to be used for activities within or adjacent to surface waters and floodplains include:

- Comply with Executive Order (EO) 11988 Protection of Floodplains to minimize adverse floodplain impacts during project siting and operations.
- CRTC will prepare and adhere to Storm Water Pollution Prevention Plans per Alaska Regulations 18 AAC 15, 72, and 83, the Alaska Pollutant Discharge Elimination System.
- Comply with the Alaska Pollutant Discharge Elimination System General Permit for Discharges from Large and Small Construction Activities, Permit Number: AKR100000.
- CRTC will make use of Section 438 of the Energy Independence and Securities Act, which calls for LEED designs and the need to maintain original hydrology when doing small projects or even small remodel projects associated with Federal properties.
- CRTC will comply with the Fort Wainwright Spill Prevention Control and Countermeasures Plan (SPCC) and the Fort Greely SPCC Plan.

BMPs to protect surface waters and floodplains include:

Project Construction

- Preserve natural vegetation, when possible, as a permanent control measure to minimize erosion potential and protect water quality.

- When possible, avoid designing roads and trails in the general direction of natural water flow to minimize concentrated surface water flows during flooding events.
- Design drainage to accommodate snowmelt runoff and rainfall to prevent erosion and formation of gullies.
- When permits are not required, CRTC will follow appropriate best management practices listed in the ADEC, Division of Water, Alaska Storm Water Guide, June 2009.

Test 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 near sites using these substances.

<p>Wetland Resources</p>	<p>Wetlands resources occur throughout USAG Fort Wainwright and Fort Greely lands and are vital in maintaining water quality, aiding in flood control, and providing 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.</p>
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SOPs to be used for activities involving wetlands during project design and construction include:

- Comply with the Section 404 permitting process, which requires mitigation of wetland impacts.
- Prepare a Finding of No Practicable Alternative to justify unavoidable impacts to wetland resources and submitted with the Section 404 permit.
- Comply with the Alaska Pollutant Discharge Elimination System General Permit for Discharges from Large and Small Construction Activities, Permit Number: AKR100000.

BMPs to protect wetlands and/or minimize impact to wetlands include:

Project Construction

- 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.
- 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.
- 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.
- 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 the weight of heavy equipment so that the bearing strength of the soil is not exceeded.
- Avoid work in peat wetlands as much as practicable. If work is necessary in peat wetlands, systematically remove 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), restore areas to pre-work contours.
- Restore temporarily disturbed wetlands to original grades using stockpiled wetland topsoils.

Test Operations

- Minimize testing and support 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.
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SOPs to be used for activities regarding vegetative cover during project design, construction, and test operations include:

- To the extent possible, CRTC will continue to preserve natural vegetation (protection of desirable trees, shrubs, grasses and other ground cover plants) from damage during project development.
- For those projects affecting salvageable timber, CRTC will work with USAG Fort Wainwright to make available usable timber salvaged from projects that cannot be sold in a timber sale to the public at no cost.

BMPs to be used to help mitigate impacts include:

Project Construction

- Considerations for selecting trees to remove during construction:
 - Tree species: Preserve tree species well-suited to present and future site conditions. Preserving a mixture of evergreens and hardwoods is desirable.
 - Tree vigor: Preserve healthy trees that will be less susceptible to damage, disease, and insects.
 - Drainage patterns: Following natural contours and maintaining preconstruction drainage patterns prevents alteration of hydrology and the potential die-off of preserved vegetation.
- 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. When rare plant species are potentially present, CRTC will work with USAG Fort Wainwright to conduct rare plant surveys or analysis of previous surveys, and implement resulting management recommendations when feasible.
- When possible, utilize previously disturbed areas before native habitat to prevent the loss of regional native plant species.
- Clearly mark trees and areas for preservation and protect from ground (root) disturbances around the base of the tree.
- Minimize placement of fill dirt within the limit of preserved areas and during final site cleanup.
- Do not plant invasive or nuisance species.

Operations

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

Wildfire Management	Infrastructure improvement projects, support activities, and test operations have the potential to cause unintentional wildfire starts. Wildfire prevention can be administrated during operations through adherence to existing regulations.
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SOPs to be used which avoid unintentional wildfire starts include:

- Compliance with training exercise regulations and wildfire prevention as stipulated by USAG Fort Wainwright Range Regulation 350-1, Training.

BMPs to be used to avoid unintentional wildfire starts include:

- Work with the USAG Forestry program on continuing actions manage the potential for wildland fires (i.e., prescribed burns and thinning to restore ecosystem functions to fire and to reduce future fire severity).

Wildlife and Fisheries	Wildlife and fishery resources are abundant within USAG Fort Wainwright and Fort Greely. 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 Fishway and Anadromous Fish acts. Wildlife and fisheries management should be considered during project design and during the timing of construction staging.
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SOPs to be used to maintain biodiversity and local wildlife and fisheries populations during project design and construction, and test operations include:

- Those projects affecting or adjacent to surface waters will conform to any conditions required by State officials, such as vegetation buffers or other appropriate measures. At this time, there are no State-listed Anadromous Waters in Fort Greely or Donnelly Training Area. Each time the State Anadromous Waters Catalog is updated, this will be re-assessed.
- For those projects affecting waters used by fish, all design and unavoidable construction activities affecting resident fish waters will be accomplished in accordance with Alaska Statutes AS 16.05.841 - AS 16.05.861.
- For those projects involving vegetation removal, to the extent possible, construction activities will avoid clearing of grass, scrub land, and forested areas between 1 May and 15 July to minimize impacts on migratory birds. CRTC will obtain permission from the USFWS when necessary to remove bird nests, including partially completed bird nests. 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.

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

Project Construction

- When possible, avoid siting projects in areas containing rare or sensitive species.
- Consider breeding areas for migratory waterfowl and fish spawning areas.

Operations

- When possible, avoid testing in areas containing rare or sensitive species.

- When bison are present, limit firing to within 4,921 feet (1,500 meters) of bison. For other testing and test support activities, minimize disturbance to bison.

Cultural Resource Management	Both Fort Wainwright and Fort Greely contain a variety of resources protected under Section 106 of the National Historic Preservation Act.
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SOPs to be used to avoid impacts to cultural resources include:

- Coordinate with the USAG Fort Wainwright or Fort Greely cultural resources programs during site and project planning.
- Coordinate and consult with the Alaska State Historic Preservation Office to identify any adverse impacts and mitigation requirements.
- Notify the USAG Fort Wainwright or Fort Greely cultural resources management (CRM) staff in the event of inadvertent discovery of cultural resources (artifacts, etc.) during construction or operations.
- USAG Fort Wainwright or Fort Greely CRM staff will review all repairs and other projects planned for historic structures and buildings.
- Consult Environmental Pre-Approval Overlays or the Culturally Restricted Sites map during test planning so that impacts to cultural resources can be minimized.

BMPs to be used to avoid impacts to cultural resources during project design, construction and operation includes:

Project Construction

- Avoid cultural sites during design utilizing information gathered from on-the-ground surveys.
- Survey unsurveyed areas of proposed construction sites 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.

Operations

- Coordinate with the USAG Fort Wainwright cultural resources program during planning of test operations.

Airspace Management	<p>The Federal Aviation Administration manages all airspace within Alaska. Airspace restrictions are needed within military installations to ensure safety and to avoid possible user conflicts. Airspace must be restricted during testing of aviation systems or live ordnance, and any time aircraft are used for test support.</p>
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SOPs to be used which avoid airspace impacts to the public during project design and planning include:

- Comply with the requirements of USAG Fort Wainwright Regulation 350-1, to include range control coordination.
- Comply with all FAA requirements to include public notification, particularly in regard to closures of airspace during firing missions.

BMPs to be used which avoid airspace impacts to the public during operations include:

- Ensure that airspace is closed for only the time required to complete a mission, re-opening the airspace through DTA Range Control immediately upon test completion or when it is known that airspace is no longer required.

Public Access, Recreation and Subsistence	<p>The Sikes Act has ensured the availability of military lands for recreation, when it does not interfere with training, testing, security or safety. In addition, subsistence activities are protected through the Alaskan National Interest Lands Conservation Act. Public access, recreation, and subsistence can be considered during project design and test operations to help minimize effects on military land users.</p>
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SOPs to be used to avoid impacts to public access, recreation and subsistence activities include:

- When appropriate, use the USARAK government-to-government relationships with Alaska Native tribes whose interests may be significantly affected by CRTC activities. This will ensure efficient and effective communication between both leadership and staff members of tribal governments and CRTC.

BMPs to be used to avoid impacts to public access, recreation and subsistence activities include:

Project Construction

- Determine the placement of access gates to allow for maximum continued recreational use and to maximize public safety.

Operations

- Use signs and other public notification measures to increase public awareness of dangers of military test activities.
- Use of advanced public notification of military testing activities likely to restrict the use of Donnelly Training Area for recreational, subsistence, and other uses.
- Upon completion of testing, immediately re-open areas that may have been temporarily closed to the public.

Noise	Noise control is regulated under the Noise Control Act of 1972. To assess military-related noise effects, the U.S. Army Public Health Command (formerly 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.
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SOPs to be used which avoid impacts from noise during project design and planning include:

- Work with DTA Range Control to ensure that the requirements of USACHPPM Technical Guide 044 (*Suggested Procedures for Handling and Recording Noise Complaints at Military Installation*, January 2008) are followed.
- Consider the Installation Noise Management Plan noise contours and compatible noise zones when siting new facilities. 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 U.S. Army Public Health Command noise modeling to detect any potential changes to existing noise conditions.

BMPs to be used to avoid impacts from noise during construction and test operation include:

- Consider scheduling activities near sensitive noise receptors in a way that will reduce impacts.
- If good engineering practices and funding allows, construct earthen berms or concrete walls around noisy equipment (e.g. SODAR) or operations to minimize noise leaving the site.

Land Use, Energy and Utilities	Army Regulation 210-21, <i>Army Ranges and Training Land Program</i> , and the associated <i>Generic Methodology for the Range and Training Land Program</i> , dated September 1998, guide overall range planning 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.
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SOPs to be used during project design to avoid land use conflicts and consider energy and utility aspects include:

- Planning of proposed new facilities and upgrades should follow AR 210-20 (Real Property Master Planning for Army Installations).
- Siting facilities and activities to avoid sensitive areas as much as possible. This includes activities that generate noise, dust, and other nuisance factors.
- Project planners will minimize placement of permanent facilities or ground disturbing activities in sensitive habitats or ecological areas.
- Project planners will site facilities in a manner that maximizes the use of existing utility infrastructure. It should be noted that under Fort Wainwright and Fort Greely's utilities privatization contract, all installation utilities belong to Doyon Utilities. CRTC will pursue any additions or upgrades to the installation's utility system through DPW's contract with Doyon Utilities.
- Where significant increases of energy demand from a planned project are likely, CRTC will work with the local garrisons to find ways 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:

Project Construction

- 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.
- Choose the least damaging method of installing underground utilities possible, such as plowing in cable or using an auger to install power poles.

Operations

- Ensure that test operations are restricted to those areas approved by Range Control.

Human Health, Safety, and Hazardous Substances	USAG Fort Wainwright and Fort Greely have proactive systems to address human health and safety issues and to prevent injury or harm to Soldiers and civilians resulting from construction projects and test operations.
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SOPs to be used to avoid impacts to human health and safety during construction and operation include:

- Comply with the requirements of USARAK Pamphlet (PAM) 200-1 and Fort Greely Environmental Procedures.
- Comply with the requirements of AR 385-10, *The Army Safety Program*, as well as local safety policies and regulations.
- Ensure that cleanup operations are conducted by workers certified under 29 CFR 1910.120 (Hazardous Waste Operations [HAZWOPER]).
- Comply with U.S. Army Garrison Fort Wainwright *Land Use Controls and Institutional Controls Policy*.
- Ensure that aboveground storage tanks (ASTs) used during testing conform to 40 CFR 112, as well as applicable ADEC and Army guidance.

BMPs to be used which avoid impacts to human health and safety include:

Project Construction

- Refrain from construction on known contaminated sites. CRTC will use the Fort Wainwright and Fort Greely Institutional Control maps to avoid known contamination. If known contamination cannot be avoided, site cleanup or other institutional control will be completed in accordance with applicable laws and regulations. CRTC will ensure that Garrison Fort Greely or Fort Wainwright review and approve any construction on contaminated sites as appropriate.
- CRTC will avoid locating buildings within impact areas. In locations outside impact areas where UXO could reasonably be expected to occur, trained personnel will conduct a UXO site survey prior to construction. Should UXO be found in the area during construction, work will cease within the immediate area. CRTC will mark the area with flagging and contact Range Control so that EOD personnel can render the item safe.
- CRTC will ensure that a surface and/or subsurface UXO clearance has been completed before any test-support infrastructure (e.g. firing pads, target poles) is placed within an impact area or range.
- CRTC will ensure that hazardous waste generation associated with building demolition is 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.
- If contaminated soils, drums, or unusual debris (i.e., construction debris, scrap metal, unexploded ordnance, discarded military munitions, or munitions debris) are encountered at any time on or around a work site CRTC will stop work and notify the USAG Fort Wainwright or USAG Fort Greely DPW Environmental Division. Work will not resume

until appropriate action is taken and continuation of construction is approved by the garrison environmental office.

Operations

CRTC will:

- Purchase and store the minimum quantity of hazardous materials required to complete a mission.
- Handle, store and dispose of hazardous materials and wastes in accordance with applicable laws and regulations, including USAG FWA Department of Public Works Environmental Institutional Controls and/or USAG Fort Greely Environmental Procedures. Store and use all hazardous materials in such a manner as to prevent spills and releases.
- Possess and have available appropriate spill response materials for the types and quantities of hazardous materials transported and used within proximity to a given work area. Report all spills of hazardous materials to the Fort Greely or Fort Wainwright Fire Department and the DPW Environmental Division. The DPW Environmental Division will provide necessary notifications to the Alaska Department of Environmental Conservation (ADEC) Spill Prevention and Response (SPAR). Clean up spills expeditiously.
- Watch for UXO. Should UXO be found on test sites, work will cease within the immediate area. CRTC will mark the area with flagging and contact Range Control so that EOD personnel can render the item safe.

APPENDIX F. TEST COMMODITY AREAS AND REQUIRED SUPPORT

Table F–1 Test Mission Areas and Required Support

<i>Mission Area</i>	<i>Typical Systems</i>	<i>Required Airspace Assets</i>	<i>Required Land Assets</i>	<i>Required Infrastructure Assets</i>	<i>Ordnance</i>	<i>Types of Equipment Tested</i>
Combat and Tactical Vehicles	Stryker Combat and Combat Support Vehicles, MIA2 Main Battle Tank, MRAP Vehicle	Sufficient controlled/ restricted airspace for live firings	<ul style="list-style-type: none"> - Large Maneuver Areas - Varied Terrains - Secondary roads - Cross-country trails - River crossings - Bogs - Heavily forested areas suitable for testing and tactics validation - Areas suitable for –vehicle operations with and without tactical teams (up to a battalion-sized element) 	<ul style="list-style-type: none"> - Mobility Test Complex - Automotive cold start capability/facilities and infrastructure - Instrumentation (Vehicular, Weather and environmental data) - Maintenance and storage facilities - Instrumentation facilities with calibration capability - Data reduction/analysis facility 	Ammunition for Combat and Tactical vehicles	Vehicle and/or Weapons Systems
Infantry and special operations weapons	M2A3 Bradley Fighting Vehicle, Hybrid Electric HMMWV, Armored Security Vehicle, Predator Unmanned Aerial Vehicle	Sufficient controlled/ restricted airspace to safely accomplish tests	<ul style="list-style-type: none"> - Test areas of suitable size - Varied terrains - Secondary roads - - Cross-country trails - River crossings - Bogs - Heavily forested areas - Glaciers - Mountains 	<ul style="list-style-type: none"> - Tactical maneuver area with firing points and portable instrumentation - Facilities and infrastructure for RPA operations 	Ammunition for Combat and Tactical vehicles	Vehicle

APPENDIX F. TEST COMMODITY AREAS AND REQUIRED SUPPORT

Table F-1 Test Mission Areas and Required Support (Continued)						
<i>Mission Area</i>	<i>Typical Systems</i>	<i>Required Airspace Assets</i>	<i>Required Land Assets</i>	<i>Required Infrastructure Assets</i>	<i>Ordnance</i>	<i>Types of Equipment Tested</i>
Ammunition		Sufficient controlled/ restricted airspace for live firings	Sufficient downrange area to accommodate weapons' SDZs	<ul style="list-style-type: none"> - Firing stands - Remote firing fixtures for weapons - Instrumentation <ul style="list-style-type: none"> * Weapons (internal performance) * Weapons (external ballistics) - Targets - Need improved downrange telemetry capability 	Artillery, Projectiles, and Fuzes	Weapons Systems
Missiles & Rockets	HELLFIRE, NLOS-LS, GLMRS, etc.	<ul style="list-style-type: none"> - Sufficient controlled/ restricted airspace for live firings - Lack restricted airspace large enough to do testing; live fires are currently executed in a TFR. 	<ul style="list-style-type: none"> - Adequate areas for firing Air-to-Surface Missiles (example HELLFIRE) - Adequate areas for firing Surface-to Surface Missiles (example -NLOS-LS, GLMRS, etc.) 	<ul style="list-style-type: none"> - Instrumented Range area for determining TSPI of missiles/rockets - Munitions storage area for missiles/rockets - Munitions preparation facilities for pre-flight and preparing missiles/rockets - Helipad or flight line suitable for flight operations - Air Traffic Control/Range Safety function 	Air and Ground Launched rockets and missiles	Weapons Systems
Clothing/ Personal Equipment/ Rations			<ul style="list-style-type: none"> - Exercise areas for field testing - Varying terrain and conditions - Obstacle courses designed to produce wear 	-Storage facility		Clothing

APPENDIX F. TEST COMMODITY AREAS AND REQUIRED SUPPORT

Table F–1 Test Mission Areas and Required Support (Continued)						
<i>Mission Area</i>	<i>Typical Systems</i>	<i>Required Airspace Assets</i>	<i>Required Land Assets</i>	<i>Required Infrastructure Assets</i>	<i>Ordnance</i>	<i>Types of Equipment Tested</i>
Power generation			-Field testing area	<ul style="list-style-type: none"> - Instrumentation <ul style="list-style-type: none"> * Environmental * Power generation data * Controllable loads - Segregated fuel storage 		Individual Equipment
Direct-fire and indirect-fire weapons	Mortars, Artillery, Stryker MGS, MIA2 Main Gun, etc.	Sufficient controlled/ restricted airspace to safely accomplish testing	<ul style="list-style-type: none"> -Impact areas sufficient to support: <ul style="list-style-type: none"> * Direct fire to 15km * Indirect fire from 2km to 100km 	<ul style="list-style-type: none"> - RADAR & Telemetry - Tactical Targets - Clean RF spectrum (low civilian and military clutter) - Air Traffic Control/Range Safety function 	Various large caliber ammunition	Weapons Systems
Sensor, CIED and EW Testing		Sufficient controlled/ restricted airspace to safely accomplish testing	<ul style="list-style-type: none"> - Areas suitable for Ground and Airborne Sensor testing - Varied terrain - Technical and tactical areas suitable for tactical dispensing of systems containing sensors/ transmitters for all-up test and evaluation 	<ul style="list-style-type: none"> - Clean RF spectrum (low civilian and military clutter) 		Individual Equipment
Air Defense		Sufficient controlled/ restricted airspace to safely accomplish testing	<ul style="list-style-type: none"> - Areas of sufficient size for air defense weapons system testing - Varied terrain - Tactical targets or –simulators <ul style="list-style-type: none"> * Drones, Remote Controlled Aircraft - Areas for tactical deployment and employment of air defense systems 	<ul style="list-style-type: none"> - Air Traffic Control/Range Safety function 	Various Air Defense missiles, rockets, and guns	Individual Equipment and Weapons Systems

APPENDIX F. TEST COMMODITY AREAS AND REQUIRED SUPPORT

Table F–1 Test Mission Areas and Required Support (Continued)						
<i>Mission Area</i>	<i>Typical Systems</i>	<i>Required Airspace Assets</i>	<i>Required Land Assets</i>	<i>Required Infrastructure Assets</i>	<i>Ordnance</i>	<i>Types of Equipment Tested</i>
Smoke, Obscurant, and CWD Systems Tests	Joint Chemical Agent Detector, M56 Smoke Generator System, Detection/Protection! Decontamination Equipment, etc.	Sufficient controlled/restricted airspace to safely accomplish testing	Areas to simulate battlefield conditions	<ul style="list-style-type: none"> - Smoke/obscurant employment areas - Test grid - Decontamination areas - Simulated CWD sheltering area - Long term storage facilities for protective and decontamination gear/equipment 		Individual Equipment or Weapons Systems
Improved Conventional Munitions		Sufficient controlled/restricted airspace to safely conduct firings	Munitions Fields for emplacement and testing	<ul style="list-style-type: none"> - Instrumentation <ul style="list-style-type: none"> * Blast (near field and far field) * Fragment Velocity/Dispersion - Storage area 	Various Improved Conventional Munitions	Weapons Systems
Explosives		Sufficient controlled/restricted airspace to safely conduct firings	Detonation pads	<ul style="list-style-type: none"> - Instrumentation - Storage area 	Various sized bare charge explosives	Weapons Systems
Lasers and Directed Energy		Sufficient controlled/restricted airspace to safely accomplish tests.	<ul style="list-style-type: none"> - Areas of sufficient size for Directed Energy weapons system Testing <ul style="list-style-type: none"> * Lasers and directed energy have an infinite safety danger zone. Without a backstop, there is no range limit on the danger area. - Terrain Backstop 	<ul style="list-style-type: none"> - Instrumentation <ul style="list-style-type: none"> * Launch/Target/Impact Area * Beam characterization * Environmental - Tactical targets or simulators from individual projectiles to vehicles/aircraft - Air Traffic Control/Range Safety function 	Various tactical and strategic Laser and Directed Energy Weapon systems	Weapons Systems

APPENDIX F. TEST COMMODITY AREAS AND REQUIRED SUPPORT

Table F-1 Test Mission Areas and Required Support (Concluded)						
<i>Mission Area</i>	<i>Typical Systems</i>	<i>Required Airspace Assets</i>	<i>Required Land Assets</i>	<i>Required Infrastructure Assets</i>	<i>Ordnance</i>	<i>Types of Equipment Tested</i>
Aircraft (Rotary Wing)		Sufficient controlled/ restricted airspace to safely operate aircraft and conduct weapons firings	Adequate areas for firing Air-to-Surface Missiles (example – HELLFIRE)	<ul style="list-style-type: none"> - Infrastructure for cold weather performance for airframes and weapons systems - Instrumented Range area for determining TSPI of aircraft and weapons - Munitions storage area for munitions - Munitions preparation facilities for pre-flight and preparing aircraft and weapons systems - Helipad or flight line suitable for flight operations - Air Traffic Control/Range Safety function 	Helicopter launched munitions	Vehicle and/or Weapons Systems
<div> <div> LEGEND: CIED - Counter-Improvised Explosive Device CWD - Chemical Warfare Defense EW - Electronic Warfare GLMRS - Guided Multiple Launch Rocket System HMMWV - High Mobility Multipurpose Wheeled Vehicle km - kilometer </div> <div> MRAP - Mine Resistant Ambush Protected NLOS-LS - Non-Line-of-Sight-Launch System RF - Radio Frequency RPA - Remotely Piloted Aircraft SDZ - Safety Danger Zone TFR - Temporary Flight Restriction TSPI - Time-Space-Position Information </div> </div>						

APPENDIX G. TEST OPERATING PROCEDURES

Test Operating Procedures (TOPS) are formal procedures that provide CRTC guidelines on how to go about testing various types of equipment in different operating environments. These documents provide testers general information about the types of failures that a given type of equipment could experience and suggestions for the types of data that should be collected. CRTC's basic testing operating procedures are detailed in "Cold Regions Environmental Considerations". CRTC follows a variety of other TOPS for its tests, as detailed below.

List of test operating procedures specific to the cold regions environment. Additional TOPs exist for other non-arctic specific equipment that is tested at CRTC.

Table G-1 CRTC Test Operating Procedures		
Series	Title	TOP Date
Overview	Cold Regions Environmental Considerations	3-Feb-09
Overview	Cold Regions Personnel Effects	15-Sep-08
Overview	Cold Regions Instrumentation Considerations	10-Oct-07
Overview	Cold Regions Material Effects	22-Sep-08
Vehicle	Cold Regions Test of Tracked and Wheeled Vehicles	22-Sep-09
Weapons	Cold Regions Stability Test of Indirect Fire Artillery Weapons	30-Jun-76
Weapons	Arctic Environmental Test of Individual Weapons Rifles (semi-auto and automatic) and Pistols	26-May-69
Weapons	Arctic Environmental Test of Grenade Launchers	26-May-69
Weapons	Arctic Environmental Test of Automatic Crew Served Weapons	10-Mar-69
Weapons	Arctic Environmental Test of Indirect Fire Weapons (Mortar)	10-Jul-69
Weapons	Cold Regions Test of Direct Fire Unguided Ballistic Weapons - Tank and Anti-tank Weapons	1-Apr-83
Ammo	Cold Regions Test of Indirect Fire Weapons Ammunition	8-Mar-83
Ammo	Arctic Environmental Test of Small Arms Ammunition	24-Nov-69
Ammo	Arctic Environmental Test of Grenades and Grenade-Type Ammunition	26-Nov-69
Ammo	Arctic Environmental Test of Tank Ammunition	31-Jul-70
Comm	Arctic Environmental Test of Tactical Radio Communications Equipment	28-Jul-70
Comm	Arctic Environmental Test of Tactical Wire Communications Equipment	5-Jun-70
NBC	Cold Regions Test of NBC Equipment (alarms and detectors)	8-Jan-86
NBC	Cold Regions Test of CB Protective Masks	28-Feb-89
NBC	Cold Regions Environmental Test of NBC Decontamination Equipment	17-May-85
NBC	Arctic Environmental Test of Smoke Munitions and Generating Equipment	8-Jun-70
NBC	Arctic Environmental Test of Chemical Agent Detector Kits	26-Nov-69
NBC	Arctic Environmental Test of Water Handling, Water Storage and Water Purification Equipment	26-Nov-69
Soldier Sys	Cold Regions Environmental Performance Test of Snowshoes	
Soldier Sys	Cold Regions Environmental Protection and Durability Test of Clothing	8-Jul-83
Soldier Sys	Cold Regions Environmental Test of Boot and Similar Footwear	9-May-80
Soldier Sys	Arctic Environmental Test of Rations	16-Jul-69
Soldier Sys	Arctic Environmental Test of Clothing and Sleeping Equipment	26-Nov-69

APPENDIX G. TEST OPERATING PROCEDURES

Table G-1 CRTC Test Operating Procedures (Concluded)		
Series	Title	TOP Date
Soldier Sys	Arctic Environmental Test of Skis and Snowshoes	10-Jul-69
Soldier Sys	Arctic Environmental Test of Individual Load Carrying Equipment	16-Jun-69
Soldier Sys	Arctic Environmental Test of Body Armor and Helmets	28-Nov-69
Soldier Sys	Arctic Environmental Tests of Generators and Generating Equipment	17-Jun-69
Soldier Sys	Arctic Environmental Test of Fuel Filter/Separators and Collapsible Petroleum Storage Reservoirs	16-Aug-69
Soldier Sys	Arctic Environmental Test of Petroleum Handling Equipment	23-Mar-70

APPENDIX H. ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AKNHP	Alaska Native Heritage Program
APDES	Alaska Pollutant Discharge Elimination System
APE	Area of Potential Effect
AR	Army Regulation
AS	Alaska Statute
ASP	Ammunition Supply Point
ATEC	Army Test and Evaluation Command
ATF	Airborne Task Force
BAX/CACTF	Battle Area Complex /Combined Arms Collective Training Facility
BL	Bolio Lake
BLM	Bureau of Land Management
BMP	Best Management Practices
BP	before present
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFA	Controlled Firing Area
CFR	Code of Federal Regulations
CRREL	Cold Regions Research and Engineering Lab
CRTC	Cold Regions Test Center
CWA	Clean Water Act
DPW	Department of Public Works
DoD	Department of Defense
DTA	Donnelly Training Area
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EMS	Environmental Management System
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FNPA	Finding No Practicable Alternative
FNSI	Finding of No Significant Impact
GMU	Game Management Unit
HGM	Hydrogeomorphic
HQ	Headquarters
ICRMP	Integrated Cultural Resources Management Plan
IFR	Instrument flight rule
IMCOM	Installation Management Command Pacific
INRMP	Integrated Natural Resource Management Plan
ITAM	Integrated Training Area Management Plan

APPENDIX H. ABBREVIATIONS

JPARC	Joint Pacific Alaska Range Complex
km	kilometer
MET	Meteorological
MFR	Memorandum for Record
MILCON	Military Construction
mg/l	milligrams per liter
MOA	Military Operations Areas
MS	Mississippi
MTC	Mobility Test Complex
NBC	Nuclear, Biological, Chemical
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NWI	National Wetlands Inventory
OP	Observation Point
PAM	Pamphlet
PCB	polychlorinated biphenyl
PEA	Programmatic Environmental Evaluation
PES	Preconstruction Environmental Survey
PM	Project Management
POL	Petroleum, Oils and Lubricants
RCRA	Resource Conservation and Recovery Act
RDX	Cyclotrimethylenetrinitramine
REC	Record of Environmental Consideration
SHPO	State Historic Preservation Office
SODAR	Sonic detection and ranging
SOP	Standard Operating Procedure
SUA	Special Use Airspace
SWPPP	Storm Water Pollution Prevention Plans
TNT	Trinitrotoluene
TOD	Test Operation Division
TOP	Test Operating Procedures
TSD	Test Support Division
TX	Texas
USACE	U.S. Army Corp of Engineers
USAEC	United States Army Environmental Command
USAF	United States Air Force
USAG	U.S. Army Garrison
USARAK	United States Army Alaska
USARTRAK	US Army Recreational Tracking System
USFWS	United States Fish and Wildlife Service
UXO	unexploded ordnance
VEC	valued environment component
VFR	Visual flight rule
WA	Washington
YPG	Yuma Proving Ground

APPENDIX I. FINDING OF NO PRACTICABLE ALTERNATIVE

Finding of No Practicable Alternative, Yuma Proving Ground

Pursuant to Executive Orders (EOs) 11988 (*Floodplain Management*) and 11990 (*Protection of Wetlands*), in order for the U.S. 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 *Cold Region Test Center's Army Testing, Infrastructure Improvement and Enhanced Environmental Procedures Programmatic Environmental Assessment* (PEA) and its findings with respect to the Proposed Action.

The Army has selected Action Alternative 2 as the Proposed Action. The Cold Regions Test Center (CRTC) would continue cold regions environmental testing, and would conduct facility modernization through site-specific projects, analyzed using enhanced environmental procedures. Some testing and site-specific projects would occur within the Delta River floodplain and in wetlands on the Donnelly Training Area, Fort Wainwright. No floodplain or wetland impacts would occur on Fort Greely.

Testing

The alternatives considered within this PEA all include continuation of testing at roughly the same intensity as the last ten years. Certain testing requires use of ranges that lie within the Delta River floodplain, and there is no practicable alternative to using these ranges. Moving them would be cost prohibitive and could pose greater adverse impacts. Eliminating cold regions environmental testing of weapons and other systems that use these ranges is not a viable alternative because it does not meet CRTC's required mission. Due to the extensive nature of wetland locations throughout Donnelly Training Area, wetlands cannot be entirely avoided during testing; however, CRTC can minimize disturbance to wetlands during testing through the use of standard operating procedures (SOPs) and best management practices (BMPs).

Site-Specific Infrastructure Enhancement Projects

Action Alternative 2 includes three site-specific projects that are located within wetlands and the Delta River floodplain and six additional projects that are located at least partially within wetlands. There is no practicable alternative to avoid wetland and floodplain impacts entirely. Construction of new facilities would be located away from wetland and floodplain resources. Other projects involving upgrades which are adjacent to wetlands or floodplains would first look to expand or upgrade in the direction away from these 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 to existing infrastructure and range facilities, including proximity to impact areas. Consideration of a new

FINDING OF NO PRACTACABLE ALTERNATIVE

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 4.4 of the PEA discusses which projects have the potential to impact floodplain resources and section 4.5 of the PEA discusses which projects have the potential to impact wetland resources. Utilization of BMPs and environmentally sound design principles would aid in the reduction or avoid impacts to floodplain and wetland resources (see appendix E). In addition, mitigation required by the Section 404 permitting process would help to mitigate any unavoidable impacts to wetlands.

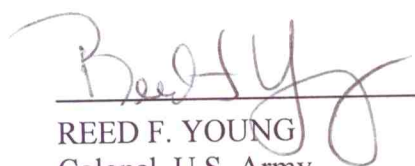
Enhanced Environmental Procedures

Through adoption of SOPs and BMPs including avoidance and reduction of impacts to floodplain and wetland resources, CRTC would be compliant with EOs 11988 and 11990. This Proposed Action would likely save project planning and permitting costs by incorporating SOPs and BMPs early in the planning process. Additionally, these measures would serve to protect the environment, benefiting CRTC, USAG Fort Wainwright, and other users of Donnelly Training Area. This FNPA outlines the programmatic approach used for avoidance and minimization of routine actions. Any site-specific routine project analyzed as a part of this Proposed Action would be reviewed using the NEPA Review 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 parts of the Proposed Action 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. Based on the considerations listed above, the Army hereby finds that there are no practicable alternatives to implementing the Proposed Action analyzed within the *Cold Region Test Center's Army Testing, Infrastructure Improvement and Enhanced Environmental Procedures PEA*. Because there is no practicable alternative to impacting wetlands, federal regulations require compensatory mitigation. This compensatory mitigation for wetland losses would be detailed within Section 404 permits. 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 Action.

Approved by:



REED F. YOUNG
Colonel, U.S. Army
Commanding

5 March 2012

Date

Finding of No Practicable Alternative, United States Army Garrison Fort Wainwright

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FINDING OF NO PRACTACABLE ALTERNATIVE

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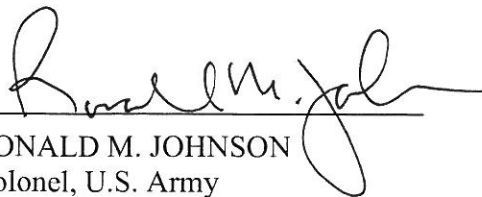
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Approved by:


RONALD M. JOHNSON
Colonel, U.S. Army
Commanding

13 Apr 12
Date