

DEPARTMENT OF THE ARMY  
UNITED STATES ARMY GARRISON, ALASKA

FINAL FINDING OF NO SIGNIFICANT IMPACT AND  
ENVIRONMENTAL ASSESSMENT

DONNELLY TRAINING AREA EAST  
MOBILITY AND MANEUVER ENHANCEMENT

FORT WAINWRIGHT, ALASKA

MAY 2008



APPROVED BY:

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17 June 2008  
Date

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## FINAL FINDING OF NO SIGNIFICANT IMPACT

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 Garrison (USAG), Alaska has prepared an Environmental Assessment (EA) to consider the environmental effects of a proposed mobility and maneuver enhancements at Donnelly Training Area (DTA) East.

**Description of Action:** USAG Alaska proposes to enhance the existing comprehensive training facility at DTA East to meet the needs of a growing and changing Army and allow for sustainable use. The proposed enhancements would improve existing training facilities by creating increased opportunities for paratroopers to conduct additional formational tactics and by providing sustainable trails and bivouac areas for unit training. The Proposed Action involves three enhancements:

*Donnelly Drop Zone Expansion.* Expansion of the existing 434-acre ground surface area drop zone to 2,474 acres. This expansion would meet the physical requirements for a mass tactical parachute drop delivered by a formation of three C-17 aircraft flying side-by-side.

*DTA East Trail Network Upgrade.* Upgrades (including widening, hardening, and repairing) of approximately 100 miles of existing networked trails and firebreaks within DTA East and approximately 36 miles of 33-Mile Loop Road. An all-season crossing of Jarvis Creek would also be established. This upgrade would provide sustainable trail use and east-west connectivity for training maneuverability within DTA East.

*Hardened Bivouac.* Establish a hardened bivouac site. This site would allow for a sustainable and designated area for Soldiers to bivouac.

The following range of alternatives has been considered:

- No Action Alternative – No enhancements would be made to the training infrastructure and trails at DTA East. The existing facilities would remain in use under current operating practices.
- Proposed Action – The three enhancements would be made to the training infrastructure and trails at DTA East. The following alternatives for each proposed enhancement were evaluated:

*Donnelly Drop Zone Expansion*

*DTA East Trail Network Upgrade*

*Hardened Bivouac*

- Alternative 1 – Buffalo Bivouac (Preferred Alternative)
- Alternative 2 – Mary and Sue Lakes Bivouac

Other alternatives, including construction of a new drop zone either outside of DTA East or within DTA East, expansion of other existing drop zones in DTA East, and partial expansion of the trail network were considered and eliminated because they either did not satisfy the purpose and need or objectives of the proposed project, they did not support the Army's mission, or they would result in greater environmental impacts.

**Preferred Alternative:** USAG Alaska’s preferred alternative is implementation of the Proposed Action to include Donnelly Drop Zone Expansion; DTA East Trail Network Upgrade; and Alternative 1 – Buffalo Bivouac.

**Procedure:** An analysis of the potential environmental impacts associated with both alternatives is addressed in the *Environmental Assessment for Mobility and Maneuver Enhancement at Donnelly Training Area East, January 2008*. The findings of this EA will be incorporated into this final decision document. USAG Alaska and agency stakeholders were informed of the Proposed Action and comments were solicited. Solutions responsive to public and agency concerns and questions were integrated into the elements of the Proposed Action and Alternatives. Public review of the EA and Draft FNSI was conducted from January 14, 2008 to February 14, 2008. A total of 3 comments were received during this period. The primary comments and potential issues raised during this period by both the public and agencies pertained to public access of DTA East and impact to wildlife habitat. These issues have been incorporated into the Final EA document and Appendix B of the EA contains USAG Alaska’s responses to these comments.

**Discussion of Anticipated Environmental Effects:** Implementation of the Proposed Action would result in impacts to the natural and cultural environment at DTA East. Table A summarizes the intensity of impact for these resources for each proposed enhancement alternative. Implementation of the Proposed Action would not impact subsistence, socioeconomics, or Environmental Justice. No impacts would occur to recreation within DTA East; however, the proposed DTA East Trail Network Upgrade would improve recreational access within DTA East.

The Proposed Action would contribute to minor adverse cumulative impacts on soils, surface water, and fire management, and potentially moderate cumulative impacts to vegetation, wildlife and fisheries, wetlands, and cultural resources. Mitigation measures would likely reduce the adverse cumulative effects to these resources.

Under the No Action Alternative, no enhancements would be made to the existing training infrastructure and trails at DTA East, including no upgrades of the trail network or a hardened bivouac area to foster sustainable training. Minor adverse impacts could occur to vegetation, wildlife and fisheries, surface water, and wetlands from off-trail vehicle use. Minor to moderate soil impacts could occur from erosion, compaction, and rutting within areas adjacent degraded segments of existing trails.

**Table A. Potential Environmental Effects of the Proposed Action and Alternatives**

Resource/Issue	Proposed Action			
	Donnelly Drop Zone Expansion	DTA East Trail Network Upgrade	Hardened Bivouac	
			Buffalo	Mary and Sue Lakes
<b>Soils</b>	Minor <sup>1</sup>	Minor <sup>1</sup> and Beneficial <sup>2</sup>	Minor <sup>1</sup>	Minor <sup>1</sup>
<b>Vegetation</b>	Minor <sup>3</sup>	Minor <sup>3</sup>	Minor <sup>4</sup>	Minor <sup>4</sup>
<b>Wildlife and Fisheries</b>	Minor <sup>5</sup>	Minor <sup>5</sup>	Minor <sup>5</sup>	Minor <sup>5</sup>
<b>Surface Water</b>	Minor <sup>6</sup>	Minor <sup>6</sup> and Beneficial <sup>7</sup>	Minor <sup>6</sup>	Minor <sup>6</sup>
<b>Wetlands</b>	Minor <sup>8</sup>	Minor <sup>9</sup>	None	None
<b>Cultural Resources</b>	None	Minor <sup>10</sup>	None	Minor <sup>10</sup>
<b>Fire Management</b>	Minor <sup>11</sup> and Beneficial <sup>12</sup>	Minor <sup>11</sup> and Beneficial <sup>12</sup>	Minor <sup>11</sup> and Beneficial <sup>12</sup>	Moderate <sup>13</sup>

**Table A. Potential Environmental Effects of the Proposed Action and Alternatives**

Resource/Issue	Proposed Action			
	Donnelly Drop Zone Expansion	DTA East Trail Network Upgrade	Hardened Bivouac	
			Buffalo	Mary and Sue Lakes
<sup>1</sup> Minor impact due to construction disturbance. <sup>2</sup> Beneficial reduction of off-trail use. <sup>3</sup> Minor conversion of forested and scrub-shrub communities to grassy communities. <sup>4</sup> Minor loss of vegetation from construction. <sup>5</sup> Minor loss of wildlife or fisheries habitat or disturbance to streambeds. Potential exists for temporary increase in turbidity of stream habitat during construction. <sup>6</sup> Minor and temporary increase in turbidity of streams during construction or minor loss of stream channel adjacent to existing trails. <sup>7</sup> Beneficial reductions of off-trail use and associated sedimentation. <sup>8</sup> Minor conversion of forested and scrub-shrub wetlands to emergent. <sup>9</sup> Minor losses of wetlands due to trail placement. <sup>10</sup> Potentially moderate to severe impacts due to lack of completed surveyed for archaeological resources. However, impacts are likely to be reduced to minor through completion of required Section 106 surveys and avoidance mitigation through the Section 106 process. <sup>11</sup> Minor increased fire risk from construction activities. <sup>12</sup> Reduction of fire risk by concentrating bivouac activities on hardened pad surfaces. <sup>13</sup> Moderate increase of fire risk from introduction of military bivouac activities.				

**Mitigation Measures:** The following measures, which are identified in Section 4.0 of the *Environmental Assessment for Mobility and Maneuver Enhancement at Donnelly Training Area East*, would be undertaken as part of the Preferred Alternative.

- Stabilize all disturbed areas, resulting from project construction, using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.
- Retain as much vegetation as possible to provide cover, concealment, and realism.
- Retain 50-foot vegetation buffer areas along either side of ephemeral and intermittent streams or other specifically designated areas. A 100-foot buffer would be maintained along Ober Creek.
- Conduct only hand clearing of trees greater than 1 inch in diameter, or 5 feet in height within 50-foot vegetation buffer areas along either side of ephemeral and intermittent streams or other specifically designated areas. Trees would be cleared to the mineral soil and the remaining stumps would be scored by a chainsaw blade to facilitate decomposition. Trees would be moved to an area outside of the buffer zone and ground by a hydro-ax.
- Narrow/confine trail widths in sensitive wetland habitats or when possible, widen trails to the upland direction to avoid wetland impact.
- An 11-acre high value wetland area will be avoided within the Donnelly Drop Zone. Only hand clearing of trees would be conducted within this area.
- Tree and vegetation removal activities would preferably occur during winter months when soils are frozen. However, some non-frozen areas could be hand cleared or hydro-axed if no rutting from clearing equipment results.
- When feasible, use a hydro-ax method as opposed to blading within wetlands to reduce impacts to hydric soils and low-lying vegetation.
- Fill areas would be minimized for wetlands through site-specific design and limiting construction staging to upland areas.
- Where necessary, natural drainage patterns would be maintained by installing culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.

- Initiate and continue consultations with Alaska Native tribes to identify and evaluate Traditional Cultural Properties that may be present on military managed lands in the interior of Alaska.
- Unsurveyed areas would be surveyed for cultural resources and the resources identified during the survey would be evaluated. Those resources determined to be National Register of Historic Places (NRHP) eligible would be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska state standards for archaeology.
- Cultural resource sites that are currently identified, but have not been evaluated for NRHP eligibility would be treated as NRHP eligible sites; until such time that they are evaluated for NRHP eligibility.
- Avoid cultural sites during design utilizing information gathered from on-the-ground surveys.
- If any cultural resources are disturbed or discovered during this undertaking, the Environmental Resources Department archeologist shall be notified.
- Curation of archaeological material recovered per Memorandum of Agreement between the United States Army Alaska (USARAK) and the University of Alaska Museum.

**Conclusions:** USAG Alaska has chosen the Preferred Alternative (Donnelly Drop Zone Expansion; DTA East Trail Network Upgrade; and Alternative 1 Buffalo Bivouac) as its intended course of action. Based on the review of the information contained in the EA, USAG Alaska has determined that the implementation of the Preferred Alternative would not significantly affect the quality of the environment within the meaning of NEPA Section 102(2)(C). The preparation of an EIS for the action is not required.

**Point of Contact:** Please direct requests to Ms. Jessica Garron, Directorate of Public Works, ATTN: IMPC-FWA-PWE (McEnteer), 1060 Gaffney Road #4500, Fort Wainwright, AK 99703-4500, [jessica.garron@us.army.mil](mailto:jessica.garron@us.army.mil). The EA and Final FNSI are available at [http://www.usarak.army.mil/conservation/NEPA\\_home.htm](http://www.usarak.army.mil/conservation/NEPA_home.htm).

**Approved by:**



DAVID L. SHUTT  
Colonel, U.S. Army  
Commanding

17 June 2008  
Date

**Environmental Assessment**

**Donnelly Training Area East Mobility and Maneuver Enhancement  
Fort Wainwright, Alaska**

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### **LIST OF COMMON ABBREVIATIONS**

<b>Abbreviation</b>	<b>Definition</b>
1-25 <sup>th</sup> SBCT	1 <sup>st</sup> Stryker Brigade Combat Team, 25 <sup>th</sup> Infantry Division
4-25 <sup>th</sup> BCT	4 <sup>th</sup> Brigade Combat Team (Airborne), 25 <sup>th</sup> Infantry Division
ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AFI	Air Force Instruction
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
ATF	Airborne Task Force
BAX	Battle Area Complex
BLM	Bureau of Land Management
BMP	best management practice
BP	before present
CACTF	Combined Arms Collective Training Facility
CEA	cumulative effects analysis
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CRTC	Cold Regions Test Center
CWA	Clean Water Act
DTA	Donnelly Training Area
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FMTV	five-ton, personnel mover
FNPA	Finding of No Practicable Alternative
FNSI	Finding of No Significant Impact
GMU	Game Management Unit
HGM	Hydrogeomorphic
ICRMP	Integrated Cultural Resource Management Plan
INRMP	Integrated Natural Resource Management Plan
ITAM	Integrated Training Area Management
L2AB3H	lacustrine aquatic bed, rooted vascular, permanently flooded
LRAM	Land Rehabilitation and Maintenance
MBTA	Migratory Bird Treaty Act
MIDAS	Missile Defense Alarm System
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants

NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSR	New Source Review
NWI	National Wetland Inventory
ORRV	off-road recreational vehicle
PEM	palustrine emergent
PFO	palustrine forested
PSS	palustrine scrub shrub
PUB	palustrine unconsolidated bottom
R5UBH	riverine unknown perennial, unconsolidated bottom, permanently flooded
R5USC	riverine unknown perennial, unconsolidated shore, seasonally flooded
RTLA	Range and Training Land Assessment
SDZ	surface danger zone
SHPO	State Historic Preservation Officer
SOP	standard operational procedure
SPPCP	Spill Pollution Prevention and Countermeasures Plan
TCP	Traditional Cultural Property
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USAG	United States Army Garrison
USARAK	United States Army, Alaska
USARTRAK	United States Army Garrison Alaska Recreation Tracking System
USC	United States Code
USFWS	United States Fish and Wildlife Service
UXO	unexploded ordnance

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## 1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

### 1.1 INTRODUCTION

The U.S. Army Garrison (USAG), Alaska is proposing mobility and maneuver enhancements to existing training areas within the Donnelly Training Area (DTA) East (Figure 1). DTA East, located within DTA near Delta Junction, Alaska, is used for primarily training Army units to maintain military readiness and preparedness. Due to Army Transformation, the Global War on Terror, individual unit training requirements, and the desire to maintain sustainable<sup>1</sup> use of Alaska Army lands, the Army is proposing to enhance the existing comprehensive training facility at DTA East to meet the needs of a growing and changing Army. The new enhancements would improve existing training facilities by creating increased opportunities for paratroopers to conduct additional formational tactics and by providing sustainable trails and bivouac areas for unit training.

The Proposed Action involves enhancements to meet the evolving mission doctrine for the 4<sup>th</sup> Brigade Combat Team (Airborne), 25<sup>th</sup> Infantry Division (4-25<sup>th</sup> BCT) stationed at Fort Richardson, and the 1<sup>st</sup> Stryker Brigade Combat Team, 25<sup>th</sup> Infantry Division (1-25<sup>th</sup> SBCT) stationed at Fort Wainwright. Both the 4-25<sup>th</sup> BCT and 1-25<sup>th</sup> SBCT require training facilities that support tactical ground insertions and mass airborne insertions (tactical formations) of personnel and equipment into a combat area. In order to develop a more comprehensive training facility for the 1-25<sup>th</sup> SBCT, 4-25<sup>th</sup> BCT, and other Army missions at DTA East, USAG Alaska is proposing three enhancement projects (connected actions)<sup>2</sup>:

*Donnelly Drop Zone Expansion.* Expansion of the existing 434-acre ground surface area to 2,474 acres. This expansion would meet the physical requirements for a mass tactical parachute drop delivered by a formation of three C-17 aircraft flying side-by-side.

*DTA East Trail Network Upgrade.* Expansion (including widening, hardening, and repairing) of approximately 100 miles of existing networked trails and firebreaks within DTA East and approximately 36 miles of 33-Mile Loop Road. An all-season crossing of Jarvis Creek would also be established. This expansion would provide sustainable trail use and east-west connectivity for training maneuverability within DTA East.

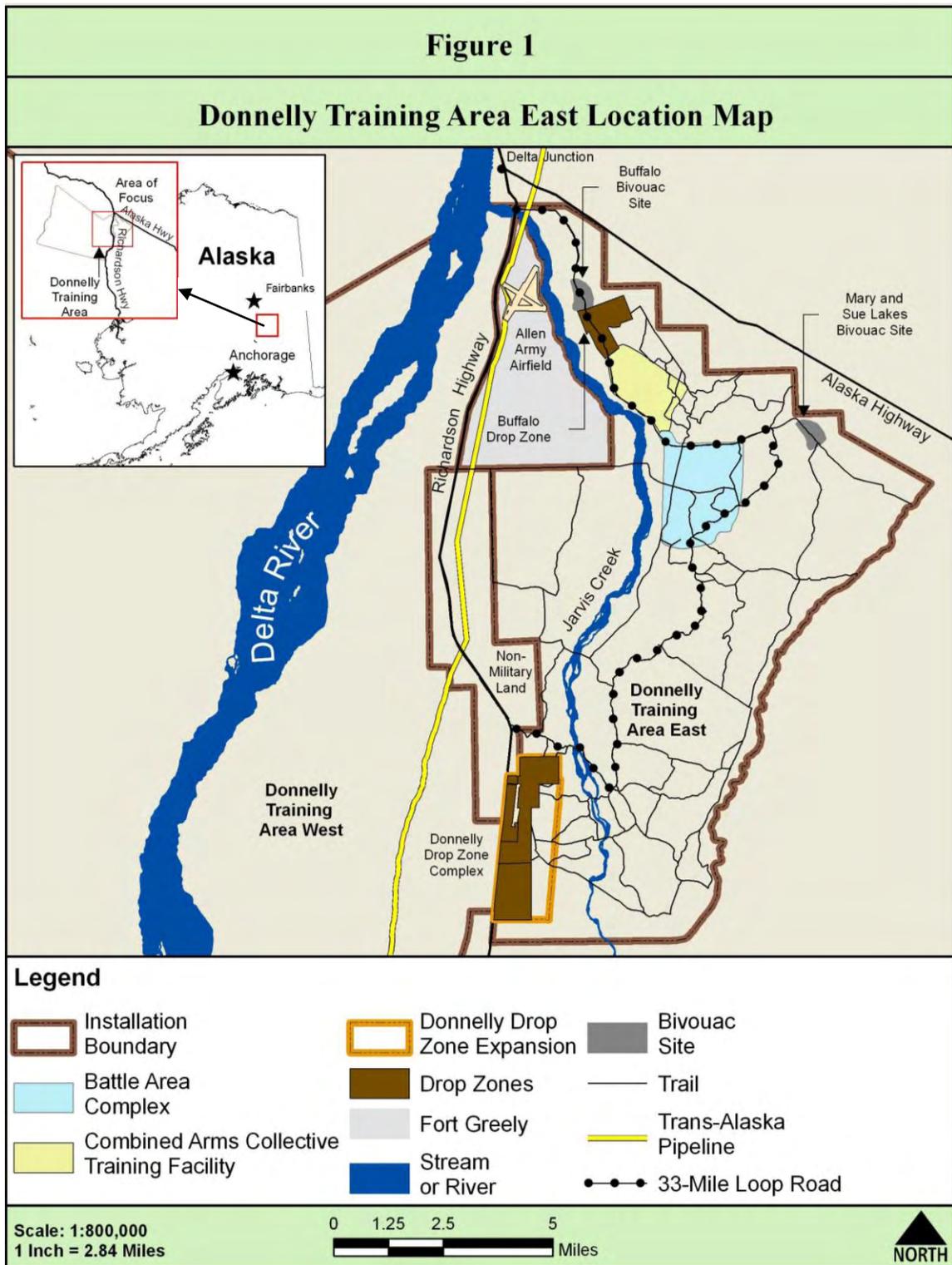
*Hardened Bivouac.* Establish a hardened bivouac site. This site would allow for a sustainable and designated area for Soldiers to bivouac.

The National Environmental Policy Act of 1969 (NEPA), 40 Code of Federal Regulation (CFR) Parts 1500-1508, and 32 CFR Part 651, *Environmental Analysis of Army Actions*, require the Army to assess the environmental impacts associated with the proposed enhancements to DTA East.

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<sup>1</sup> Sustainability can be defined as the long-term use and viability of managing and maintaining training lands in a manner which provides the most comprehensive training experience possible for Soldiers to support testing and training today and in the future, while taking into consideration environmental conditions (i.e., including but not limited to vegetation, soil conditions and cultural sites), training impacts, and techniques for reducing long-term effects of training and testing with preventive and corrective land reclamation, reshaping, rehabilitation, repair and maintenance. Refer to the Integrated Training Area Management (ITAM) Plan (USAG Alaska, 2005) for more specific information regarding sustainable use of military training lands.

<sup>2</sup> Connected actions are those that are “closely related” to the proposed project and alternatives. Connected actions are interdependent parts (i.e., the proposed three enhancements above) of a larger action (i.e., comprehensive training facility at DTA East) which oftentimes will not proceed unless other actions have been taken previously or simultaneously (i.e., Army transformation).



This Environmental Assessment (EA) describes the purpose and need for the Proposed Action, decision to be made, issues of concern, comparison of alternatives, environmental consequences, and reasonable and practicable mitigation measures.

## 1.2 PURPOSE AND NEED

An effect of the Army's changing mission and Army doctrine is the need to make modifications to Army Alaska training ranges to ensure units are capable of training to an ever evolving standard. The goal is for Army units training at DTA East to meet all training objectives now and in the future, thus the United States Army, Alaska (USARAK) proposes to enhance existing facilities.

The purpose of the Proposed Action is to develop a more comprehensive training environment at DTA East, while allowing for sustainability of training lands and transportation corridors. Improvements at DTA East would support mass tactical ground and airborne insertions of personnel and equipment into a combat area. Soldiers would be better prepared to support Army modularity goals, conduct reset training in support of the Global War on Terror, achieve Army Transformation objectives, conduct training, and maintain functional efficiency.

Enhancements to DTA East would increase the ability for simultaneous synergistic training and "round-robin" type training by multiple-sized units up to a Brigade level (3,000 to 5,000 Soldiers). This type of training allows different units to train at different stations (Army facilities) for certain time periods. An example rotation for a single unit utilizing the proposed enhancements could include the unit parachuting into DTA East, using the trail network and Stryker vehicles for ground transportation to various training facilities to include the Battle Area Complex and Combined Arms Collective Training Facility (BAX/CACTF) and bivouacking at the newly established areas. The following three enhancements connected with the Proposed Action are required to provide a more comprehensive training environment within DTA East:

*Donnelly Drop Zone Expansion.* The Donnelly Drop Zone is in a location that optimizes the accessibility and use of existing training areas and trails within DTA East. The purpose of the drop zone enhancement is to widen an existing parachute drop zone to an area large enough for the 4-25<sup>th</sup> BCT or an airborne task force to conduct a C-17 mass tactical formation (three C-17 aircraft side-by-side, allowing for 306 total drops [102 per plane] per pass). The minimum width requirement for this type of formation is 2,000 meters. Ultimately, the Donnelly Drop Zone would also allow for jumpers to be deployed with a single pass of three aircraft over the drop zone, requiring a minimum drop zone length of 5,000 meters (Air Force Instruction [AFI] 13-217 and AFI 11-2C-17V3)<sup>3</sup>. To accommodate the 2,000- by 5,000-meter (1.2- by 3.2-mile) dimension, the existing usable cleared area of the Donnelly Drop Zone (averaging 0.4 by 1.7 miles) would be expanded from 434 acres to approximately 2,474 acres.

The primary drop hazards to be removed include trees (both live and burned), stumps, and rocks. Trees pose parachute tangle hazards, burned trees pose spearing danger to jumpers, and stumps and rocks can cause bodily injury (sprains and breaks) during landing. Existing buildings at the nearby decommissioned MIDAS (Missile Defense Alarm System) Radar site would not be removed as they would also be used for obstacle avoidance training.

Expanding the existing drop zone would address a shortage of large tactical drop zones in Alaska and would be used as an integral part of comprehensive unit training for airborne insertions of personnel and equipment into a combat area.

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<sup>3</sup> Note: AFI uses metric (meters) in their published materials. For purposes of this EA and to reduce confusion, English units (feet/miles/acres, etc.) will be used throughout the remainder of this document.

*DTA East Trail Network Upgrade.* The purpose of the DTA East Trail Network Upgrade is to upgrade existing maneuver trails and improve connectivity of the existing trail network. The existing trails within DTA East were not built to accommodate sustainable use by Stryker vehicles. In addition, inadequate original trail construction methods of creating road elevations below surrounding grades and lack of adequate drainage have created areas of frequent ponding and unstable soils which result in off-trail use to maneuver around these areas. This expansion would increase maneuverability and improve access within DTA East and to the BAX/CACTF to accommodate tactical training requirements for both the 1-25<sup>th</sup> SBCT and 4-25<sup>th</sup> BCT.

The trails would be engineered to support Stryker vehicles, thereby preventing soil erosion and achieving sustainability goals. Currently degraded trail segments would also be improved eliminating unnecessary and damaging off-trail vehicle traffic in areas with marginal soil conditions.

*Hardened Bivouac.* The overall USARAK Training Strategy directs all Company and larger training events to be conducted at DTA. The current bivouac facilities at DTA East have not been constructed using long-term sustainable techniques designed to accommodate repetitive large scale tactical events for both the 1-25<sup>th</sup> SBCT and 4-25<sup>th</sup> BCT, without noticeable degradation to the bivouac areas. An established all-season hardened bivouac is needed to foster sustainability (greatly reduce soil erosion in areas habitually used to support Brigade and Battalion bivouac operations) and support all-season training requirements within DTA East. In addition, the bivouac area should connect to the existing maneuver trail network, and provide a logistical support area for units training at the BAX/CACTF.

### **1.3 PROJECT OBJECTIVES**

In order to meet the mobility and maneuver enhancement purpose and need discussed in Section 1.2, USAG Alaska has established the following objectives:

Overall Objectives:

- Develop a more comprehensive training facility at DTA East to support USARAK
- Foster DTA East's sustainable use by the military
- Utilize Integrated Training Area Management (ITAM) Standard Operating Procedures (SOPs) during construction and rehabilitation
- Provide for the reduction and/or prevention of adverse land use impacts that can potentially lead to erosion problems and environmental and cultural resource damage

1) Donnelly Drop Zone Expansion Objectives:

- Drop zone expansion and clearing to accommodate a mass tactical formation
- Develop vegetation clearing techniques within the drop zone based on existing environmental conditions
- Clearing of jump hazards (trees, stumps and rocks) to descending paratroopers to parachute tangle hazards, spearing danger to jumpers, and bodily injury (sprains and breaks) during landing
- Begin use of the expanded drop zone by July 1, 2008, for C-17 aircraft and airborne units to meet jump certification requirements

2) DTA East Trail Network Upgrade Objectives:

- Maximize use of maneuverable land at DTA East by improving existing trails to provide a sustainable, hardened all-season access network to connect numerous training facilities and areas located within DTA East

- Utilize 33-Mile Loop Trail as main artery (approximately 36 miles) and connect combat maneuver trails leading off 33-Mile Loop Trail (approximately 100 miles)
- Provide a programmatic approach for upgrading or constructing new trails
- Establish an all-season crossing of Jarvis Creek to provide internal DTA East (east and west) connectivity
- Build and improve combat maneuver trails to standards identified in the ITAM Plan

3) Hardened Bivouac Objectives:

- Establish a hardened all-season site for Company-sized bivouac operations, including Stryker vehicles, within DTA East to allow for flexibility in usage times to include break-up (ground thaw occurring between April 1 and May 15)
- Create a designated use bivouac area to avoid conflicts with other nearby facilities and activities to include BAX Surface Danger Zone (SDZ)
- Allow for easy accessibility to BAX/CACTF facilities
- Reduce Soldier crossing of Richardson Highway

## **1.4 DECISIONS TO BE MADE**

This EA considers direct, indirect, and cumulative effects of the Proposed Action and the alternatives. It was prepared in accordance with the NEPA of 1969 (42 United States Code [USC] 4321 et seq.), Council on Environmental Quality (CEQ) Regulations 40 CFR Parts 1500-1508, 32 CFR Part 651 (Army Regulation 200-2: *Environmental Analysis of Army Actions*), and Army Environmental Command's *NEPA Analysis Guidance Manual* (May 2007). A specific requirement for this EA is an appraisal of impacts of the proposed project, including a determination of a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an environmental impact statement (EIS).

This EA will provide the decision-maker, the Commander of USAG Alaska, with the information necessary to evaluate the impacts associated with the Proposed Action and alternatives (see Chapter 2.0 for alternatives). The decision-maker will take into account technical, economic, environmental, and social issues, and the Proposed Action's ability to meet the purpose and need and the objectives. The decision to be made will determine:

1) *Donnelly Drop Zone Expansion*. The size of the drop zone expansion and the method of clearing that support a mass tactical operation:

- No Action Alternative – No expansion of the Donnelly Drop Zone
- Proposed Action – Expansion

2) *DTA East Trail Network Upgrade*. The expansion of the existing trail and firebreak network and the location of all-season water crossings of Jarvis Creek:

- No Action Alternative – No expansion of the existing trail and firebreak network
- Proposed Action – Upgrade

3) *Hardened Bivouac*. The location of a hardened bivouac site to accommodate a Company-sized unit and their vehicles:

- No Action Alternative – No hardened bivouac site
- Alternative 1 – Buffalo Drop Zone
- Alternative 2 – Mary and Sue Lakes

## 1.5 SCOPE OF ENVIRONMENTAL ANALYSIS (ISSUES OF CONCERN)

This EA provides a discussion of the affected environment and the potential impacts (direct, indirect, and cumulative) to physical, biological, and socioeconomic resources in Chapter 3.0. The following resources were identified as potential issues of concern and analyzed for the Proposed Action and alternatives:

- Soils
- Vegetation
- Wildlife and Fisheries
- Surface Water
- Wetlands
- Cultural Resources
- Subsistence
- Public Access and Recreation
- Fire Management
- Socioeconomics
- Environmental Justice

It has been determined that various resources would not be impacted by the Proposed Action, and thus, further evaluation and analysis are not necessary and will not be addressed in Chapter 3.0. Brief reasoning on why each resource will not be further evaluated is presented below:

- *Air Quality:* DTA East has been designated as an attainment area for Federally-regulated air pollutants. When complete, the three proposed enhancements would have *de minimis* effects on area air quality. Non-significant, temporary air emissions would result from construction/clearing processes and would include fugitive dust emissions from soil agitation and byproducts from the combustion of fossil fuels from operation of construction equipment. Open burning of vegetation debris associated with the proposed enhancements would be coordinated with the Alaska Department of Conservation and would comply with the open burning policies and guidelines regarding land clearing and burning of 40 acres or more. The current and projected use of DTA East by military vehicles during training was analyzed in previous NEPA documentation discussed in Section 1.6, with no increase in military training occurring as a consequence of undertaking the Proposed Action.
- *Airspace Management:* No changes would occur to the existing airspace under the three proposed enhancements. Airspace use of the Donnelly Drop Zone would not be affected by ground surface expansion. The expanded drop zone surfaces would allow for additional aircraft configuration; however, this would occur within existing designated airspace. The current and projected use of drop zones at DTA was analyzed in previous NEPA documentation discussed in Section 1.6.
- *Geology:* No impacts would occur to geology for the proposed drop zone expansion. Gravel pit operations may be required for the proposed trail upgrades and for the bivouac site if gravel is not obtained from an outside source. Gravel extraction impacts are discussed further in Chapter 3.0. Surface-related impacts (stump removal, grading, and gravel extraction) are addressed within the soils discussion of this EA.
- *Groundwater:* Any potential impact to local and regional groundwater quality or availability would be insignificant. Construction activities for all three proposed enhancements would result in minor surficial soil disturbances and would not be expected to adversely impact groundwater. Substances (i.e., fuel, oils, and other lubricants) associated with construction equipment and operations that have the potential for leaking into soils and entering groundwater aquifers would be avoided through the use of Best Management Practices (BMPs) to prevent spills or leaks as defined in Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*.
- *Hazardous Substances:* Petroleum, oil and lubricants (POLs) would be associated with equipment required for clearing and grading for all three proposed enhancement projects.

BMPs as defined in AR 200-1 would be used to prevent spills or leaks during construction and during training operations. No sites within DTA East are listed on the Environmental Protection Agency's (EPA) National Priorities List. However, the potential for unexploded ordnance (UXO) is possible within DTA East.

- *Human Health and Safety:* During construction and operation of three proposed enhancements, USAG Alaska would follow existing SOPs for the handling and transfer of hazardous materials and UXO and comply with occupational health and safety standards (see Section 2.2.4).
- *Noise:* Minor noise would be associated with clearing and grading activities for the three proposed enhancements. These impacts would be temporary and confined within DTA East boundaries. Noise production associated with current and projected use of DTA East was analyzed in previous NEPA documentation discussed in Section 1.6. Operations associated with the DTA East enhancements would not change the type of noise effects.
- *Land Use/Energy/Utilities:* All three proposed enhancements would not change existing military training land use, nor would they impact energy use or require additional utility infrastructure.
- *Threatened and Endangered Species:* No Federally-listed rare, threatened, or endangered species, or their habitats, are known to exist within DTA East. Therefore, the three proposed enhancements would not impact threatened or endangered species.
- *Traffic and Transportation:* All training activities would be conducted within DTA East. Equipment required for clearing and grading activities would require use of existing roadways (Richardson Highway and Alaska Highway). Use of local highways would be minor and temporary in nature. Army operations resulting from the three proposed enhancements would not change from the current and projected use of the DTA East analyzed in previous NEPA documentation discussed in Section 1.6. All Army operations would 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

NEPA documentation has been prepared within recent years to evaluate the environmental, cultural and socioeconomic impacts of USARAK Transformation efforts, the addition of Soldiers and new vehicles, a general increased use of USARAK training lands, and range development projects within DTA East. The following documents (incorporated by reference) provide a synopsis of USARAK Transformation:

- *Transformation of US Army Alaska Final EIS, May 2004.* This document analyzes the impacts to USARAK lands (including DTA) and surrounding communities and land users associated with the transformation of the 172<sup>nd</sup> Infantry Brigade (Separate) at Forts Wainwright and Richardson into a 1-25<sup>th</sup> SBCT.
- *Conversion of the Airborne Task Force (ATF) to a 4-25<sup>th</sup> BCT Final EA, September 2005.* This document analyzes the impacts to USARAK lands (including DTA) and surrounding communities and land users associated with the conversion of the ATF to a 4-25<sup>th</sup> BCT at Fort Richardson.
- *C-17 Fight Training Areas EA, September 2005.* This document justifies the United States Air Force (USAF) need for C-17 aircraft and analyzes the impacts to USARAK lands and adjacent airspace users regarding C-17 aircrew training in Alaskan airspace, including the use of the Donnelly Drop Zone.

- *ITAM Plan 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 Draft Integrated Natural Resource Management Plan (INRMP) 2007-2011 and 2007 INRMP EA, 2006 and January 2007, respectively.* These documents describe standard policies and procedures for managing natural resources to ensure sustainability of Army lands.
- *The Integrated Cultural Resource Management Plan (ICRMP), 2001.* This document outlines treatment for and management of cultural resources.
- *The BAX/CACTF Final EIS, June 2006.* The focus of this EIS was on the construction and operation of a 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 comprehensive description of existing resources. Therefore, the BAX/CACTF EIS (2006) will serve as the foundation and main reference source for this EA.

## **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 the DTA East Mobility and Maneuver Enhancement EA. An example scoping letter and a summary of Agency responses are provided in Appendix A.

- Alaska Department of Environmental Conservation (ADEC)
- Alaska Department of Fish and Game (ADFG)
- Alaska Department of Natural Resources (ADNR), Office of Habitat Management and Permitting
- ADNR, Office of History and Archaeology
- Bureau of Land Management (BLM)
- Alaska Fire Service
- City of Delta Junction
- Cold Regions Test Center (CRTC)
- Division of Forestry, Delta Area Office
- Fort Greely
- U.S. Air Force
- U.S. Army Corps of Engineers (USACE), Regulatory Branch
- U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS)
- U.S. Fish and Wildlife Service (USFWS)

Nine government agencies (ADFG, BLM, CRTC, Fort Greely, NRCS, ADNR, Office of History and Archaeology, Division of Forestry, and the USFWS) provided written correspondence during the scoping period for the DTA East Mobility and Maneuver Enhancement projects (see Appendix A). The following discussion summarizes agency scoping comments as well as identifies sections of the EA which discuss the relevant topics.

## **ADFG**

### Donnelly Drop Zone (DZ) Expansion

- A vegetation removal plan that describes appropriate clearing techniques and timing (including prescribed burning and crushing) and a regeneration prescription should be developed (see Sections 2.2.1, 3.3.2.2 and 4.2).
- Alternative 2 provides at least a minimally tempered approach.
- Due to moose, caribou, bison, public access, and general environmental aspects, ADFG recommends the Buffalo DZ as a third alternative (see Section 2.3.1.3).
- The Donnelly DZ is within in an area of winter moose and caribou habitat. Removal of vegetation at Donnelly DZ would reduce the overall amount of winter forage in the area (see Sections 3.4.1, 3.4.2.2 and 4.3).
- The Donnelly DZ is within a migration corridor for the Delta Bison herd. Disturbances to bison migration may have negative ramifications for farmers east of Delta Junction (see Sections 3.4.1, 3.4.2.2 and 4.3).
- Any reductions in public access through the Donnelly DZ area will limit access to adjacent state lands (see Sections 3.9.1, 3.9.2.2 and 4.7).
- Frequent high winds could result in severe soil erosion (see Sections 2.2.1, 3.2.1, 3.2.2.2 and 4.1).

### DTA East Trail Network Upgrade

- Any increased training and vehicular traffic would increase disturbance to moose (see Sections 1.6, 3.4.2.3, and 5.2.3).
- Increased access restrictions would cause adverse impact to public use of state land (see Sections 1.6, 3.9.2.3 and 5.1.3).

### Hardened Bivouac Site

- There are no current wildlife concerns with either the proposed Buffalo DZ or Mary Sue Lakes bivouac sites.

## **ADNR Division of Forestry**

The Division of Forestry, Delta Junction Area Office, request the Army salvage the 6 inch and larger diameter trees from proposed clearings and be made available to public or local timber buyers (see Sections 2.2.1.3, 2.2.2.2, 2.2.3.2, 3.3.2 and 4.2).

## **ADNR, Office of History and Archaeology**

The Office of History and Archaeology commented that numerous historic properties are likely to exist within or adjacent to the proposed Donnelly Drop Zone Expansion and the DTA East Trail Expansion projects and they would likely recommend an archaeological survey prior to project design (see Sections 3.7.1, 3.7.2.2, 3.7.2.3 and 4.6).

## **BLM**

BLM provided general comments and comments relative to each specific proposed enhancement. The following highlight their general comments for the proposed enhancement projects:

- Mitigation of fire risk should be included in all of the proposed actions (see Section 3.10.2).

- Impacts to wetlands should be acknowledged and mitigated to the extent possible (see Sections 3.6.2 and 4.5).
- Cumulative impacts due to continued range clearing and expansion of training activities should be considered (see Chapter 5.0).

#### Donnelly Drop Zone Expansion

- Approximately 70 wood cutting permits have been issued per year in this area for several years. BLM encourages the Army to minimize the reduction in available fire wood by 1) keeping the area to be cleared as small as practicable, 2) extending the period over which the clearing occurs for as long as possible, and 3) making as much wood as possible available to the public as the clearing is conducted (see Sections 2.2.1.3, 3.3.2.2 and 4.2).
- As the proposed drop zone expansion area is highly susceptible to wind erosion, BLM encourages the Army to consider all feasible mitigations for wind erosion (see Sections 2.2.1, 3.2.1, 3.2.2.2 and 4.1).
- The Army should maintain the integrity of Jarvis's creek riparian zone and avoiding the creation of erosion potential during the clearing operations (see Sections 3.2.2, 3.5.2, 4.1 and 4.4).

#### DTA East Trail Network Upgrade

- Potential impacts that should be analyzed in the EA include:
  - Disruption of wildlife movement due to the width of the trail corridor (see Section 3.4.2.3);
  - Introduction and spread of noxious and invasive plant species (see Section 3.3.2.3);
  - Erosion control, both on the trailbed and in the trail ditches (see Sections 3.2.2.3 and 4.1); and
  - Consideration of community needs in disposing of woody debris created during right of way clearing (see Sections 2.2.2.2, 3.3.2.3 and Section 4.2).
- BLM recommends staying with existing low water crossings if feasible. The proposed above-river-bed all-season crossings of Jarvis Creek, if undersized, could lead to long term erosion and maintenance problems (see Section 3.5.2.3).

#### Hardened Bivouac

- Introduction and spread of noxious and invasive plant species (see Section 3.3.2.3);
- Control of erosion due to both water and wind (see Sections 3.2.1, 3.2.2.4, 3.5.2.4 and 4.1);
- Consideration of community needs in disposing of woody debris created during clearing (see Sections 2.2.3.2, 3.3.2.3 and Chapter 4.2).

#### **CRTC**

CRTC supports the proposed projects as they would reduce training pressures within DTA, allow the general public increased access to the base of the Granite Mountains, and would reduce erosion potential and indirect impacts to wetlands (see Sections 3.2 and 3.6).

#### **Fort Greely**

Fort Greely requests the EA analyze the need for Fort Greely to provide infrastructure support or additional services if the expanded training facilities would cause an increase in training activities (see Section 1.6). Fort Greely also recommends the Fort Greely Security Office review the Proposed Action if the proposed activities get close to the Fort Greely boundary.

## **NRCS**

NRCS commented that straight blading the entire Donnelly Drop Zone expansion site would remove the organic layer and subject the area to wind erosion, causing revegetation of the area to be difficult. In addition NRCS commented that the soils in the proposed areas for the DTA East Trail Network Upgrade and Hardened Bivouac alternatives are suitable for such activities. Areas of permafrost and/ or are wet soils would exist which could require additional maintenance, however, should not create any long term problems (see Section 3.2).

## **USFWS**

The USFWS determined that no further consultation was required and concluded there would be no anticipated impact to threatened or endangered species or critical habitat protected under the ESA (see Appendix A).

### **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 NEPA.

In accordance with USAG Alaska responsibilities under NEPA; Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments; Department of Defense (DoD) American Indian and Alaska Native Policy; DoD American Indian and Alaska Native Policy Alaska Implementation Guidance; DoD Instruction 4710.02; and AR 200-4, Cultural Resources Management, government-to-government consultation regarding this EA has been initiated with six Alaska Native tribal governments: Dot Lake, Healy Lake, Eagle, Northway, Tanacross, and Tetlin. The projects were also discussed during the Quarterly Meeting between Upper Tanana Tribes and USAG Alaska on November 20, 2007.

USAG Alaska has solicited input from these Native tribes to evaluate the potential effects of the Proposed Action on tribal resources, rights, and interests. A Native liaison with USAG Alaska has been designated to work directly with tribal representatives.

## **1.8 PUBLIC REVIEW PROCESS**

A detailed summary of the public comments and USAG Alaska responses are located in Appendix B. The Notice of Availability was published in two publications (the Fairbanks Daily Miner and the Delta Wind) and on the USAG Alaska website (<http://www.usarak.army.mil/conservation>) beginning a 30-day comment period on January 14, 2008. In addition, USAG Alaska held a public meeting regarding the Draft EA and FNSI at the Delta Junction Community Center in Delta Junction on January 23, 2008. The 30-day public comment period ended on February 14, 2008. Copies of the Draft EA were made available on the USAG Alaska website, at the Noel Wien Public Library in Fairbanks and the Delta Junction Community Library in Delta Junction.

In all, 3 comments were proved during the public meeting. Two commentors were State agencies and one commentor was from the public. Primary concerns were in regards to potential public access impacts within DTA East and to State lands to the south; concern was expressed whether the DTA East improvements would either reduce or restrict access opportunities. Other concerns

also included vegetation clearing at the Donnelly Drop Zone and potential impacts to soil resources (erosion) and large mammals (winter habitat). These issues, as well as other comments, have been considered in detail throughout the Final EA.

## 1.9 LISTS OF FEDERAL PERMITS, LICENSES, OR ENTITLEMENTS

Table 1.9-1 lists the applicable and relevant Federal laws and regulations and their associated regulatory agency consultations and permits that would be required with the implementation of the Proposed Action.

**Table 1.9-1. Laws, Regulations, and Associated Consultations and Permits**

Law or Regulation	Description
Clean Air Act [42 USC 7401 et seq.]	Requires sources to meet standards and obtain permits to satisfy National Ambient Air Quality Standards, State Implementation Plans (SIPs), New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants (NESHAPs), and New Source Review.
Clean Water Act (CWA) [33 USC 1251 et seq. Sections 401 and 402]	Requires EPA or state-issued permits, National Pollutant Discharge Elimination System (NPDES) permits, and compliance with provisions of permits regarding discharge of effluents to surface waters and additional wetland protection requirements.
CWA [33 USC 1313 Section 404]	Requires permits to dredge or place fill in jurisdictional waters, including wetlands. Requires alternatives analysis including practicable alternatives that avoid impacts (404b(1) guidelines).
Magnuson-Stevens Fishery Conservation and Management Act [16 USC 1801 et seq.]	Requires consultation with National Oceanic and Atmospheric Administration National Marine Fisheries Service Fisheries and assessment of impacts from activities that may affect Essential Fish Habitat and managed species.
Migratory Bird Treaty Act [16 USC 703 et seq.]; 50 CFR Part 21	Requires Armed Services to take measures to prevent significant impact to migratory bird populations.
National Historic Preservation Act, as amended [16 USC 470 et seq.]	For a Federal undertaking, Section 106 requires consultation with State Historic Preservation Officers (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 (NRHP)), and consider ways to avoid effects or reduce them to the level of no adverse effect.

## **2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES**

The following sections describe the No Action Alternative, the Proposed Action (implementation of DTA East enhancements) and the associated alternatives. The Proposed Action was developed in accordance with USARAK training mission requirements and criteria objectives listed in Sections 1.2 and 1.3. The following sections describe the proposed enhancements, including military activities and location within DTA East. Section 2.1 discusses the No Action Alternative of not implementing the overall enhancements. Section 2.2 provides a description of each of the three proposed enhancements, and also includes alternatives for each proposed enhancement. Safety and environmental precautions (including BMPs and mitigation measures) that would be implemented (regardless of the alternative presented in Section 2.2) are discussed in Sections 2.2.4 and 2.2.5, respectively. Section 2.3 addresses alternatives considered and eliminated from detailed study. Additionally, a summary of the potential environmental effects of the alternatives is also presented at the end of this Chapter.

### **2.1 DESCRIPTION OF THE NO ACTION ALTERNATIVE**

Under the No Action Alternative, no enhancements would be made to the training infrastructure and trails at DTA East. The existing facilities would remain in use under the current operating practices as described in the NEPA reference documents in Section 1.6, and would not be able to accommodate additional 1-25<sup>th</sup> SBCT and 4-25<sup>th</sup> BCT training requirements or all-season sustainable training, as trails would not be hardened and improved. This alternative serves as the status quo for comparative analysis with the action alternatives. Specific components of the No Action Alternative are:

- 1) *Donnelly Drop Zone Expansion.* The Donnelly Drop Zone would not be expanded. The existing drop zone dimensions would be retained, limiting C-17 aircraft to dropping paratroopers from one plane at a time (less than 1 company/102 paratroopers) and limiting the type of mass tactical aircraft formations at DTA. The No Action Alternative would not support the objectives outlined in Section 1.3.
- 2) *DTA East Trail Network Upgrade.* There would be no upgrades to existing trails and firebreaks; however, routine trail maintenance would continue. This alternative would not provide overall sustainable access to the DTA East for the 1-25<sup>th</sup> SBCT, 4-25<sup>th</sup> BCT, or any other unit assigned to USARAK. Trails within DTA East would only be upgraded on a case-by-case basis, and likely in response to a degraded situation. Limited trails currently exist to accommodate one-way Stryker traffic and even fewer trails exist to accommodate two-way Stryker traffic. Also, no all-season access across Jarvis Creek exists to provide internal year-round access between western and eastern portions of DTA East. The No Action Alternative would not support the objectives outlined in Section 1.3.
- 3) *Hardened Bivouac.* There would be no new construction, upgrades or improvements of a bivouac area under this alternative. Use of existing bivouac areas would continue; however, these areas used for bivouac activities were not constructed using sustainable hardening techniques or built to accommodate Stryker vehicles. There would be no defined area for bivouac use created and sustainable bivouac operations would not be able to occur during break-up at DTA East. The No Action Alternative would not support the objectives outlined in Section 1.3.

## 2.2 DESCRIPTION OF THE PROPOSED ACTIONS AND ALTERNATIVES

The following sub-sections provide a description of the three proposed enhancements and presents alternatives unique to each particular proposed enhancement.

### 2.2.1 Donnelly Drop Zone Expansion

#### 2.2.1.1 Requirement

USARAK proposes expansion and clearing of the existing 434-acre Donnelly, Fox and Bear Drop Zones (collectively known as Donnelly Drop Zone) to 2,470 acres (Figure 2) for accommodating mass tactical airborne insertions of the 4-25<sup>th</sup> BCT employed by three C-17s (see Section 1.3 for specific objectives).

#### 2.2.1.2 Design

The following are design requirements and considerations for the Donnelly Drop Zone Expansion:

- Create a drop zone 1.2 miles wide by 3.2 miles long (approximately 2,474 acres) that would allow a mass tactical formation of three C-17 aircraft flying side-by-side capable of deploying 306 paratroopers (102 per C-17) during a single pass of the drop zone
- Clear drop hazards (trees, burned snags, and rocks) within the expanded drop zone
- Use soil type and vegetation density and type to determine preferred methods of drop zone clearing, to minimize impacts to soils and maximize soil stabilization by maintaining low-lying vegetation growth or ensuring rapid regrowth and the organic layer
- Protect the expanded drop zone area from wind and water erosion through a combination of retention of low-lying vegetation and stabilizing (i.e., re-seeding, planting, geotextile use) areas of exposed soils

**Full Phased Expansion by April 1, 2009:** This action proposes to expand the Donnelly Drop Zone by clearing approximately 2,040 acres to construct a total drop zone area of approximately 2,474 acres over a four-phase period (see Figure 2). Due to shallow soils and harsh growing conditions, the four-phase approach would allow for sustainable clearing methods which would allow for vegetation to become re-established, reduce the potential for soil erosion and drop zone surface hazards (divots created from erosion), and allow for long-term sustainable use of the drop zone. This Proposed Action would increase the size of Donnelly Drop Zone to the requisite 1.2-by 3.2-mile drop zone over a phased period and would meet USARAK training and sustainability requirements. However, near-term training requirements would not be met as the drop zone would not be available for full mass tactical air insertions until potentially spring of 2009.

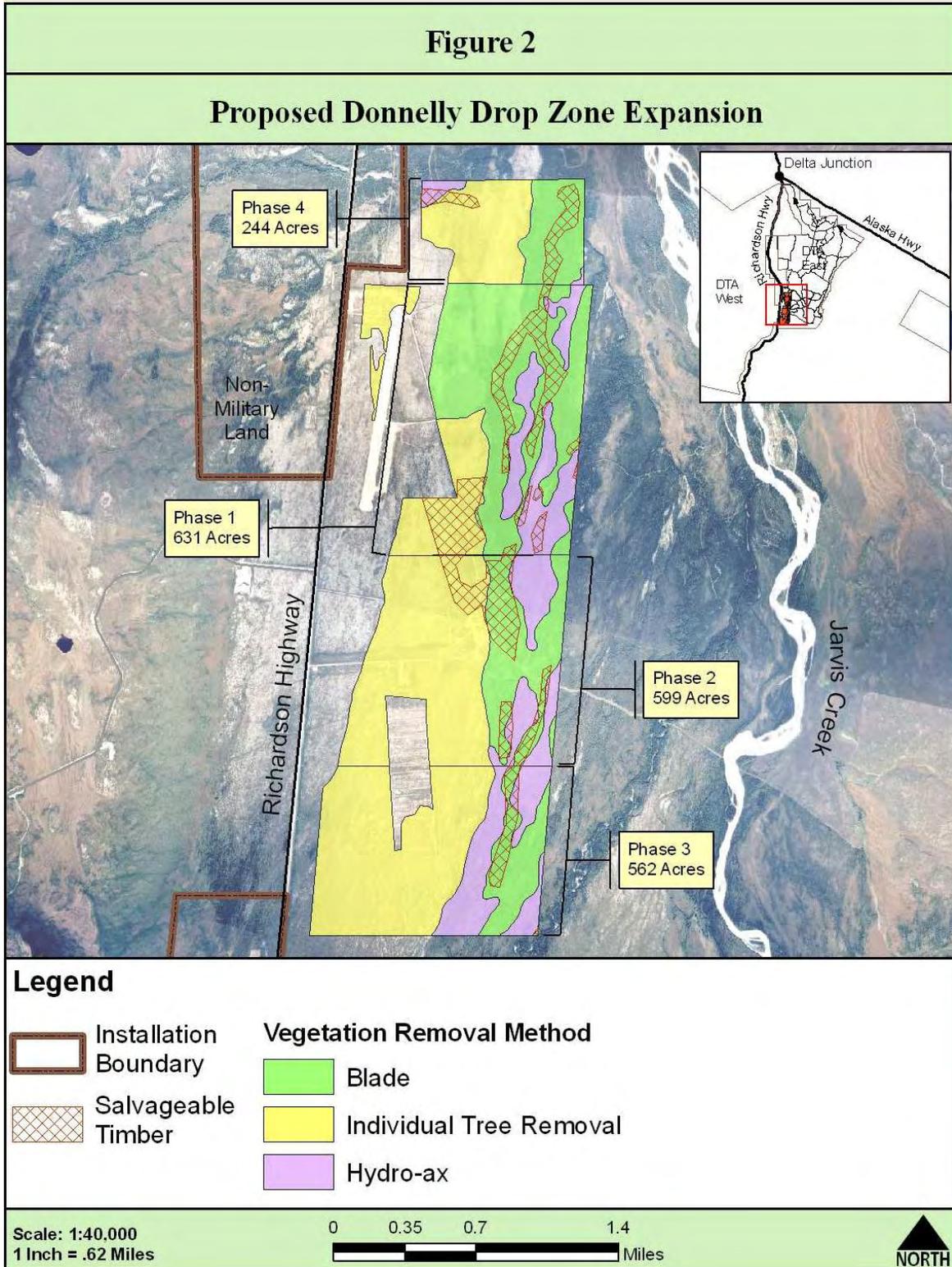
Phase 1 would clear approximately 630 acres in the northern half of the Donnelly Drop Zone, followed by approximately 600 acres in Phase 2, 556 acres in Phase 3, and 244 acres in Phase 4. The expanded portion of the Donnelly Drop Zone during Phase 1 would create the 1.2-mile width requirement for a three C-17 aircraft side-by-side tactical formation. However, the 3.2-mile length requirement allowing for deployment of all 306 paratroopers during a single pass would not be achieved until the Phase 4 clearing is completed (by April 1, 2009). This phased expansion would allow for the time necessary to conduct the most ecologically sound clearing methods described above using soils and vegetation density as factors, reducing the potential for soil erosion while still allowing for sustainable use of the drop zone and some use by paratroopers for training in 2008.

The phased vegetation clearing approach would allow for the individual tree removal method to be used in areas of shallow organic soils, less than 6 inches deep, and the blading method to be used in areas with organic soils 6 inches or greater in depth. This method takes additional time to individually remove trees compared to the blading method. Utilizing the individual tree removal method in soils with shallow organic layers (less than 6 inches deep) would help maintain the overall soil structure and the organic horizon of the drop zone, compared to the blading method which would disturb and remove a good portion of the organic soil horizon in shallow layers. The retention of the organic horizon would allow vegetation to re-establish at a faster rate and would confine soil disturbance to areas of root ball removal. Rapid re-establishment of vegetation will reduce overall soil erosion and ensure that the drop zone will retain necessary qualities that support sustained use of the drop zone into the future.

### 2.2.1.3 Drop Hazard Removal Methods

The following vegetation clearing methods and several tree harvesting techniques are being considered:

- *Individual Tree Removal Method:* A tractor equipped with a bucket or a blade set above the ground surface could be used to individually remove trees in areas with low tree density and shallow soils (6 inches or less of organic layer). The excavator would be used to push over trees and remove root masses. Damage to the top organic layers of soil would be reduced by causing only localized disturbance where root masses are exposed, preserving the overall organic soil horizons within the area.
- *Blading Method:* A tractor equipped with a blade would be set approximately 4 inches into the organic layer. The blade would be pushed through the forest floor in a series of sweeps to remove the trees and the upper root layers, including any protruding stakes (stumps) within previously burned areas that pose a hazard to landing. This method is the most time efficient and the least costly. This method may remove the majority of vegetation and require reseeding, which will be accomplished by a tractor pulling a breaking disk followed by a finish disk and roller. A spin spreader would be used to apply fertilizer and annual oats (a quick cover crop), followed by a seed drill with a seed mix (most likely a native mix of seeds) planted as per rates and application specifications contained in the ADNR Division of Agriculture's "Alaska Revegetation Manual" (2007).
- *Hydro-ax Method:* A tractor equipped with a hydro-ax would be used to remove trees (3 to 4 inches into the organic layer but above the mineral soil) and mulch woody vegetation. This method could be employed in areas with 10 inches or greater organic layer determined to be more environmentally sensitive (i.e., wetlands), reducing impacts to soils and low-lying vegetation. Remaining stumps and woody protrusions would then be hydro-axed with a flailing or masticating head into mulch and left on site to minimize drop hazards.
- *Rock Picker Method:* Following vegetation removal, a tractor equipped with a rock picker would be used in upland areas to clear remaining large debris and rocks and evenly distribute smaller remaining debris. The rock picker would conduct a surficial sweep of the newly cleared drop zone areas to remove paratrooper drop hazards.
- *Hay Rake Method:* Following vegetation removal (hydro-ax method), a tractor equipped with a hay rake would be used to evenly distribute remaining debris created through hydro-axing. The hay rake would windrow (distribute the woody debris into linear rows created by hydro-axing) and allow a second pass by the hydro-ax to remove remaining stumps and other jump hazards. The use of a hay rake in concert with hydro-ax clearing would reduce the number of passes by the hydro-ax over an area and uniformly spread remaining smaller debris. The depth of the hay rake would be set to prevent ground penetration and disturbance to low lying vegetation and root structure.



- *Tree Harvesting (salvageable timber)*: 265 acres of salvageable timber would be generated from drop zone clearing. Trees would be sold in commercial timber allotments or harvested for public firewood. For those areas determined feasible for salvage, tree harvesting techniques utilizing such equipment as a feller-buncher, excavator, or chainsaw would be used to cut and stack salvageable trees (6 inches or greater diameter at breast height). Trees would then be skidded (dragged by a tractor and moved a maximum distance of 500 feet) to a yard (or stockpile area) within the drop zone. At the yard, the trees would then be loaded onto logging trucks and moved off site to a designated firewood area. As timber removal within the Donnelly Drop Zone would occur on BLM lands currently withdrawn from the public domain for use by the Army, all salvageable timber could be available to the public at no cost. Grubbing (stump removal) and slash removal (branches and tree tops) would be conducted using methods such as pulling with an excavator, use of a hydro-ax to grind flush, or a blade.
- *Tree Harvesting (non-salvageable timber)*: Non-salvageable timber would be either burned in small piles as areas are cleared, stockpiled into larger piles and then burned onsite, ground to mulch onsite; or hauled and burned off-site. Funding and open burn air permit requirements would determine which method or combination of disposal methods would be used for non-salvageable timber.
- *Vegetation Clearing within Ephemeral and Intermittent Stream Buffers*: Vegetation within 50 feet of either side of mapped ephemeral and intermittent stream channels will remain intact. In addition, vegetation within 100-feet of Ober Creek would remain intact (see Section 3.4.2.2). However, trees greater than 1 inch in diameter, or 5 feet in height would be removed by hand clearing. Trees would be cleared to the mineral soil and the remaining stumps would be scored by a chainsaw blade to facilitate decomposition. Trees would be moved to an area outside of the buffer zone and ground by a hydro-ax.
- *Avoidance of High Value Wetland Area*: An 11-acre high value wetland area will be avoided. Only hand clearing of trees would be conducted within this area.

#### **2.2.1.4 Timing of Construction**

To the extent possible, clearing will be completed by July 1, 2008. As funding is provided, additional phased clearing completed by April 1, 2009, may be necessary to obtain the desired 1.2- by 3.2-mile drop zone area. Further description of activities associated with each phase is discussed in Section 2.2.1.6. Tree removal activities would preferably occur during winter months when soils are frozen due to the following factors:

- Frozen soils allow for access to areas required for clearing
- Frozen soils help retain the root mass, preventing damage to soils and loss of additional amounts of the organic layer

#### **2.2.1.5 Operations**

Use of DTA East drop zones, including the Donnelly Drop Zone, is described in the C-17 Fight Training Areas EA (2005) and the BAX/CACTF EIS (2006). Users of the Donnelly Drop Zone include the Army 4-25<sup>th</sup> BCT, USAF, Navy, and Marine Corps. Army air assets consist of attack helicopters, troop assault helicopters, and equipment/supply helicopters. USAF, Navy, and Marine Corps air assets include equipment or personnel delivery aircraft (C-130, C-17 to either parachute or land). During air assault operations, rotary-winged aircraft are used to move troops and equipment around training areas. During airborne operations, troop movement is supported by using established drop zones, fixed wing aircraft (C-130, C-141, and C-17), and occasional rotary aircraft for small operations.

The current use of the Donnelly Drop Zone for heavy equipment drops is targeted to the area right around the existing field landing strip (Donnelly Assault Airfield). Following the proposed expansion, heavy equipment drops would still utilize the existing field landing strip, keeping heavy equipment and artillery pieces outside of sensitive areas (wetlands, shallow soils, etc.) and within the network of existing trails. The area proposed for expansion would be used to accommodate the mass tactical personnel drops with consolidation points being established for Soldiers and their gear to deploy using existing designated trails.

## **2.2.2 DTA East Trail Network Upgrade**

### **2.2.2.1 Requirement**

USARAK proposes to increase maneuverability and access for mechanized vehicles in DTA East by upgrading the existing trail network to support sustainable Stryker, other military vehicle use, provide a primary artery to support two-way Stryker traffic, and to establish an all-season crossing of Jarvis Creek within DTA East (see Section 1.3 for specific objectives).

### **2.2.2.2 Design and Methods**

The proposed expanded trail network (Figure 3) would optimize available training areas within DTA East, provide sustainable trail use to accommodate Stryker vehicles, and deter off-trail use which occurs in currently degraded trails segments. The following trail network components would be part of the proposed DTA East Trail Network Upgrade:

**Trails:** Improvements would be made to approximately 100 miles of existing trails and firebreaks, in addition to improving 36 miles of 33-Mile Loop to serve as a main artery within DTA East. Though all trails shown in Figure 3 would be upgraded to improve drainage, trail bed conditions, and deter off-trail use, the optimal extent of trail width improvements (except the proposed 92-foot width of 33-Mile Loop to accommodate two-way Stryker traffic) is currently undecided; therefore, this EA analyzes potential impacts of creating 92-foot wide trails (two-way Stryker use) throughout the network which would serve as the maximum possible footprint of disturbance (the worst case scenario). USARAK would use site design and restoration to minimize or avoid impacts (see Section 2.2.5 and Chapter 4).

The following describes proposed trail design which would adhere to the road hardening methods described in the ITAM and Land Rehabilitation and Maintenance (LRAM) plans and would incorporate sustainable use design for the trail network upgrades:

- Upgrade 33-Mile Loop to serve as the primary artery within DTA East, capable of two-way Stryker movement. Therefore, the 36 miles of 33-Mile Loop would be upgraded to a total footprint width of 92 feet; consisting of 42-foot gravel trail bed and an additional 25-foot shoulder on either side to allow for sloping, drainage and snow placement during winter months.
- Upgrade up to 100 miles of existing trail network and firebreaks for two-way Stryker traffic as described above.
- Install geotextile material with a minimum overlap of 18 inches on trail sub-grade at marked treatment areas.
- Clearing of brush and vegetation to the ground surface.
- Addition of a combination of bull rock and pit run gravel material at treatment areas to a compacted depth of approximately 24 inches in layers no greater than 6 inches for an 18-inch trail top.
- Installation of a V-ditch where necessary and appropriate to facilitate drainage. Culverts, cutouts, and low-water crossings would be installed where necessary.
- Obtain gravel from strategically located pits and side-borrow locations taking into consideration soils, topography and the potential for archaeological sites. Sources would

- ideally be located 3 to 5 miles from work areas and would incorporate use of spot gravel takes from trails to improve trail sight distances.
- Construction staging areas would also be located along 33-Mile Loop, gravel pits or existing cleared areas.

Similar tree clearing methods as described in Section 2.2.1.3 would be used; however, full removal of tree stumps would not be required. Gravel used to construct the trail bed would be placed on top of the cleared area to create the trail bed surface. Most of the salvageable timber along the existing trail network is under Army management responsibility for vegetation rights. Therefore, the timber would potentially be sold (at fair market value) or ground into small piece size (less than 6 inches) and left on site to prevent erosion as effective residue management. Salvageable timber on BLM holdings would be made available as free firewood to the public. A timber sale within the construction area would be coordinated by USAG Alaska and comply with existing timber harvest regulations.

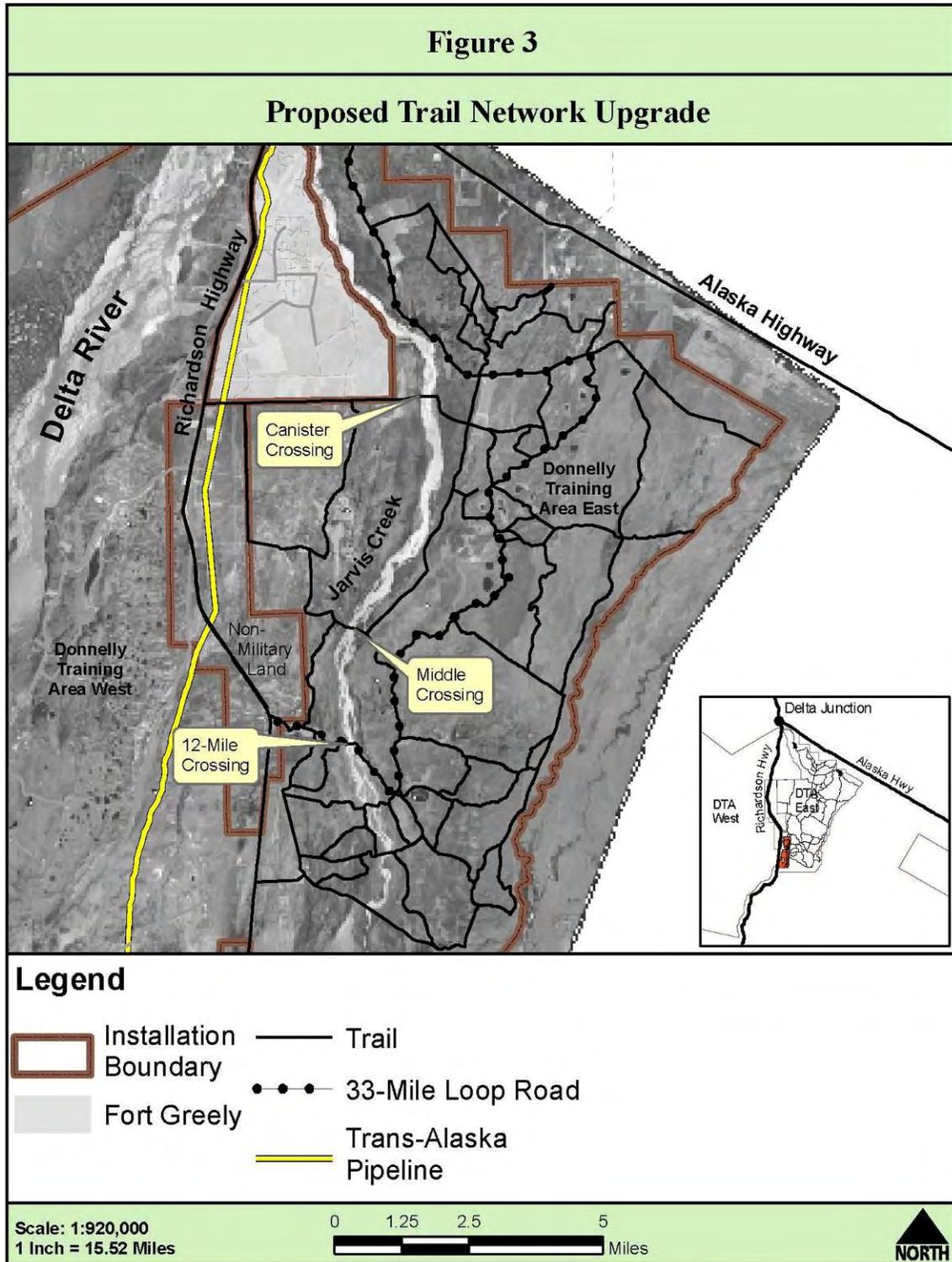
**Water Crossing(s):** All-season crossings of Jarvis Creek (Figure 3) could also be established at three existing low-water crossings (12-Mile Crossing, Middle Crossing, or Canister Crossing), which currently only allows crossing during the dry season or during frozen periods.

Jarvis Creek is an active sediment-fed glacial creek which has a dynamic, changing main course of flow over time. Therefore, an all-season crossing of the creek would require a structure to be placed above the actual river bed. At any in-stream crossing, hydrologic studies and a stream flow analysis would be required to determine above-stream and downstream channel impacts.

The potential water crossings at Jarvis Creek would utilize non-permanent bridge structures, such as a Bailey Bridge (Photo 1), that can be installed and removed in response to training access requirements. These non-permanent bridges are comprised of decking and abutments. During periods of low water levels, deck units may be installed directly instream without abutments. Bridge decks would be expandable, component-based systems that would include palletized sections, flat bed railcars, and/or bailey bridge sections set on top of abutments. A component based deck system could be extended to an appropriate length through the addition of deck sections. Abutment locations would vary depending on specific deck requirements. Due to the active nature of the Jarvis Creek stream channel, permanent abutments, constructed of wood, concrete and/or steel, may be required. If necessary, these abutments would be placed in the riverbank and instream locations at a height and distance to accommodate existing water levels and deck span requirements, minimizing impacts to channel flow, and morphology.



Photo 1. 150-ft Bailey Bridge over the Chatanika River, Caribou/Poker Creeks Research Watershed, Alaska.



The actual method and bridge locations to be used by USARAK for an all-season crossing of Jarvis Creek would be determined based on hydrological studies in consultation with the USACE. Whichever method is chosen, the bridge span would be non-permanent, but permanent abutments may be required. Bridges would be placed in areas that would not inhibit existing low-water crossings of Jarvis Creek used by the public.

**Access Control Gates:** New access control gates would be installed at entry points to allow for trail closure when the training areas of DTA East are in active use.

### **2.2.2.3 Timing of Construction**

Construction would occur from April to October when excavation of gravel is possible. Depending upon funding, the improvements to the trails would be anticipated over a 5- to 7-year period. However, vegetation clearing associated with the road widening may be conducted at any time. Winter clearing is often preferred as soils are frozen and impacts to nesting birds are avoided.

### **2.2.2.4 Operations**

Military operations of the DTA trails are described in the Transformation of USARAK Final EIS (2004), and within the BAX/CACTF EIS (2006). All vehicles within the Army inventory utilize existing trails and maneuverable unimproved terrain to maneuver between training areas. Typical vehicle use of DTA East trails include the Stryker, HMMWV (Army vehicle), FMTV (five-ton, personnel mover), Armored Security Vehicle, medium tactical vehicles, trailers, and towed equipment.

Public access and recreational use of DTA East is described in the BAX/CACTF EIS (2006) and the Transformation EIS. Use of the United States Army Garrison Alaska Recreation Tracking System (USARTRAK) system would still be required for foot, vehicle, boat, off-road vehicles, and aerial access and hunting, trapping, and fishing activities within DTA East. The USARTRAK automated phone system was designed to help eliminate conflicts between military training and recreation. Recreational users must call into USARTRAK every time they enter training lands.

## **2.2.3 Hardened Bivouac**

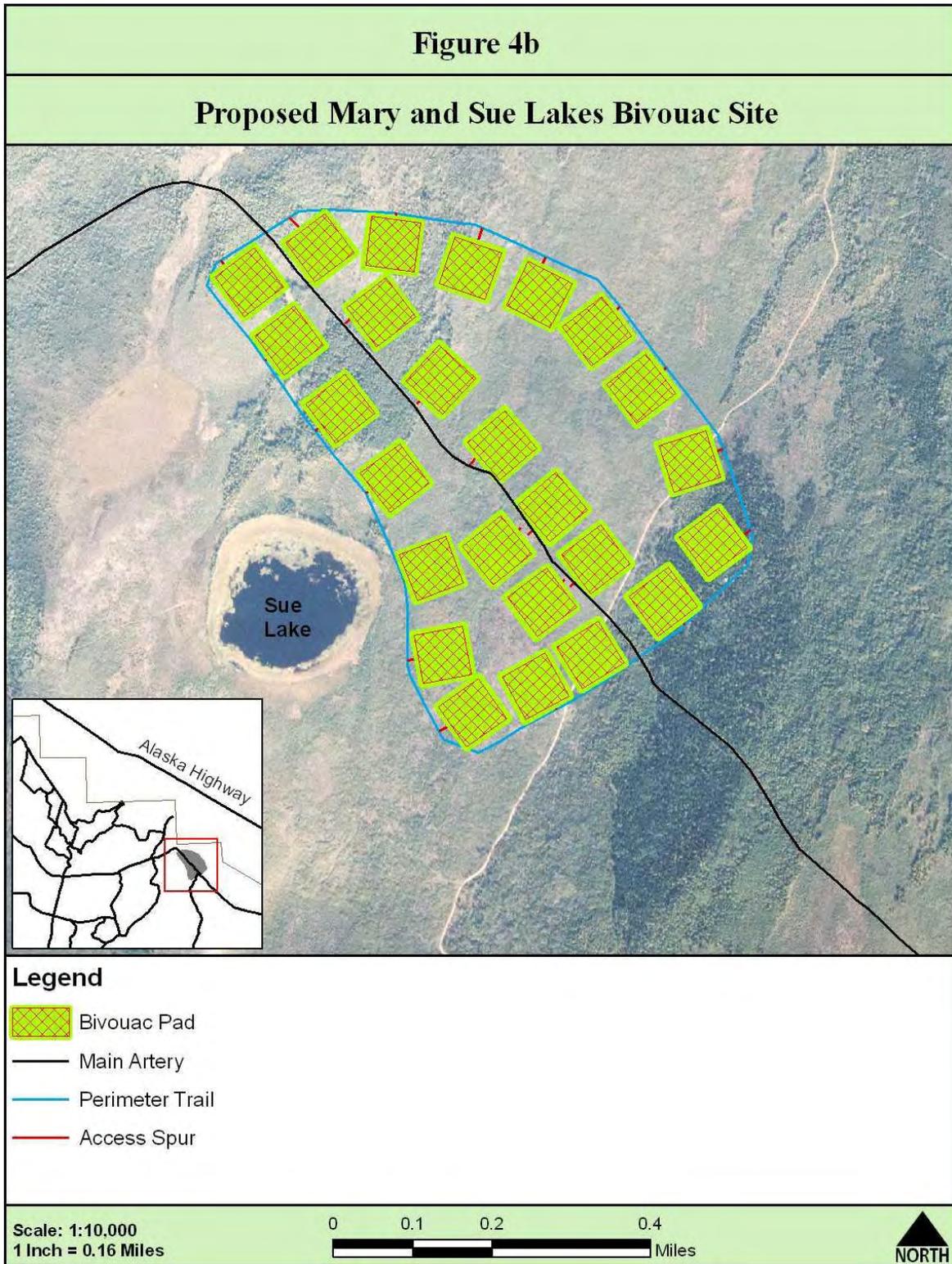
### **2.2.3.1 Requirement**

USARAK proposes to establish a sustainable, all-season hardened bivouac site within DTA East. Units conducting field training exercises at the BAX and CACTF as well as within DTA East need a nearby location to set up tents and other temporary support facilities. By establishing a designated use bivouac area, conflicts with other nearby facilities and activities to include BAX SDZ, would be avoided. SDZs are exclusion areas identified to protect personnel from weapons firing during training (see Section 1.3 for specific objectives).

### **2.2.3.2 Design and Methods**

A hardened bivouac site would be designed to stage Soldier activities. The site would support field sustainment activities and house Soldiers and equipment before and after training events. This type of bivouac site would be used for short-term bivouac (typically 1 to 2 weeks) by units while they are deployed to DTA East for training events. Figure 4a and Figure 4b illustrate the proposed bivouac design.





The following design elements are depicted in the figures:

- 25 individual 328-foot square gravel pads would be constructed in a scattered pattern throughout an approximate 172-acre site. Each pad would require additional vegetation clearing within a 20-foot buffer surrounding each pad to allow for sloping and snow placement during winter months.
- Each pad would be designed to accommodate a Squad to a Platoon of Soldiers.
- The total disturbance envelope for each pad and 20-foot buffer is approximately 2.8 acres; with a total of 70 acres of disturbance resulting from pad placement.
- An approximate 1-mile main trail artery designed for two-way Stryker traffic would be constructed with gravel through the center of the bivouac site, requiring a 42-foot gravel bed and an additional 25-foot shoulder on either side to allow for sloping, drainage, and snow placement during winter months (92-foot width total).
- An approximate 2-mile perimeter trail designed for one-way Stryker traffic would be constructed around the bivouac site, requiring a 24-foot gravel bed and an additional 4-foot shoulder on either side to allow for sloping, drainage, and snow placement during winter months (32-foot width total).
- Access spurs (up to 164 feet) would be constructed from either the main artery trail or the perimeter trail to provide access to each pad.
- An approximate 40-foot by 80-foot vehicle maintenance and storage facility, used to instrument vehicles prior to their use at the BAX/CACTF or other range facilities at DTA East. The facility would be constructed on a concrete pad, and have entrance and exit doors. The facility would have its own generator and fuel supply.
- Gravel for the site would be either obtained by establishing a 10-acre gravel pit located near the site utilizing an existing pit if available or from an outside source; the source used primarily being dependent upon environmental feasibility and funding. Gravel pit practices, including the stockpiling of topsoil and organic layers of soil to be used for remediation following use of the pit is described in the ITAM Plan.
- Gravel placed for both the pads and trails would be approximately 18 inches to 2 feet in depth.
- Areas between pads would remain as a vegetative/forested buffer between troop operations occurring at each pad.

Similar tree clearing methods and distribution of salvageable timber as described in Section 2.2.2.2 would be used as the Army has management responsibility for vegetation rights at the proposed bivouac sites.

### **2.2.3.3 Timing of Construction**

Construction would likely occur from April through October. Depending upon funding, the development of the bivouac site could be completed within one construction season.

### **2.2.3.4 Hardened Bivouac Alternatives**

#### **Alternative 1 – Buffalo Bivouac**

Under this alternative, an existing bivouac site (non-hardened) near Buffalo Drop Zone would be improved to support military use of the BAX/CACTF and other training areas at DTA East. The use of an existing site would utilize up to 14 acres of the existing bivouac footprint, reducing overall new ground disturbance. In addition, 33-Mile Loop Road would serve as a main artery trail through the center of the bivouac site, incorporating an existing trail planned for upgrades to two-way Stryker Traffic (see Section 2.2.2). The location of the Buffalo Bivouac site is in close proximity to the Buffalo and Donnelly Drop Zones and the BAX/CACTF facilities, and is located

east of Richardson Highway, avoiding the need for Soldiers to cross the highway to access training areas.

### **Alternative 2 – Mary and Sue Lakes Bivouac**

Under this alternative, a new bivouac site near Mary and Sue lakes would be constructed to support military use of BAX/CACTF and other training areas at DTA East. This location would require construction of the proposed 172-acre bivouac site within an undeveloped area not currently used for bivouacking. In addition to new construction of the perimeter trails, a main artery trail would also be newly constructed to provide access to the existing trail network. This site is also located within close proximity to the Buffalo and Donnelly Drop Zones and BAX/CACTF facilities, and is located east of Richardson Highway, avoiding the need for Soldiers to cross the highway to access training areas

#### **2.2.4 Environmental and Safety Precautions**

Numerous surveys have already been completed for the entire project areas of the Donnelly Drop Zone and proposed bivouac sites. In addition, portions of the proposed trail network upgrades have been included in previous investigative surveys. Formal wetland delineations would be completed in any areas that have not previously undergone Section 404 jurisdictional review that would supplement existing wetland data presented in this EA and fulfill the wetland permitting requirements as administered by the USACE and the EPA. Necessary archaeological surveys would be required prior to construction activities in areas that have not already been determined to have lower archaeological potential. Most of the project areas have undergone surface munitions surveys. As necessary, additional surveys for surface munitions constituents would be conducted by qualified Explosive Ordnance Division personnel within the project areas.

If the surveys indicate that contamination, wetlands, or other siting constraints are present within the proposed project area, additional sampling or surveys would be conducted to determine the extent of the constraint, and the results would be used to make a determination on whether the proposed facilities can be reconfigured to avoid such areas or if the siting constraints should be addressed (i.e., avoidance of wetlands or archeological sites).

A Spill Pollution Prevention and Countermeasure Plan (SPPCP) would be employed to prevent spills and effectively address cleanup strategies before potential spill contaminants from construction equipment could reach surface water or groundwater resources. In addition, during construction of the proposed enhancements, USAG Alaska would follow existing SOPs for the handling and transfer of hazardous material, and would adhere to relevant and applicable occupational health and safety standards listed under 29 CFR Parts 1910 and 1920.

#### **2.2.5 Best Management Practices**

The following regulations and programs detail BMPs currently in place to respond to new or increasing impacts.

- Compliance with training exercise regulations and wildfire prevention as stipulated by USARAK Range Regulation 350-2 and continued update and implementation of fire management plans prepared by USARAK.
- Application of the ITAM program to inventory and monitor, repair, maintain, and enhance training lands.
- Continued implementation of the INRMP which helps maintain natural resource sustainability.
- Continued implementation of ICRMPs which help maintain cultural resource sustainability.

- Use of the Range and Training Land Assessment (RTLTA) program and LRAM program to inventory land conditions, monitor vegetation trends, repair damaged areas, and minimize future damage.
- Implementation of a soil and water monitoring program for DTA.
- Comply with EO 11988 – Protection of Floodplains to minimize adverse impacts to floodplains.
- Continued assessment and management of subsistence resources for all users per guidelines outlined in the INRMP.
- Continued establishment of government-to-government relationships with Alaska Native tribes whose interests may be significantly affected by USARAK activities. This would ensure efficient and effective communication between both leadership and staff members of tribal governments and USARAK.

BMPs would be implemented during all construction activities, clearing, and grading for all three proposed enhancements as set forth in the 2005 ITAM Plan. The BMPs would be developed in accordance with Army, State, and local sediment and erosion control ordinances; Federal and State Pollution Discharge Elimination System permits would be followed. The following are BMPs by resource area (where applicable) which would be implemented based upon the above programs:

#### Soils

- A project construction sequence would be implemented to minimize the extent of exposed soil at any given time.
- Wet the construction area to control fugitive dust emissions and foster soil stabilization
- Seed and fertilize, as necessary, the area immediately following construction to aid in the establishment of protective vegetative cover. Manual planting or geotextiles, as necessary, would be used in areas susceptible to higher wind erosion to aid in the establishment of protective vegetative cover.
- Tree and vegetation removal activities would preferably occur during winter months when soils are frozen. However, some non-frozen areas could be hand cleared or hydro-axed if no rutting from clearing equipment results.
- Utilize BMPs, common in Alaska's construction industry, to localize impacts and to ensure soils would not erode from the site or enter waterways. These include:
  - Avoid permafrost whenever possible.
  - When working in permafrost, minimize the footprint of the disturbed area, take into account how thermokarsts (melting ice wedges) would affect local drainage, and slow or prevent thawing of permafrost by providing insulation (vegetative cover) as soon as possible following disturbance.

#### Vegetation

- Continued use of environmental limitations overlays to protect vulnerable habitats, indicating areas where maneuver training is and is not allowed.
- Continued vegetation management, including invasive species monitoring and management.
- Continued implementation of RTLTA and LRAM programs to minimize and rehabilitate vegetation damage, and to gather long-term monitoring data.
- Continued implementation of a recreational vehicle use policy at USARAK.
- Continue to make available usable timber that cannot be sold in a timber sale to the public at no cost.
- Re-seed areas directly affected by construction with native grass or other appropriate vegetation.

- Revegetate areas that are not recovering naturally through the LRAM program.
- Retain as much vegetation as possible to provide cover, concealment, and realism.
- Retain 50-foot vegetation buffer areas along either side of ephemeral and intermittent streams or other specifically designated areas. A 100-foot buffer would be maintained along Ober Creek.
- Conduct only hand clearing of trees greater than 1 inch in diameter, or 5 feet in height within 50-foot vegetation buffer areas along either side of ephemeral and intermittent streams or other specifically designated areas. Trees would be cleared to the mineral soil and the remaining stumps would be scored by a chainsaw blade to facilitate decomposition. Trees would be moved to an area outside of the buffer zone and ground by a hydro-ax.
- Implement invasive species prevention measures during construction activities such as washing of construction equipment prior to on-site construction activities and require gravel pits to be free of invasive species.

#### Wildlife and Fisheries

- Continued monitoring of effects of military training on select wildlife species (especially herd animals and waterfowl) and fisheries during vital seasons such as breeding, rearing of young, and migration.
- Continue annual moose, bison, and caribou surveys in partnership with ADFG and swan surveys with the USFWS.
- Continued development and implementation of an information and education program for personnel using USARAK lands.
- Continued compliance with Federal and State laws and regulations relating to fish and wildlife conservation or management.
- To the greatest extent practicable, vegetation clearing would be avoided during the May 1 through July 15 USFWS Region 7 guidelines to reduce impacts to nesting migratory birds. Visible bird nests would be identified and avoided.

#### Surface Water

- Closely monitor all construction sites to detect and correct future changes in drainage patterns.
- Avoid designing roads and trails in the general direction of preferential water flow and at ground level.
- Design drainage to accommodate general local snowmelt runoff each spring and rainfall events throughout the year.
- Design trails to prevent bank erosion, widening of waterways, and increased sediment in streams.
- As necessary, conduct additional hydrological investigations along north-south trending trails located within the Clearwater River watershed, improving trail designs to minimize concentrated surface water flows along these trails during flooding events. This may require the Army to conduct improvements to east-west trending trails first, while necessary hydrological studies are conducted along the north-south trending trails.
- Control sediment transport through utilization of silt fencing, hay bales, and stormwater retention/detention basins.
- All construction staging, fueling, and servicing operations would be kept at a minimum of 100 feet from surface waters.
- Employ SPPCP measures to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources.
- Temporary material storage piles would not be placed within the 100-year floodplain during the rainy season unless the following conditions are met: (1) storage does not

occur when flooding is imminent; and (2) if storage piles consist of erosive material, they would be covered with plastic tarps (or something similar) and surrounded with compost berms or other erosion control devices. Material used within 12 hours of deposition is not considered a temporary material storage pile.

#### Wetlands

- Stabilizing of all disturbed areas resulting from project construction using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.
- Narrow/confine trail widths in sensitive wetland habitats or when possible, widen trails to the upland direction to avoid wetland impact.
- Where possible, conduct vegetation clearing activities during the winter months when soils are frozen.
- Use of a hydro-ax within wetlands to reduce impacts to hydric soils and low-lying vegetation.
- Fill areas would be minimized for wetlands through site-specific design and limiting construction staging to upland areas.
- Natural drainage patterns would be maintained by the installation of culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.
- No fill or construction materials would be stockpiled in wetlands or waters of the U.S. without obtaining necessary permits. All equipment operation would be confined to the project footprint to prevent unnecessary damage to adjacent wetlands and vegetation.
- All cuts, fills, and disturbed areas resulting from project construction would be stabilized using native or other appropriate vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.
- An 11-acre high value wetland area will be avoided within the Donnelly Drop Zone. Only hand clearing of trees would be conducted within this area.
- All additional avoidance, mitigation and compensation would be conducted as required by terms and conditions in the USACE Section 404 permit.

#### Cultural Resources

- Initiate and continue consultations with Alaska Native tribes to identify and evaluate Traditional Cultural Properties (TCPs) that may be present on military managed lands in the interior of Alaska.
- Unsurveyed areas will be surveyed. Resources identified during survey will be evaluated. Those resources determined to be NRHP eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska state standards for archaeology.
- Sites that are currently identified, but have not been evaluated for NRHP eligibility will be treated as NRHP eligible sites; until such time that they are evaluated for NRHP eligibility. Once evaluated, sites determined to be NRHP eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as Alaska state standards for archaeology.
- Avoid cultural sites during design utilizing information gathered from on-the-ground surveys.
- If any cultural resources are disturbed or discovered during this undertaking, the Environmental Resources Department archeologist shall be notified.
- Curation of archaeological material recovered per Memorandum of Agreement between USARAK and the University of Alaska Museum.
- Continued development and implementation of an information and education program for personnel using USARAK lands and the public. This would enhance the conservation of cultural resources on USARAK lands.

- Continued evaluation of NRHP eligibility of archaeological sites potentially impacted by placing ranges in use.

#### Public Access and Recreation

- Continued implementation of recreational vehicle use policies, per the INRMP. The INRMP outlines specific actions to maintain and improve public access and recreation opportunities on USARAK lands.
- Continued implementation of the USARTRAK automated check-in phone system. This would provide information regarding daily closures and should greatly simplify the public access process.
- Continued monitoring of recreational usage of each training area through the USARTRAK phone system. This would inform USARAK and ADFG regarding use patterns, which should improve management for public access and recreation.
- Continued maintenance of kiosks at all primary entrances to recreational areas on USARAK lands and provision of visitor maps and information. Information kiosks can help users quickly identify areas designated for recreational use, as well as the times and locations of military activities.
- Determine the placement of access gates to allow for maximum continued recreational use and to maximize public safety.
- Determine the placement of bridges in areas that will not inhibit existing low-water crossings of Jarvis Creek by the public.

### **2.3 ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED STUDY**

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

#### **2.3.1 Donnelly Drop Zone Expansion Alternatives Considered and Eliminated from Detailed Study**

##### **2.3.1.1 Create and Expand Drop Zones on Military Lands in Alaska Outside of DTA East**

This alternative would involve the creation of a new drop zone or expansion of an existing drop zone within DTA West or other military lands within the State of Alaska. This alternative was eliminated because other areas within DTA are either too small for a 1.2- by 3.2-mile drop zone or do not have direct access to the large collective training facilities located in DTA East. Construction or expansion of a drop zone outside of DTA would limit the mass tactical formations and Soldier access to other training facilities within DTA East necessary for BCT training requirements. As written in the USARAK Transformation EIS, units conduct individual, Squad, and Platoon training at Fort Richardson and Fort Wainwright home stations. DTA was selected for company and larger size unit collective training.

##### **2.3.1.2 Create a New Drop Zone on DTA East**

This alternative was considered, but eliminated due to the substantially greater amount of vegetation that would need to be removed as compared to utilizing an already partially cleared drop zone. In addition, a new location would likely present conflicts with existing training areas and adjacent land uses:

- Drop Zone would be within the SDZ of BAX/CACTF

- The paratrooper azimuth (the extent of any lateral deviation during jump exercises) lies near populated areas

### **2.3.1.3 Expand Buffalo Drop Zone**

This alternative was eliminated from consideration due to surrounding constraints that prevent the required drop surface width of 1.2 miles. The expansion would result in Jarvis Creek crossing the drop zone and would involve high tension power lines within the area, both creating jump hazards to paratroopers. Additional paratrooper safety issues from an expanded Buffalo Drop Zone result from the jump azimuth extending over Ground Missile Defense and the tail end of the drop zone would encroach upon CACTF which would require vegetation clearing, affecting training operations at the CACTF.

### **2.3.1.4 Full Expansion of Donnelly Drop Zone by April 1, 2008**

This alternative was considered but eliminated because of timing and greater environmental impacts. The timeline for achieving a full expansion of the drop zone by April 1, 2008 required permits to be in place by January or February of 2008. The size and complexity of the project with regards to wetlands made this deadline unrealistic. In addition, the methods that would need to be used to complete the full expansion in a short time period would be more environmentally detrimental.

## **2.3.2 DTA East Trail Network Upgrade Alternative Considered and Eliminated from Detailed Study**

### **2.3.2.1 Partial Upgrade of DTA East Trail Network**

This alternative would involve overall trail network upgrades over a long-term, phased approach. This alternative was not independently analyzed in detail as the full expansion alternative would involve a phased 5- to 7-year timeframe for the trail upgrades, based upon funding and evolving mission requirements.

## **2.3.3 Hardened Bivouac Alternative Considered and Eliminated from Detailed Study**

### **2.3.3.1 Bolio Bivouac Area**

This alternative was dropped from further consideration as the proposed bivouac site would be located west of Richardson Highway, requiring Soldiers to cross the highway. This area would also be located farther from the new training facilities/infrastructure, and would not maximize support to existing facilities such as the BAX/CACTF. This area would also involve potential impacts to cultural resources and to bison habitat.

## **2.4 IDENTIFICATION OF THE PREFERRED ALTERNATIVE**

The Army's preferred alternative is implementation of the three proposed enhancement projects. The preferred alternatives for each enhancement project are as follows:

- Donnelly Drop Zone Expansion
- DTA East Trail Network Upgrade
- Hardened Bivouac: Alternative 1 – Buffalo Bivouac

## **2.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

This section summarizes the conclusions of the analyses based on the application of the described methodology. Table 2.5-1 contains a summary matrix of alternatives comparing their environmental consequences for the specific resource categories. The table describes the range of environmental consequences of the Proposed Action and the No Action alternatives discussed in Chapter 3.0. The qualitative terms used in the matrix are generally defined as:

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

**Table 2.5-1. Summary of Potential Environmental Effects for the Proposed Action and Alternatives**

Resource/Issue	Alternatives				
	No Action	DTA East Drop Zone Expansion	DTA East Trail Network Upgrade	Hardened Bivouac	
				Buffalo	Mary and Sue Lakes
Soils	Minor to Moderate	Minor	Minor and Beneficial	Minor	Minor
Vegetation	Minor	Minor	Minor	Minor	Minor
Wildlife and Fisheries	Minor	Minor	Minor	Minor	Minor
Surface Water	Minor	Minor	Minor and Beneficial	Minor	Minor
Wetlands	Minor	Minor	Minor	None	None
Cultural Resources	None	None	Minor <sup>1</sup>	None	Minor <sup>1</sup>
Subsistence	None	None	None	None	None
Public Access and Recreation	None	None	Beneficial	None	None
Fire Management	None	Minor and Beneficial	Minor and Beneficial	Minor and Beneficial	Moderate
Socioeconomics	None	None	None	None	None
Environmental Justice	None	None	None	None	None

<sup>1</sup>Both the DTA East Trail Network Upgrade and Mary and Sue Lakes Bivouac site have potentially moderate to severe impacts to cultural resources as these locations have not been completely surveyed for archaeological resources. However, impacts are likely to be reduced to minor as these areas would be surveyed prior to construction resulting in site avoidance. Any unavoidable impacts would likely be mitigated through the Section 106 process.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the impact assessment methodology, the affected environment (existing conditions), and the environmental consequences for the Proposed Actions and No Action alternative. As discussed in Chapter 2, the BAX/CACTF Final EIS was completed in June 2006. This EIS document provides a detailed description of existing resources within DTA East and is incorporated by reference. The information on natural resources and Army operations within DTA East contained in the BAX/CACTF EIS serves as a baseline for the analysis of potential impacts associated with the Army's Proposed Actions. The description of the affected environment within this EA will primarily focus on specific resource characteristics of the proposed enhancement locations.

Several resources were determined to be affected by the Proposed Action; therefore, a detailed analysis of these topics is not presented in this section (see Section 1.5).

#### 3.1 IMPACT ASSESSMENT METHODOLOGY

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

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

Resource/Issue of Concern	Region of Influence	Factors
Soils	Installation	The degree to which the action causes erosion resulting in soil loss, sediment delivery, compaction that precludes establishment of native vegetation, or permafrost degradation. Activities that would not result in uncontrolled erosion and adhere to Federal, State, and local BMPs would be considered minor impacts.

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

Resource/Issue of Concern	Region of Influence	Factors
Biological Resources (Vegetation, Wildlife and Fisheries)	Installation and surrounding area	<p>The degree to which the action affects fragmentation, loss, or degradation of high quality natural areas or sensitive sites; local extirpation of rare or sensitive plant species; or the introduction or extreme increased prevalence of undesirable non-native species.</p> <p>The degree to which the action causes population-level impacts (e.g., potential to reduce local populations below self-sustaining levels, or long-term loss or impairment of substantial portions of local habitat [species-specific]).</p> <p>The degree to which the action has impacts on species protected under the Endangered Species Act (ESA) or the Migratory Bird Treaty Act (MBTA), or other Federal, State, or local natural resource protection law.</p> <p>Activities that do not violate regulatory conditions and do not substantially alter the local biological conditions or result in regional impacts would be considered a minor to moderate impact.</p>
Water Resources (Surface Water, and Floodplains)	Watersheds	<p>The degree to which the action increases sedimentation in waterways, degrades surface water or groundwater quality, or alters the floodplain. Activities that would not result in uncontrolled erosion/sedimentation and adhere to Federal, State, and local BMPs would be considered minor impacts. Activities that would not result in notable floodplain alteration or changing flood elevations or flows would be considered a minor to moderate impact.</p>
Wetlands	Contiguous wetlands within Installation	<p>The degree to which the action affects the functions and values of wetlands or whether the action violates Federal or State discharge permits. Activities that do not result in substantial wetland losses of regionally unique or rare wetlands and where suitable mitigation measures for wetland losses is available would be considered a minor to moderate impact.</p>
Cultural and Historic Resources (including Aesthetics)	Installation to include the Area of Potential Effect	<p>The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. Activities that do not violate regulatory conditions but would alter a cultural or historic resource would be considered a minor to moderate impact.</p>
Subsistence	Installation and surrounding area	<p>The degree to which the action may adversely affect Native populations' hunting, fishing, trapping, and gathering rights.</p>
Public Access and Recreation	Installation and surrounding area	<p>The degree to which the action may adversely affect existing access or recreational opportunities.</p>
Fire Management	Installation	<p>The degree to which the action may adversely affect the wildfire conditions or the ability to prevent wildfire.</p>

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

Resource/Issue of Concern	Region of Influence	Factors
Socioeconomics, Environmental Justice, and Protection of Children	Installation and surrounding area	The degree to which the action affects levels of employment, use of existing infrastructure, or family income; disproportionate impacts to minorities or low-income individuals; or causes health and safety risks for children. Activities that do not notably alter levels of employment, or disproportionately impact minorities or low-income individuals, or result in health and safety risks for children would be considered a minor impact.

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

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

The impact assessment intensity for soils uses sustainable principles and erosion risk to categorize impacts and the impact assessment intensity for vegetation (Section 3.3), wetlands (Section 3.6), and cultural resources (Section 3.7) use percentage thresholds based on existing resource quantities and amount of potential impact. Their respective sections further describe this specific impact assessment methodology.

### 3.2 SOILS

Soil resources in the DTA East, including soil trafficability, characteristics, and permafrost are set forth in Section 3.2.1 of the BAX/CACTF EIS (2006) and are summarized within this introduction. Soil characteristics unique to each of the proposed project areas are discussed in Section 3.2.1 of this EA.

Soils in DTA are primarily derived from glacial activities (moraines and outwash plains), modified by streams and discontinuous permafrost, and overlain by loess (wind-blown soils) in many places. Moraine deposits are characterized by rolling hills and kettle lakes, and the soils in these areas have a thin to moderately thick loess cap underlain by gravelly silts and sands. Soils in outwash plain areas have a moderately thick to very thick loess mantle underlain by sands and gravels. Heavy sediment loads of silt, sand, and gravel are often found deposited in braided stream channels and floodplains. Silty soils in level areas hold moisture and develop thick organic mats, which lower the soil temperature and favor permafrost formation (USARAK, 2006a).

Isolated patches of permafrost are found in areas under DTA’s sandy gravel, from 2 to 40 feet below ground level. Thickness of permafrost varies widely from 10 to 118 feet (USARAK, 2006a). Due to its isolated variability, actual locations of permafrost within DTA East are

difficult to predict. However, the gravelly and sandy lower horizons of soils located throughout DTA East create a “thaw-stable” condition which reduces permafrost degradation.

Table 3.2-1 provides further description of the soil types located within the proposed project areas. Locations of these soils are depicted in Figures 5a through 5d, following Table 3.2-1.

**Table 3.2-1. Description of Primary Soil Associations**

Location	Soil Association or Complex	Soil Unit	Description	Erosion Hazard		Hydric Soil	Permafrost <sup>a</sup> Potential
				 Water	 Wind		
Trails <sup>1</sup> Mary and Sue <sup>2</sup>	Butchlake-Southpaw Complex, 0 to 12 percent slopes	610	Mucky silt loam over extremely gravelly course sandy loam, cobbly sandy loam and very cobbly sandy loam; soils are found on hills and moraines; parent material is loess over till; well drained soil with low runoff	 Slight	 Severe	<i>Inclusion<sup>b</sup></i> : Typic Aquiturbels (5%) depressions on moraines	
Trails	Butchlake-Southpaw Complex, 0 to 35 percent slopes	611	Mucky silt loam over extremely gravelly course sandy loam, cobbly sandy loam and very cobbly sandy loam; soils are found on hills and moraines; parent material is loess over till; well drained soil with medium runoff	 Slight	 Severe	<i>Inclusion</i> : Typic Aquiturbels (5%) depressions on moraines	
Trails	Butchlake-Southpaw Complex, subalpine, 0 to 35 percent slopes	612	Silt loam over fine sandy loam, gravelly sandy loam, and very gravelly sandy loam; soils are found on backslopes, shoulders, summits and footslopes; parent material is loess over till; well drained soil with medium runoff	 Slight	 Severe	None	
Trails Buffalo <sup>3</sup>	Chena very fine sandy loam	613	Fine sand to silt loam over very gravelly sand; soils are found on stream terraces; parent material is alluvium; excessively drained soil with very low runoff	 Slight	 Moderate	None	
Drop Zone <sup>4</sup> Trails	Donnelly Silt Loam, 0 to 3 percent slopes	616	Gravelly silt loam over variegated gravelly silt loam and very gravelly sand; soils are found on stream terraces; parent material is loess over sandy and gravelly alluvium; somewhat excessively drained soil with low runoff	 Slight	 Moderate	None	

**Table 3.2-1. Description of Primary Soil Associations**

Location	Soil Association or Complex	Soil Unit	Description	Erosion Hazard Water Wind	Hydric Soil	Permafrost <sup>a</sup> Potential
Trails	Donnelly-Nenana complex, 0 to 3 percent slopes	618	Gravelly silt loam over variegated gravelly silt loam and very gravelly sand; soils are found on stream terraces; parent material is loess over sandy and gravelly alluvium; somewhat excessively drained soil with low runoff	Slight Moderate	None	
Trails	Gerstle-Moosehead Complex, 0 to 3 percent slopes	619	Silt loam over stratified loamy fine sand to silt loam; soils are found on stream terraces; parent material is alluvium; well drained soil with low runoff	Slight Moderate	<i>Inclusion:</i> Tanana (5%) terraces	
Trails	Gerstle-Tanana complex, 0 to 3 percent slopes	620	Silt loam over stratified loamy fine sand to silt loam; soils are found on stream terraces; parent material is alluvium; well drained soil with low runoff	Slight Moderate	<i>Inclusion:</i> Tanana (15%) terraces	 (Tanana)
Drop Zone Trails	Jarvis very fine sandy loam	629	Very fine sandy loam over very cobble sand; soils are found on floodplains; parent material is alluvium; well drained soil with low runoff	Slight Severe	None	
Trails	Jarvis very fine sandy loam, flooded	630	Very fine sandy loam over very cobble sand; soils are found on floodplains; parent material is alluvium; well drained soil with low runoff	Slight Severe	None	
Trails	Jarvis-Chena complex, flooded	632	Stratified fine sand to silt loam over very gravelly sand; soils are found on stream terraces; parent material is alluvium; excessively drained soil with very low runoff	Slight Moderate	None	
Drop Zone Trails Buffalo	Jarvis-Salchaket complex	633	Very fine sandy loam over very cobble sand to very gravelly sand; soils are found on floodplains; parent material is alluvium; well drained soil with low runoff	Slight Severe	<i>Inclusion:</i> Tanana (5%) terraces	

**Table 3.2-1. Description of Primary Soil Associations**

Location	Soil Association or Complex	Soil Unit	Description	Erosion Hazard Water  Wind	Hydric Soil	Permafrost <sup>a</sup> Potential 
Trails	Moosehead fine sandy loam, 0 to 3 percent	637	Silt loam over very gravelly sand; soils are found on stream terraces; parent material is alluvium; moderately well drained soil with low runoff	 Slight  Moderate	None	
Trails Mary and Sue	Nenana silt loam, 0 to 3 percent	639	Silt loam over extremely gravelly sand; soils are found on stream terraces; parent material is loess over alluvium; well drained soil with low runoff	 Slight  Moderate	None	
Trails	Nenana-Donnelly complex, hilly	640	Silt loam over extremely gravelly sand; soils are found on stream terraces; parent material is loess over alluvium; well drained soil with medium runoff	 Severe  Moderate	<i>Inclusion: Typic Aquiturbels (10%) depressions on moraines</i>	
Trails	Nenana-Donnelly complex, rolling	641	Silt loam over extremely gravelly sand; soils are found on stream terraces; parent material is loess over alluvium; well drained soil with medium runoff	 Severe  Moderate	None	
Trails	Ninchuun-Audrey complex, 0 to 7 percent slopes	644	Silt loam over permanently frozen gravelly sandy loam; soils are found on footslopes and backslopes; parent material is loess over glaciofluvial deposits; poorly drained soil with very high runoff	 Slight  Moderate	Yes	
Trails	Riverwash	647	N/A	N/A	Unranked	
Trails Buffalo	Salchaket very fine sandy loam	648	Very fine sandy loam over very gravelly sand; soils are found on floodplains; parent material is alluvium; well drained soil with low runoff	 Slight  Moderate	None	
Trails	Tanacross Peat	650	Mucky silt loam over permanently frozen material; soils are found on alluvial flats; parent material is organic material over alluvium; poorly drained soil with very high runoff	 Slight  Severe	Yes	

**Table 3.2-1. Description of Primary Soil Associations**

Location	Soil Association or Complex	Soil Unit	Description	Erosion Hazard Water Wind	Hydric Soil	Permafrost <sup>a</sup> Potential
Drop Zone Trails	Tanana silt loam	651	Mucky silt loam over permanently frozen material; soils are found on terraces; parent material is organic material over loess; poorly drained soil with high runoff	 Slight  Slight	Yes	
Trails	Terric Hemistels-Typic Aquiturbels-Water complex, 0 to 3 percent slopes	655	Mucky peat over permanently frozen silt loam; soils are found on depressions on moraines; parent material is partially decomposed organic material over loess over permanently frozen loess; very poorly drained soil with low runoff	 Slight  Slight	Yes	
Trails	Typic Aquiturbels, 0 to 7 percent slopes	666	Very fine sandy loam over permanently frozen gravelly very fine sandy loam; soils are found on hills on moraines and depressions on moraines; parent material is loess over till; poorly drained soil with high runoff	 Slight  Slight	Yes	
Trails	Typic Aquiturbels-Terric Hemistels complex, 0 to 20 percent slopes	671	Very fine sandy loam over permanently frozen gravelly very fine sandy loam; soils are found on hills on moraines and depressions on moraines; parent material is loess over till; poorly drained soil with high runoff	 Moderate  Slight	Yes	
Drop Zone Trails Mary and Sue	Volkmar-Nenana complex	716	Silt loam over very extremely gravelly sand; soils are found on stream terraces; parent material is loess over alluvium; well drained soil with low runoff	 Slight  Moderate	<i>Inclusion:</i> Tanana (5%) terraces	

Source: USDA 2005

<sup>a</sup> Permafrost soils are those with temperatures below freezing that have existed continuously for two or more years.

<sup>b</sup> Inclusions are areas of soils within the dominant soil unit that belong to other taxonomic classes.

<sup>1</sup> Soil types within the table row occur within the proposed DTA East Trail Network Upgrade.

<sup>2</sup> Soil types within the table row occur within the proposed Mary and Sue Lakes Bivouac Site.

<sup>3</sup> Soil types within the table row occur within the proposed Buffalo Bivouac Site.

<sup>4</sup> Soil types within the table row occur within the proposed Donnelly Drop Zone Expansion.

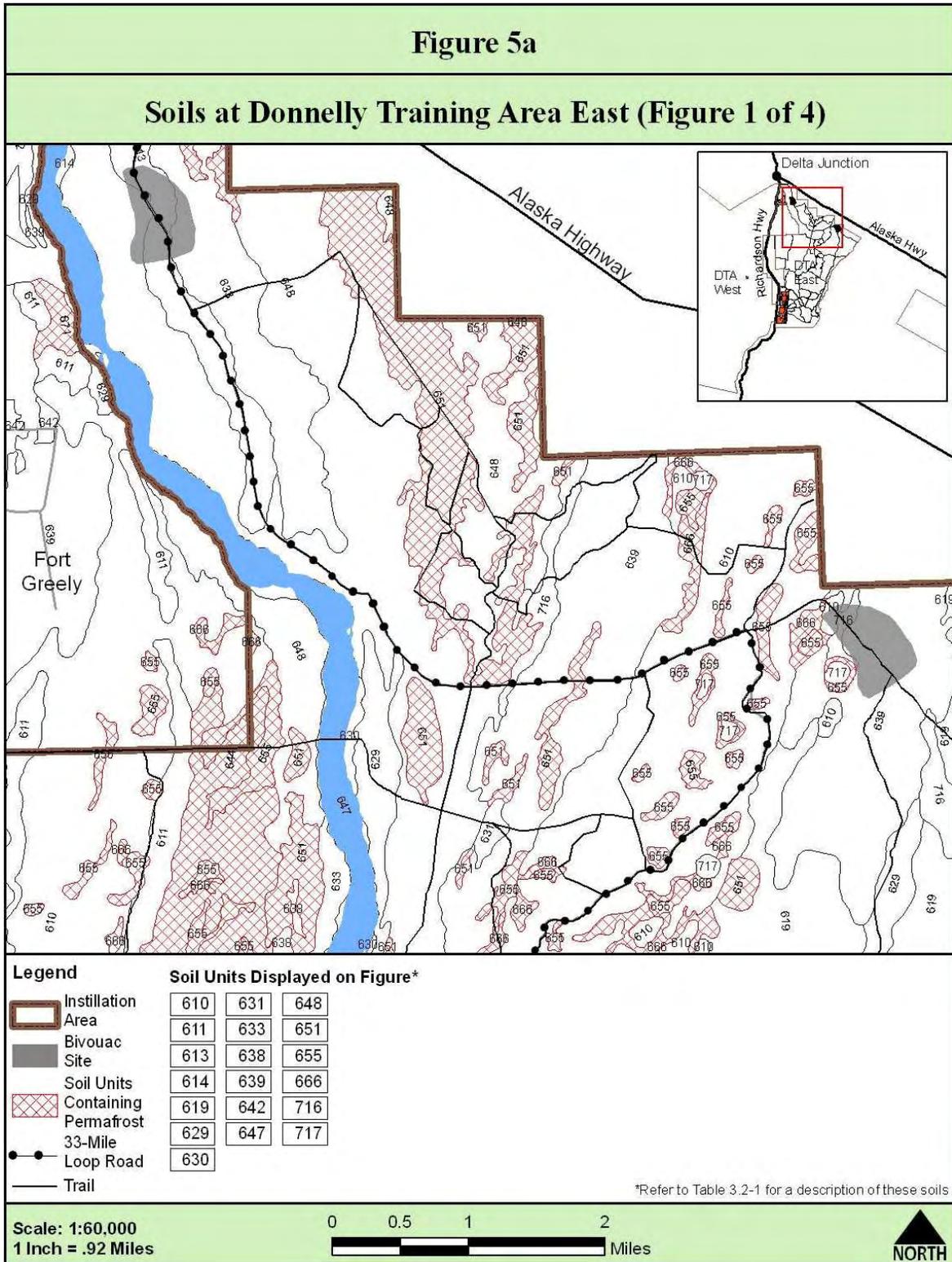
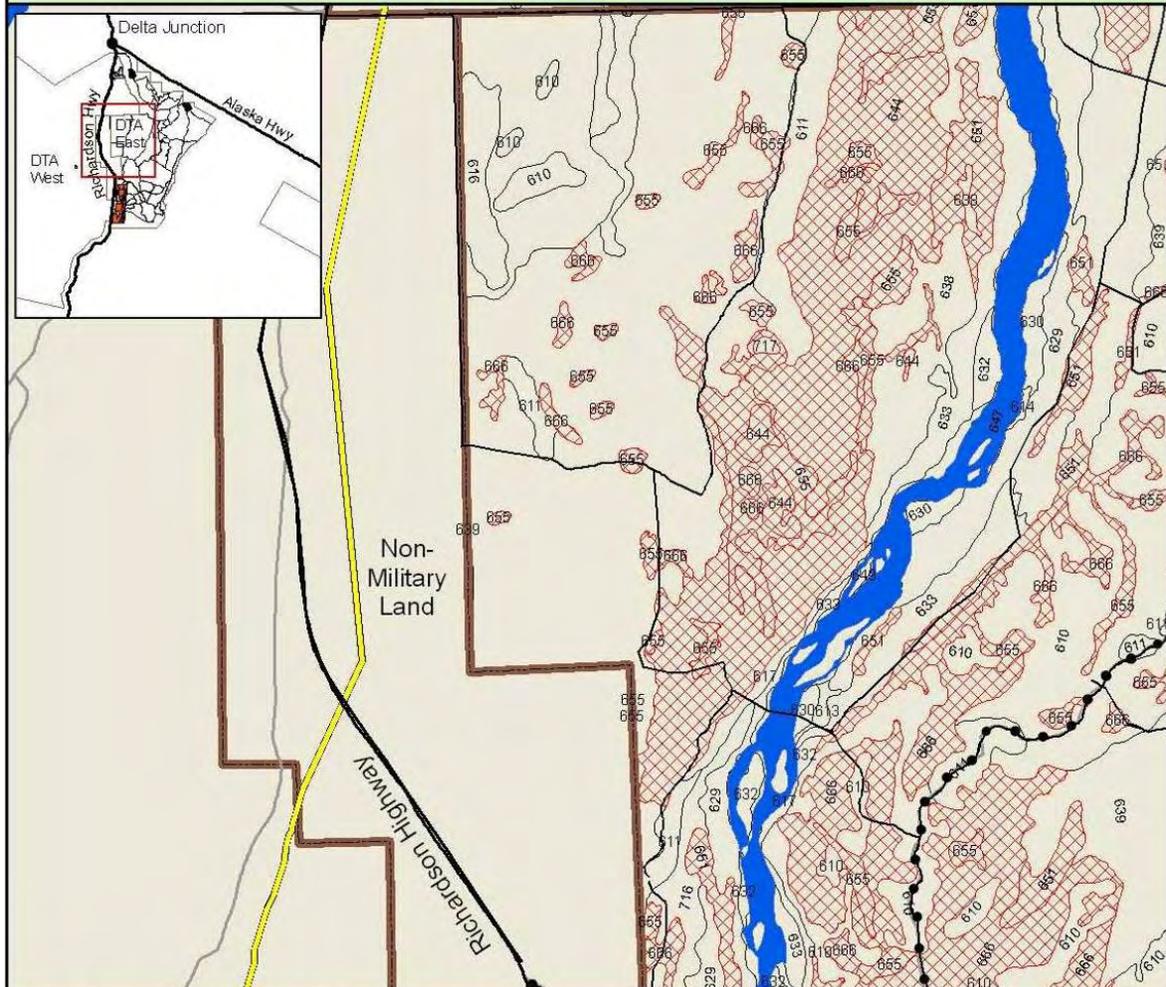


Figure 5b

Soils at Donnelly Training Area East (Figure 2 of 4)



Legend

- 33-Mile Loop
- Trail
- Trans-Alaska Pipeline
- ▭ Installation Area
- ▨ Soil Units Containing Permafrost

Soil Units Displayed on Figure\*

602	615	632	640	649
609	616	633	641	651
610	617	635	643	655
611	618	636	644	666
612	629	637	646	668
613	630	638	647	671
614	631	639	648	717

\*Refer to Table 3.2-1 for a description of these soils

Scale: 1:60,000  
 1 Inch = .92 Miles



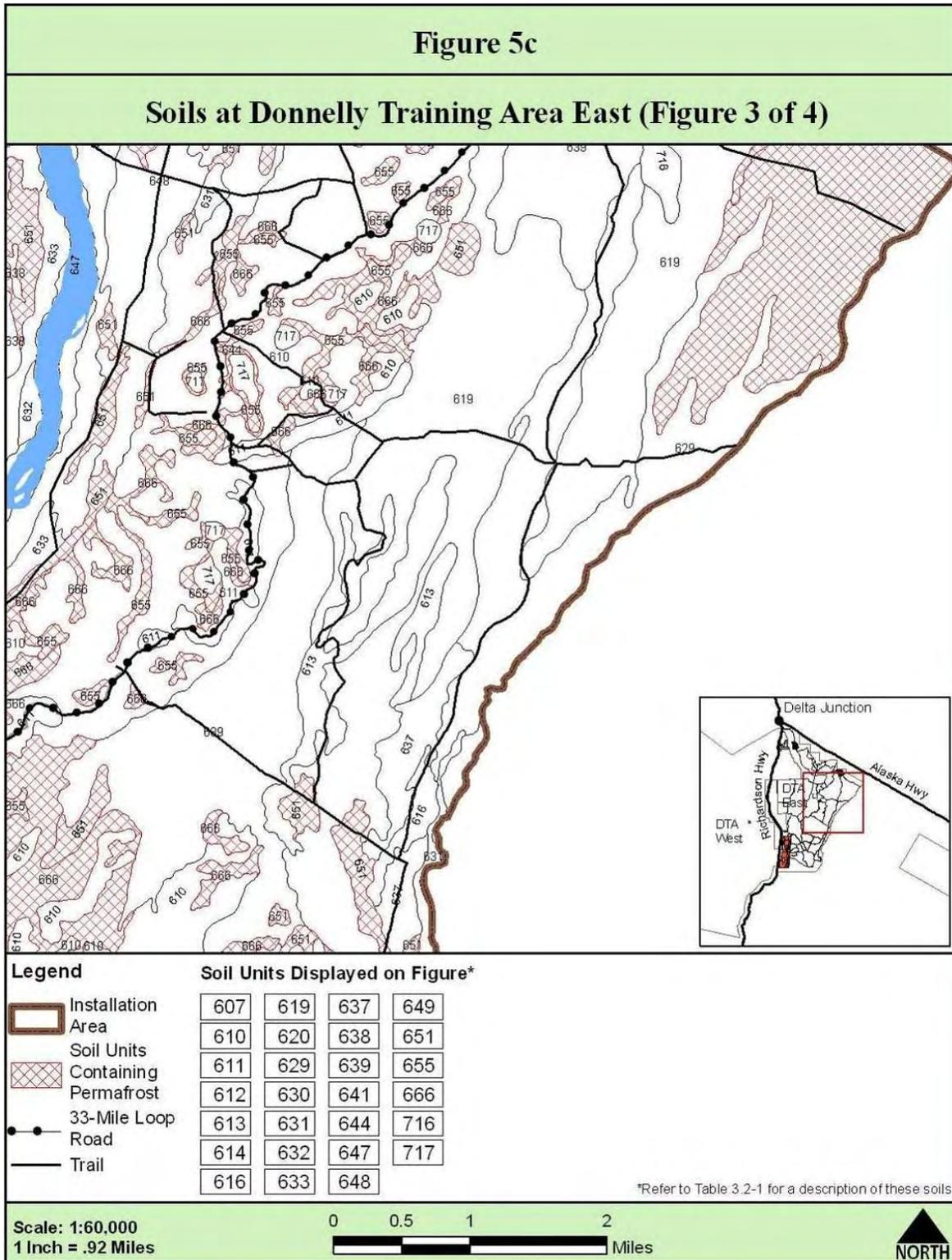
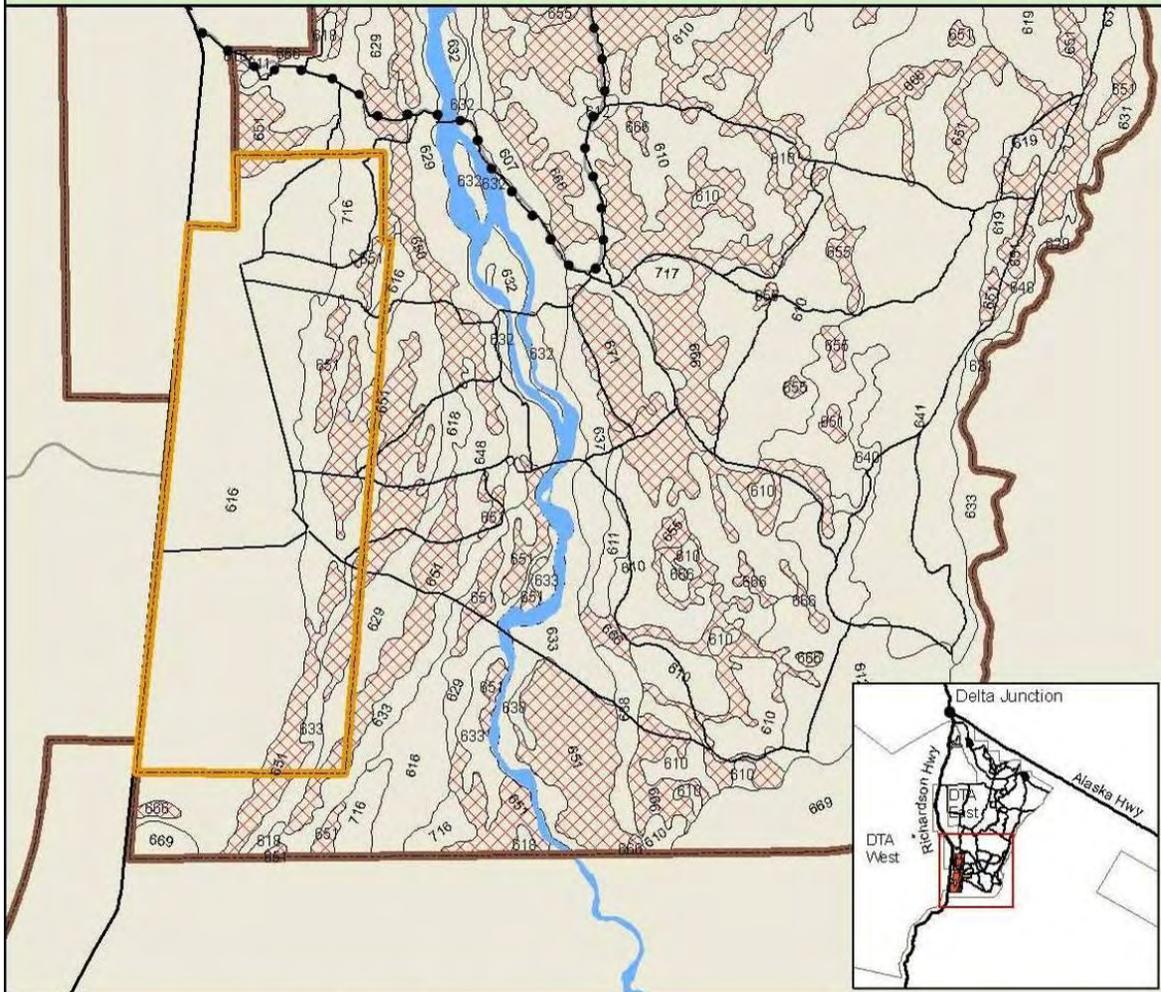


Figure 5d

Soils at Donnelly Training Area East (Figure 4 of 4)



Legend

- Installation Area
- Donnelly Drop Zone Expansion
- 33-Mile Loop Road
- Trail
- Soil Units Containing Permafrost

Soil Units Displayed on Figure\*

604	619	638	651
607	621	640	655
610	629	641	666
611	631	647	669
612	632	648	671
616	633	650	716
618	637		

\*Refer to Table 3.2-1 for a description of these soils

Scale: 1:60,000  
 1 Inch = .92 Miles



### 3.2.1 Affected Environment of Proposed Enhancement Projects

The following describes soil types associated with each proposed project area (see Figure 1). Information regarding hydric soils is presented in the wetlands section (Section 3.6).

#### Donnelly Drop Zone Expansion

Soil organic matter content is an important consideration for the Donnelly Drop Zone Expansion because it binds soil particles together into stable aggregates (reducing runoff and erosion) and enhances soil fertility and plant productivity by improving the ability of the soil to store and supply nutrients (USDA, 2007). These properties increase the probability of vegetation growth without continual maintenance/stabilization efforts and the addition of fertilizers. Table 3.2-2 illustrates organic characteristics of Donnelly Drop Zone soils. In addition, the Donnelly Drop Zone area's position within the landscape often creates windier conditions than found within other areas of DTA East, also increasing potential for wind erosion. Table 3.2-1 provides information regarding each soil unit's susceptibility to wind erosion.

Figure 5d shows the mapped soil associations within the Donnelly Drop Zone. A majority of the proposed 2,040 acres of Donnelly Drop Zone Expansion lies within a fairly flat glacial outwash terrace characterized by soil units 616, 651, and 716. Other soil units include 629 and 633 which are located within a floodplain<sup>4</sup> landform, and occur within a small portion of the southeast corner (see Table 3.2-1). The dominant soil type in this region is unit 616, Donnelly silt loam. This soil unit has limited organic material, primarily occurring within the upper 6 inches of the soil horizon with no organic material occurring below 12 inches (Table 3.2-2) and has moderate susceptibility to wind erosion (Table 3.2-1). Though in limited quantities at lower depths, the other four soil units contain organic material throughout the soil profile. Soil unit 651 has slight susceptibility to wind erosion, soil unit 716 has moderate susceptibility to wind erosion and soil units 629 and 633 has severe susceptibility to wind erosion (Table 3.2-1).

**Table 3.2-2. Organic Soil Properties and Soil Unit Acreage within the Proposed Donnelly Drop Zone Expansion**

Soil Unit	Depth (Inches)	Percent Organic Matter by Weight	Approximate Soil Acreage
<b>616</b> <b>Donnelly Silt Loam, 0 to 3 percent slopes</b>	0 to 2	85-95	1,140
	2 to 6	2-4	
	6 to 12	0-1	
	12 to 60	0	
<b>629</b> <b>Jarvis very fine sandy loam</b>	0 to 2	75-90	45
	2 to 6	3-6	
	6 to 24	0-0.5	
	24 to 60	0.1-0.3	
<b>633</b> <b>Jarvis-Salchaket complex</b>	<b>Jarvis (see above)</b>		60
	<b>Salchaket</b>		
	0 to 3	85-95	
	3 to 24	3-6	
	24 to 45	1-5	
45 to 60	0-1		

<sup>4</sup> Note: Floodplain landforms as described in soil taxonomy are different than the regulated 100-year floodplain. For the purpose of this section, floodplain can be defined as "A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially" (USDA, 2005).

**Table 3.2-2. Organic Soil Properties and Soil Unit Acreage within the Proposed Donnelly Drop Zone Expansion**

Soil Unit	Depth (Inches)	Percent Organic Matter by Weight	Approximate Soil Acreage
<b>651 Tanana silt loam</b>	0 to 3	85-95	350
	3 to 6	2-6	
	6 to 25	0-2	
	25 to 60	Frozen	
<b>716 Volkmar- Nenana complex</b>	<b>Volkmar-</b> 0 to 3	75-95	445
	3 to 10	1-5	
	10 to 30	0-1	
	30 to 60	0-1	
	<b>Nenana</b> 0 to 2	75-90	
	2 to 15	3-6	
	15 to 21	0-1	
	21 to 60	0-1	

Source: USDA, 2005

Permafrost

Permafrost is defined as layers of soil or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for two or more years (USDA, 2005). The only soil type within the proposed Donnelly Drop Zone Expansion that contains permafrost is Tanana silt loam. These soils are characterized by permanently frozen material beginning at a depth of approximately 25 inches. As shown in Figure 5d and Table 3.2-2, these soils occur within the eastern third of the proposed Donnelly Drop Zone Expansion and constitute approximately 350 acres, or 17 percent of the area proposed for vegetation clearing.

**DTA East Trail Network Upgrade**

All 25 soil types presented in Table 3.2-1 occur within the proposed trail network upgrade area. A majority of these soil types are crossed perpendicularly by the existing trails. Nine of the soil units are commonly associated with higher elevations such as hills and moraines (610, 611, and 666), shoulders, slopes and summits (612), and terraces (613, 616, 619, 639, and 651). Therefore, this alternative contains trails constructed within and running parallel to the soil unit (see Figures 5a through 5d).

Permafrost

The following seven soil units contain permafrost (see Table 3.2-1): 620, 644, 650, 651, 655, 666, and 671. With the exception of soil units 651 and 666, these permafrost soils are typically crossed perpendicular by the trails. Depths to the start of permafrost range from as low as 15 inches (666 and 671) to 25 inches (620). Approximately 19 percent, or 853 acres, of the proposed trail upgrades would occur within permafrost soils.

## Hardened Bivouac

### *Buffalo Bivouac*

Three soil types occur within the proposed Buffalo Bivouac site (Figure 5a). These soil types include 648 in the western quarter, 613 in the middle half, and 633 in the eastern quarter. These soils are characteristic of floodplain soils (633 and 648) and stream terraces (613).

### *Mary and Sue Lakes Bivouac*

Three soil types also occur within the proposed Mary and Sue Lakes Bivouac site (Figure 5a). These soil types include predominantly 639 in the lower three-quarters of the site and 610 and 716 in the northern quarter. These soils are predominantly characteristic of stream terraces (639 and 716) with a minor component of hills and moraines (610).

### Permafrost

No areas of permafrost are located within either proposed bivouac site.

## 3.2.2 Environmental Consequences

Overall impacts to soil resources would be minor to moderate with the direct adverse impact occurring due to construction equipment and trail and bivouac hardening activities. Direct impacts are further discussed by the No Action and proposed enhancement alternatives below. Indirect impacts resulting from soil disturbance including those to vegetation, fisheries habitat, water quality, wetlands, and cultural resources are discussed in Sections 3.3.2, 3.4.2, 3.5.2, 3.6.2, and 3.7.2 respectively. BMPs to help reduce soil erosion and restoration practices are discussed in Chapter 4.0 and the ITAM Five-Year Plan (USARAK, 2005c). The following categories will be used in assessing the intensity potential direct impacts resulting from the proposed enhancement alternatives.

- **None** – No measurable impacts are expected to occur.
- **Minor** – Short-term but measurable adverse impacts are expected such as a temporary erosion risk of soils during and following construction (short-term).
- **Moderate** – Noticeable adverse impacts that would have a measurable effect on soil and permafrost. This would include activities which result in unstable soils following construction due to considerable permafrost degradation. This would also include activities which would require remediation beyond typical seeding stabilization measures; causing an extended duration or risk of erosion.
- **Severe** – Adverse impacts to soils would be obvious. Total loss of soil integrity following construction. Activities which result in large-scale permafrost degradation or long-term risks of erosion.
- **Beneficial** – Impacts would benefit soils.

The first three qualitative impact categories (none, minor, and moderate) are considered insignificant in this analysis. The next category (severe) is considered significant.

### 3.2.2.1 No Action

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use, resulting in adverse minor to moderate soil impacts.

The No Action Alternative would result in the continued current use of DTA East. Soils at the Donnelly Drop Zone expansion site would remain intact and stabilized by vegetative cover and

would not be impacted. Soil degradation would continue to occur from off-trail vehicle use throughout the trail network. As funding becomes available, areas of rutted trails formed in soft and unstable soils would be repaired; however, the levels of degradation could increase with the use of Stryker vehicles which have begun training at DTA, jeopardizing sustainable use of DTA East trails and resulting in moderate impacts. In addition, soil compaction and erosion would continue to occur at the non-hardened bivouac sites. As the bivouac sites have the potential to degrade with use, Soldiers may have to relocate to other areas for bivouacking activities, resulting in moderate impacts to soils and for potential non-sustainable use of DTA East.

### **3.2.2.2 Donnelly Drop Zone Expansion**

#### **Proposed Action**

Under the Proposed Action, minor adverse impacts would occur to the approximate 2,040 acres of soils within the Donnelly Drop Zone during vegetation removal and during restoration/soil stabilization efforts due to increased potential for erosion of exposed soils. Although portions of soils within the area of proposed clearing are moderately to severely susceptible to erosion, this alternative would allow for retention of low-lying vegetation to help keep soils stabilized (see Section 3.3.2.2). Approximately 1,480 acres which would be cleared using either the individual tree removal method or the hydro-ax method would experience limited disturbance to soils (see Section 2.2.1.3). In addition, the depth of the hay rake following hydro-ax clearing would be set to limit ground penetration and disturbance soils and soil stability by preserving soil root structure. Mitigation and BMPs would help to further reduce the level of impact (i.e. erosion susceptibility) by controlling the amount of soil erosion both during and after clearing activities (see discussion below and also Chapter 4.0).

Soil structure and composition would be impacted within the proposed area of clearing. Tractor equipment use would cause soil compaction. In addition, both the tractor wheels and removal of root masses would cause mixing of soil horizons and disruption to organic material within the upper soil horizons. Areas cleared using the blading technique (up to 560 acres) would be further disrupted within the upper organic horizons as the blade would be positioned to remove the upper four inches of organic layers during vegetation clearing, including the removal of low-lying vegetation. However, these overall impacts would be reduced as this technique would be employed in soils with deeper organic content allowing for vegetation within these areas to become re-established once the clearing is completed due to the higher organic content of these soils. In addition, the rock picker would conduct surficial sweeps of the newly cleared drop zone within the upland areas and non-hydro-ax cleared portions, limiting additional disturbance to soils as the expanded drop zone is swept to remove paratrooper drop hazards.

A phased vegetation clearing approach (see Section 2.2.1.6) would allow for the individual tree removal method to be used in areas of Donnelly silt loam (approximately 1,140 acres) which are characterized by shallow organic soils. In addition, this method would help maintain the overall soil structure and the organic horizon of these soils. The retention of the organic horizon would in turn allow vegetation to re-establish at a faster rate and would confine disruption of the organic material to areas of root ball removal. Rapid re-establishment of vegetation would reduce overall soil erosion that could occur following vegetation removal, and ensure that the Donnelly Drop Zone would retain necessary qualities that support sustained future use. In addition, a phased approach would allow for phasing of restoration and soil stabilization in areas devoid of vegetation. A phased approach would reduce the overall surface area of required restoration areas that would be susceptible to wind and water erosion within a given period of time; addressing the often windy conditions within the Donnelly Drop Zone area by reducing wind erosion potential (see Section 3.2.1).

As discussed above, areas of exposed soils would be reduced under this alternative due to the retention of low lying vegetation within areas cleared by the individual tree removal and hydro-ax techniques. Revegetation of exposed soils would likely occur within one to two months during the growing season. As necessary, geotextiles would be used in areas with moderate to severe susceptibility to wind erosion to aid in the revegetation process (see Section 4.1).

#### Permafrost

The potential also exists for permafrost degradation within the approximate 350 acres of Tanana silt loam soils. Activities that remove the insulating vegetation cover or destroys the active layer above the permafrost table could cause irregular surface subsidence as the ice-rich soil melts. The tendency for settling and frost action is directly proportional to the silt content of the soil. These soils have higher silt content, 50 to 80 percent, in the upper six inches. However, sand content increases as soil depth increases, resulting in silt content as low as 10 percent near permafrost depth at 25 inches (USDA, 2005). Therefore, thaw-stable permafrost conditions are likely as the frozen lower portion of the soil profile contains relatively little silt which would cause minor impacts to permafrost. Only small areas of surface subsidence would be expected. In addition, BMPs outlined in Chapter 4.0, such as providing vegetative cover following clearing activities, would further reduce permafrost impacts.

### **3.2.2.3 DTA East Trail Network Upgrade**

#### **Proposed Action**

Under the Proposed Action minor adverse impacts would occur to soils within DTA East. As stated in Section 2.2.2.2 the proposed trail upgrades represents the “worst case scenario”, widening all trails to accommodate Stryker traffic. In addition, this project would be completed over the long term (5 to 10 years), and therefore, the intensity of impacts discussed in this section would be reduced as impacts would be spread out over a longer duration. Mitigation and BMPs would help reduce the level of impact by controlling the amount of soil erosion both during and after construction activities (see Chapter 4.0).

Approximately 4,585 acres of soil disturbance would occur. Impacts would include compaction of approximately 2,260 acres of soils within the proposed shoulders and loss of approximately 2,325 acres of soils located directly below the trail bed through the placement of gravel. Soils located within the shoulder areas would be compacted by construction vehicles and would be subject to erosion following construction and grading activities. Beneficial long-term impacts would be expected as the number of vehicles maneuvering off-trail to avoid degraded trail segments would be reduced. The reduction of off-trail use would help avoid rutting and erosion of soils adjacent to the trails.

Gravel would be required for trail network upgrades. The potential exists for gravel to be purchased and hauled from off-site sources; however, gravel could also be obtained from within DTA East through development of gravel pit sites. Typically, gravel extraction pits are located within soil units containing gravelly alluvium outwash or from gravelly deposits located within hills or moraines (see Table 3.2-1). Jarvis Creek and its associated floodplains and seasonal channels could also provide a source of gravel (see Section 3.5.2.3). These impacts would be localized, minor, and would adhere to gravel extraction, gravel pit development and remediation procedures discussed in the ITAM Five-Year Plan and include (USARAK, 2005c):

- Pit sites would be between 0.5 to 4.9 acres in size and require access upgrades. Pit boundaries are established and include extraction areas, overburden dumps, and stockpile areas. Pits are developed to maintain adequate drainage through the strategic placement

- of berms, ditches, and culverts. In addition, pits are developed and operated to provide for efficient and effective reclamation.
- Pits that are no longer in service are reclaimed by shaping and smoothing exposed areas and spreading and compacting stockpiled overburden. Slopes within a reclaimed pit do not exceed 2:1 and are track walked for reseeding and/or fertilizing.
  - Pits would be located in areas which avoid environmentally sensitive locations (i.e., wetlands and cultural sites).

The proposed trail upgrades have the potential to indirectly exacerbate sediment concerns within the Clearwater River (see Section 3.5.2.3). Although the Clearwater River is located north of DTA East, the eastern portion of DTA East (east of Jarvis Creek) is located within the Clearwater River watershed. The upgrades proposed to north-south trails within the Clearwater River watershed have the potential for transporting sediments within these north-south corridors during extreme flooding events to the north into the Clearwater River. Mitigation and BMPs would help reduce the level of impact to both resources within DTA East and outside DTA boundaries (i.e. Clearwater River) by controlling the amount of soil erosion both during and after construction activities (see Chapter 4.0).

#### Permafrost

Approximately 853 acres of soils potentially containing permafrost exist within the proposed trail upgrade areas. These soils are predominantly thaw-stable, containing higher percentages of sand and gravel within the lower soil horizon (see Section 3.2.1.2). In addition, as the trail widening activities would occur adjacent to and over top of the existing non-vegetated trails, areas of permafrost within these locations would likely already be degraded from previous vegetation removal and trail construction. Therefore, minor to no permafrost impacts would be anticipated. BMPs in Chapter 4.0, such as providing vegetative cover along the trail shoulders following construction activities, would further reduce permafrost impacts.

#### **3.2.2.4 Hardened Bivouac**

##### **Alternative 1 –Buffalo Bivouac**

Under this alternative, minor adverse impacts would occur to soils within the proposed bivouac site. Approximately 80 acres of soil disturbance would occur. Overall impacts under this alternative would be less than Alternative 2 as 14 acres within the proposed Buffalo Bivouac site are already classified as disturbed. Impacts would include compaction and loss of soil function and productivity during creation of the hardened bivouac pads, access spurs, the storage facility, and from placement of a perimeter trail. Soils located directly below these areas would be lost through the placement of gravel. Soils located within shoulder areas of the pads and perimeter trail would be compacted by construction vehicles and would be subject to erosion following construction and grading activities. Overall beneficial impacts would include the reduction of bivouac activities occurring in undefined areas. The establishment of hardened pads would confine bivouac activities to the pad surface, reducing the amount of impact to soils.

Gravel required for bivouac hardening would be obtained by similar methods as described in Section 3.2.1.3 for trail upgrades; therefore, the minor and localized impacts would be similar.

#### Permafrost

No areas of permafrost soils exist within the proposed site.

## Alternative 2 – Mary and Sue Lakes

Under this alternative, impacts to soils would be minor and similar to those described under Alternative 1. Approximately 80 acres of soil disturbance would occur from pad, storage facility, access spur and perimeter trail placement.

Gravel required for bivouac hardening would be obtained by similar methods as described in Section 3.2.2.3 for trail upgrades, and therefore, the minor and localized impacts would be similar.

### 3.3 VEGETATION

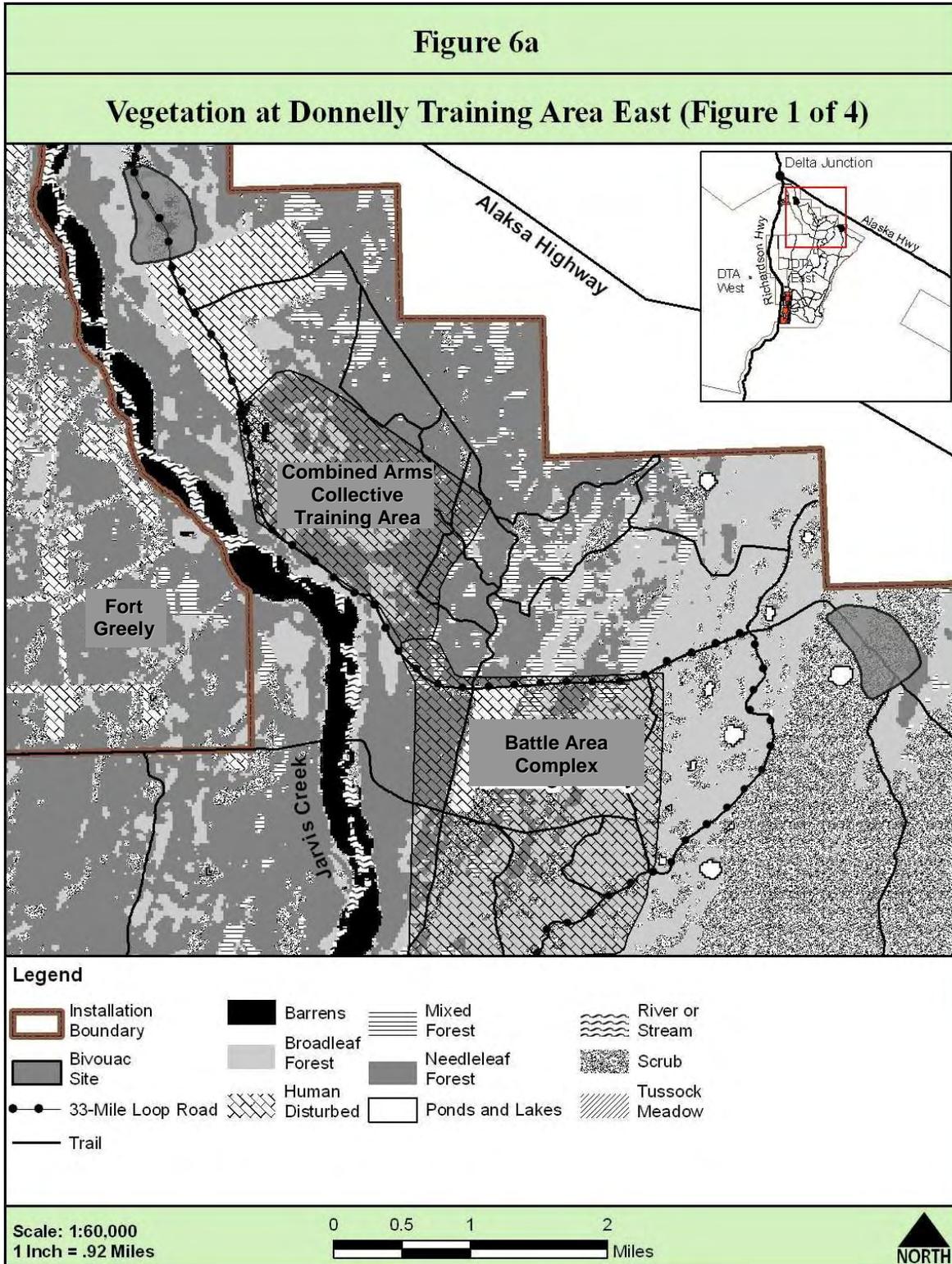
Information on vegetative cover at DTA East is set forth in Section 3.3.4 of the BAX/CACTF EIS (2006) and is summarized in this section. Vegetation communities unique to each of the proposed project areas are discussed in Section 3.3.1. Figures 6a through 6d depict vegetation cover at DTA East.

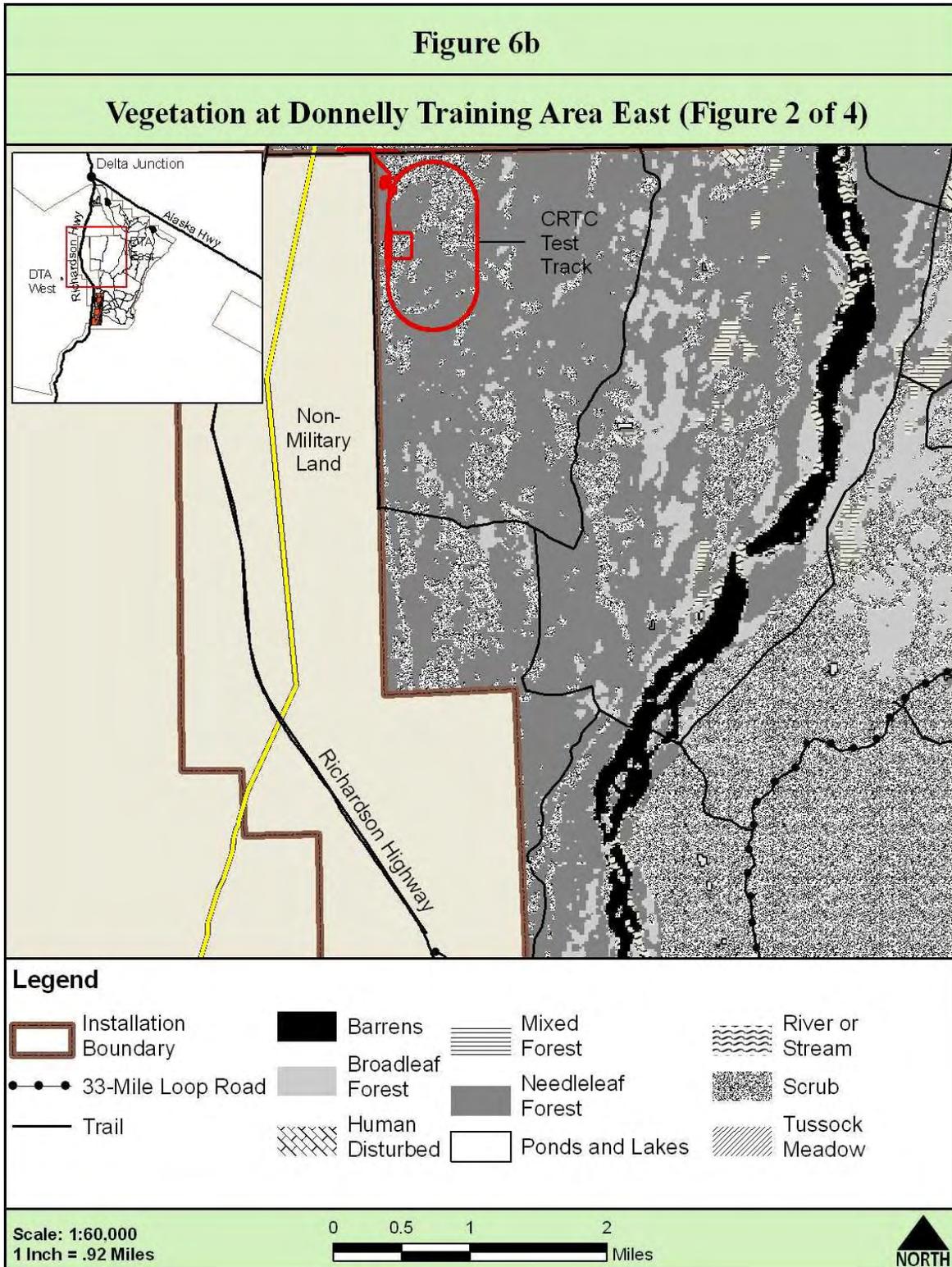
An ecological survey reported vegetation cover as forest (29.0 percent), scrub lands (58.1 percent), tundra (4.4 percent), barren lands/partially vegetated (3.6 percent), human disturbed (0.6 percent), and water (4.3 percent) (USARAK, 2005a). Forest cover at DTA is diverse and includes pure stands of spruce, hardwoods, and spruce/hardwood mixtures. The dominant types include white spruce, paper birch, quaking aspen, balsam poplar, black spruce, and spruce/hardwood. Scrub communities (typically composed of alder, willow, and dwarf birch) occur at high mountain elevations, in small stream-valley bottoms, and as pioneer vegetation on disturbed sites. Dense thickets of scrub communities exist along floodplains or disturbed sites such as gravel pits, road shoulders, rights-of-way, and military trails. Most barren areas on DTA East are located on gravel bars along the Delta River, Jarvis Creek, and Granite Creek. Barren lands also occur above the tree line, along ridges, and adjacent to rivers and streams. Higher elevation sites along the southern portion of DTA East 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. At least 18 species of rare vascular plants on DTA are being monitored by the Alaska Natural Heritage Program (AKNHP). (USARAK, 2006b). During the initial agency scoping period (see Section 1.7), the USFWS determined that no threatened or endangered species occur in the area and there are no designated or proposed critical habitat units in interior Alaska; therefore, the proposed project would not adversely affect listed resources. Furthermore, preparation of a Biological Assessment or further consultation under the ESA is not required (see Appendix A).

#### Invasive Species

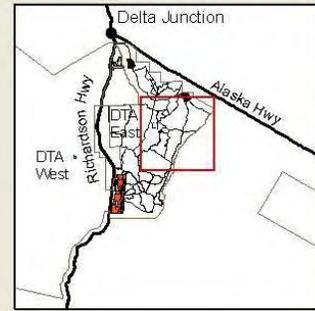
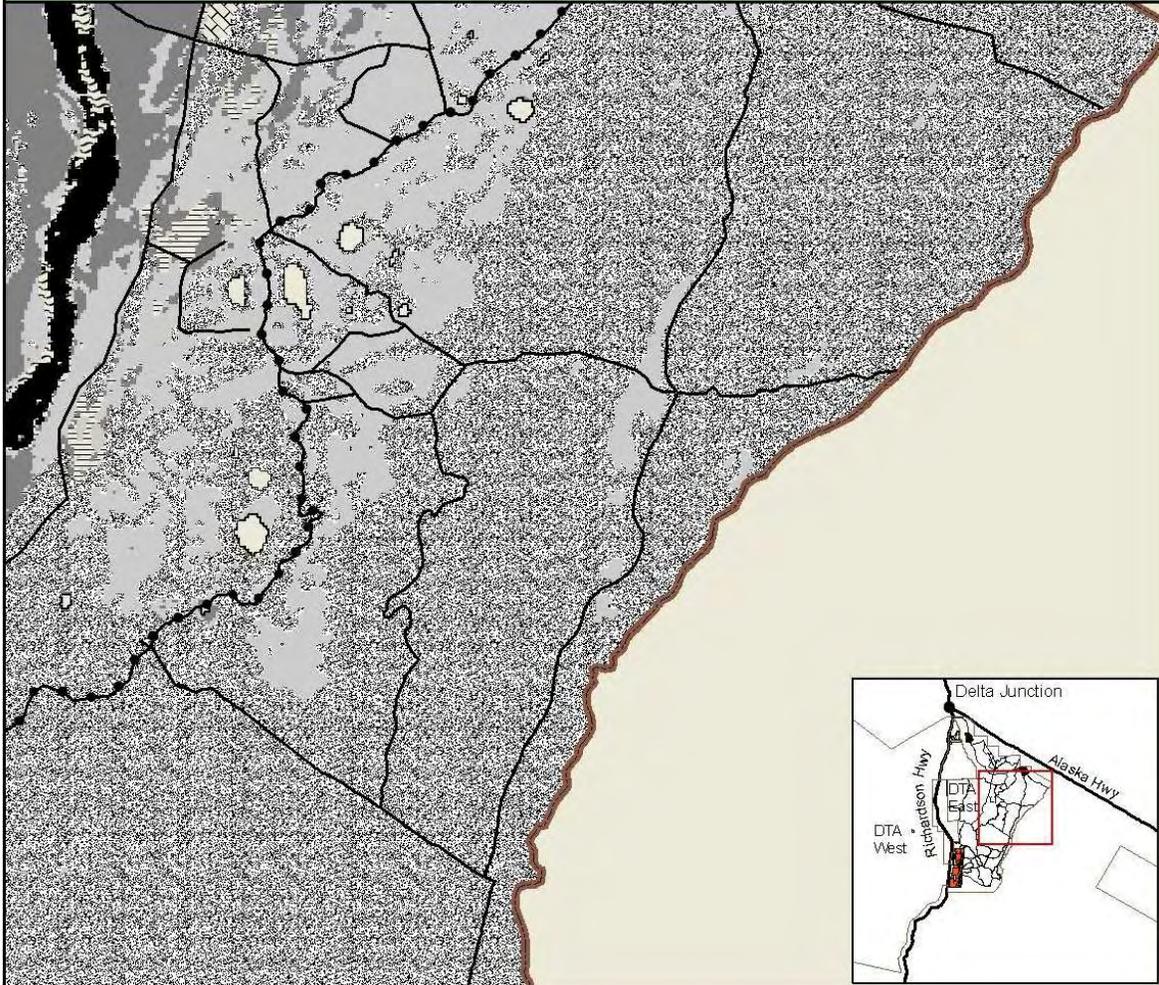
Several invasive species occur within DTA East. Recent surveys have not revealed any major invasive plant infestations (USARAK, 2006b). Although no infestations have been recorded, narrowleaf hawksbeard (*Crepis tectorum*) and foxtail barley (*Hordeum jubatum*) have begun to spread down roadsides in the training areas. Vegetation control is periodically conducted along roadsides, around range buildings, fences, and targetry infrastructure





**Figure 6c**

**Vegetation at Donnelly Training Area East (Figure 3 of 4)**

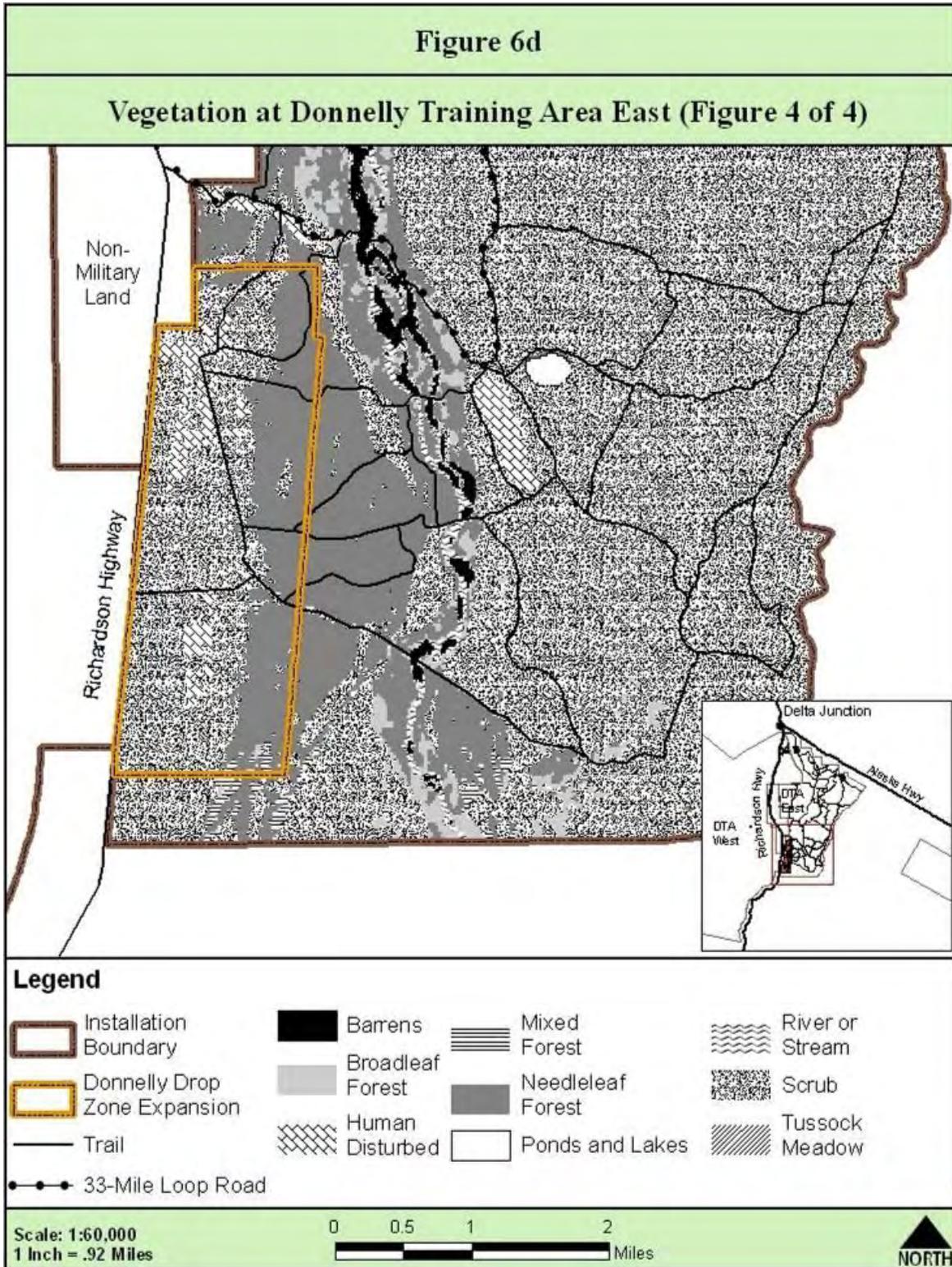


**Legend**

- |                       |                 |                   |                  |
|-----------------------|-----------------|-------------------|------------------|
| Installation Boundary | River or Stream | Mixed Forest      | Barrens          |
| 33-Mile Loop Road     | Scrub           | Needleleaf Forest | Broadleaf Forest |
| Trail                 | Tussock Meadow  | Ponds and Lakes   | Human Disturbed  |

Scale: 1:60,000  
 1 Inch = .92 Miles





### 3.3.1 Affected Environment of Proposed Enhancement Projects

The following describes vegetation associated with each proposed project area (see Figures 6a through 6d). Table 3.3-1 displays the acreage of vegetation types within each proposed area.

**Table 3.3-1. Types of Vegetation at DTA East Proposed Enhancement Sites**

Type of Vegetation	Approximate Acres/ Percent of Total Enhancement Area	
<i>Donnelly Drop Zone</i>		
Barrens	0/0	
Tussock Meadow	0/0	
Scrub	1,200/59	
Broadleaf Forest	2/<1	
Mixed Forest	16/<1	
Deciduous Forest	0/0	
Needleleaf Forest	632/31	
Human Disturbed	190/9	
<i>Trail Network Upgrade</i>		
Barrens	42/<1	
Tussock Meadow	0/0	
Scrub	2,253/49	
Broadleaf Forest	669/15	
Mixed Forest	109/2	
Deciduous Forest	0/0	
Needleleaf Forest	1,158/25	
Human Disturbed	354/8	
<i>Bivouac Site</i>	<b>Buffalo</b>	<b>Mary and Sue Lakes</b>
Barrens	9/5	0/0
Tussock Meadow	0/0	0/0
Scrub	41/24	130/76
Broadleaf Forest	99/58	35/20
Mixed Forest	0/0	<1/<1
Deciduous Forest	0/0	0/0
Needleleaf Forest	18/10	7/4
Human Disturbed	5/3	0/0

Source: USAG Alaska GIS Vegetation Data

#### **Donnelly Drop Zone Expansion**

The Donnelly Drop Zone expansion area is comprised of primarily low scrub vegetation (59 percent) and needleleaf forest (31 percent). The remaining cover types include human disturbed (9 percent) and broadleaf forest and mixed forest (less than 1 percent). The northeast portion of

the proposed drop zone expansion is located within a previously burned area of needleleaf forest (see Section 3.10).

Needleleaf and mixed forests cover the Donnelly Drop Zone expansion area. The existing Drop Zone area consists of scrub ecotypes and human disturbed areas. Black and white spruce predominates in the forest ecotypes and black spruce is a significant component of the scrub ecotypes as well. The shrub components of the forest ecotypes are similar to dominant species in the scrub ecotypes and include willow, alder, dwarf birch, and Labrador tea. Common grasses and forbs include bluejoint reedgrass, alai fescue, fireweed, twinflower, and bunchberry.

One rare plant species has been documented within proximity to the Donnelly Drop Zone area. Scabrous black sedge (*Carex atratiformis*) was widespread and common on disturbed sites.

Approximately 265 acres of salvageable timber is estimated to exist within the proposed Donnelly Drop Zone expansion area. This represents approximately 4 percent of the 7,300 acres of estimated salvageable timber within DTA East.

### **DTA East Trail Network Upgrade**

Existing maneuver trails at DTA East are located in a variety of vegetation types, primarily including scrub (49 percent), with needleleaf forest (25 percent), broadleaf forest (15 percent), human disturbed (8 percent), mixed forest (2 percent), and barrens (less than 1 percent). General locations of these vegetative communities are provided in Section 3.3 and are further described in the BAX/CACTF EIS (2006). No rare plant surveys have been conducted specifically for the area within the proposed trail network upgrade.

### **Hardened Bivouac**

#### *Buffalo*

The Buffalo Bivouac site contains approximately 58 percent broadleaf forest, followed by 24 percent scrub, and 10 percent needleleaf forest. An additional 8 percent is characterized as barren or human disturbed and is located in areas serving as an existing (non-hardened) bivouac site adjacent to the Buffalo Drop Zone. No rare plant surveys have been conducted specifically for this proposed bivouac area.

#### *Mary and Sue Lakes*

The Mary and Sue Lakes Bivouac site contains approximately 76 percent scrub, 20 percent broadleaf forest, four percent needleleaf, and less than 1 percent mixed forest. No rare plant surveys have been conducted specifically for this proposed bivouac area.

### **3.3.2 Environmental Consequences**

Overall impacts to vegetation would be minor, with direct adverse impacts resulting from vegetation removal. Together, the projects would result in the loss of up to 2,010 acres of vegetation (approximately 2 percent of total DTA East vegetative cover) and the conversion of up to additional 4,300 acres of vegetation (approximately 5 percent of total DTA East vegetative cover). Intensity of potential vegetation impacts for each proposed enhancement is based on the extent of direct permanent vegetation loss or conversion of vegetation community (i.e. forest to meadow). It is assumed that DTA East is approximately 104,600 acres, of which approximately 9,200 acres are currently classified as “human disturbed” and the remaining 95,400 acres are classified as non-disturbed lands (USARAK, 2006a). The following categories will be used in assessing the intensity of direct impacts resulting from the proposed enhancement alternatives. Percentage levels of impacts were determined from professional evaluations and assessments.

- **None** – No measurable adverse impacts are expected to occur.
- **Minor** – Adverse impacts would occur on less than 10 percent of vegetation within DTA East.
- **Moderate** – Adverse impacts would occur to between 11 to 25 percent of vegetation within DTA East.
- **Severe** – Adverse impacts would occur to more than 25 percent of vegetation within DTA East.
- **Beneficial** – Impacts would benefit vegetation resources.

The first three qualitative impact categories (none, minor, and moderate) are considered insignificant in this analysis. The next category (severe) is considered significant. Impacts are further discussed by the enhancement alternative below. Indirect impacts resulting from vegetation disturbance to soils, wildlife habitat, surface water quality and flood water control, and wildfire management are further discussed in Sections 3.2.2, 3.4.2, 3.5.2, and 3.10.2, respectively. BMPs to help reduce impacts to vegetation and restoration practices are discussed in Chapter 4.0 and the ITAM Five-Year Plan (USARAK, 2005c). This includes continual implementation of monitoring and management of vegetation (both sensitive and invasive species), retention of existing vegetative cover and reseeded/planting of disturbed areas with native or other appropriate vegetation.

### 3.3.2.1 No Action

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use, resulting in minor adverse impacts. The No Action Alternative would result in the continued current use of DTA East. As new construction of the proposed facilities would not occur, there would be no anticipated impacts to vegetation resources. However, continued off-trail vehicle use and bivouacking within non-hardened areas would continue and likely increase damage to vegetation, including breaking and crushing of plants and direct mortality. This could directly or indirectly alter plant community composition and structure, from large perennial plants to small annuals, decrease vegetation cover, reduce densities of woody vegetation, and increase invasive plant species. These impacts would be localized and dependent on environmental conditions (i.e., impacts are less harmful during winter, when snowpack protects vegetation).

### 3.3.2.2 Donnelly Drop Zone Expansion

#### Proposed Action

Expansion of the Donnelly Drop Zone would remove larger woody vegetation that presents jump hazards within the proposed expansion area and result in minor adverse impacts to vegetation. Dwarf birch and other brush would remain intact in areas cleared by individual tree removal or hydro-ax (approximately 1,480 acres) or in areas where the blade was kept high using the blading technique (up to 560 acres). Approximately 2,040 acres of forested and woody scrub, which represents approximately 2 percent of the entire 95,400 acres of non-disturbed lands at DTA East, would be converted to a plant community dominated by non-persistent (non-woody) scrub communities, and grassy open areas. This conversion would create a minor impact to vegetation communities within DTA East through removal of larger woody species, transforming these communities into an earlier successional stage (low scrub and grassy meadow). As discussed in Section 3.2.2.2, Proposed Action, revegetation of exposed soils would require between one to two months during the growing season.

The BLM in conjunction with the Army's Natural Resources Staff, has a long-established public wood cutting area designated within the area proposed for the Donnelly Drop Zone Expansion; approximately 70 wood cutting permits have been issued per year in the proposed drop zone expansion area for several years (see Appendix A). Approximately 265 acres of the estimated salvageable timber would be made available to the public which would benefit the local community and offset the loss of salvageable timber within areas covered by wood cutting permits. Other areas of DTA East would be made available for wood cutting following clearing of the drop zone and when resulting cut wood supplies are exhausted. The phased clearing approach would also extend the period of time salvageable timber is made available to the public. Industry standard and environmentally sound harvesting techniques would be conducted to reduce both direct and indirect impacts. See Section 2.2.1.3 for timber harvesting techniques and salvageable and non-salvageable timber information.

Subsequent Donnelly Drop Zone use and future maintenance would likely control future tree growth, decreasing the amount of forest cover within DTA East. However, this decrease of forest cover would be minor compared to the areas of extensive forest that exist within DTA East and surrounding regions. Vegetative ground cover, whether grass, lichens, moss, low-growing shrubs, or taller growing willows/alders, would be mechanically maintained to protect soil resources and provide a clear drop zone surface.

Use of the individual tree removal method for vegetation clearing in Donnelly silt loam soils would allow up to 90 percent of the ground cover and shrubby vegetation to remain intact and allow vegetation to re-establish at a faster rate than with the blading method. Monitoring and management would ensure that any areas not recovering naturally would be revegetated. Vegetation buffers of 50 feet on either side of identified streams and 100 feet along Ober Creek would remain. Smaller trees measuring less than 1 inch diameter and under 5 feet tall would be preserved within these buffer areas.

The use of the hydro-ax in areas wetland areas as opposed to the blading method would further reduce impacts to vegetation, as areas of low-lying vegetation would remain. This method would also allow for vegetation to re-establish at a faster rate.

The potential for invasive plant species introduction would be increased during clearing activities due to potential for equipment to be contaminated with weed seeds. If introduced, these invasive species could spread up and down the trail corridors and potentially out into undisturbed areas. Planting of native species in disturbed areas and implementation of invasive species management to control invasive species according to standards outlined in the 2007-2011 INRMP (i.e. manual pulling, mowing, and herbicides) would help reduce establishment and proliferation of invasive plant species. In addition, washing of construction equipment prior to on-site construction would reduce the potential for invasive species introduction.

### **3.3.2.3 DTA East Trail Network Upgrade**

#### **Proposed Action**

Under the Proposed Action, approximately 4,190 acres of vegetation, which represents approximately 4 percent of the entire 95,400 acres of non-disturbed lands at DTA East, would be cleared to accommodate the proposed 92-foot wide trail width causing moderate impacts. See Section 2.2.2.2 for timber harvesting techniques and salvageable and non-salvageable timber information. Portions of the 25-foot trail shoulders would be graded and stabilized with native grassy vegetation, allowing for up to 54 percent of the disturbed area (2,260 acres) to revert back to grassy vegetation. Impacts would be moderate as the overall loss of vegetation to accommodate the widened trailbed, following regrowth of native grassy vegetation, would be

approximately 2 percent of the entire 95,400 acres of non-disturbed lands at DTA East. In addition, trail upgrades would deter off-trail maneuvers and prevent erosion. This would eliminate vegetation damage currently occurring from off-trail vehicle use, providing some benefits (avoidance of impacts) to vegetation adjacent to the trails during trail use.

Gravel would likely be obtained from the footprint of the proposed expanded trails or from existing gravel pit sources; therefore, no additional impacts to vegetation would be anticipated due to gravel extraction for trail construction.

The temporary disturbance to vegetation communities during clearing could cause an increase in the presence of invasive species. The potential for invasive plant species introduction would be increased during construction due to potential equipment and gravel source contamination with weed seeds. If introduced, these invasive species could spread up and down the trail corridors and out to undisturbed areas. Planting of native species in disturbed areas and implementation of invasive species management to control invasive species according to standards outlined in the 2007-2011 INRMP (i.e. manual pulling, mowing, and herbicides) would help reduce establishment and proliferation of invasive plant species. In addition, washing of construction equipment prior to on-site construction and requiring gravel pit sources to be free of invasive species would reduce the potential for invasive species introduction. As no new trails would be established, the potential for invasive plant species introduction by vehicle or human access would not change from existing conditions (see Section 1.6).

#### **3.3.2.4 Hardened Bivouac**

##### **Alternative 1 – Buffalo Bivouac**

Under this alternative, minor adverse impacts would occur from loss of up to 80 acres of vegetation, cleared to accommodate the proposed gravel bivouac pads, storage facility, access spurs and perimeter trail within the 172-acre bivouac design footprint. This 80-acre loss represents less than 1 percent of the entire 95,400 acres of non-disturbed lands at DTA East. See Section 2.2.3.2 for timber harvesting techniques and for salvageable and non-salvageable timber information. The remaining 92 acres, including areas between pads and trails, would remain as a vegetative/forested buffer between troop operations occurring at each pad.

Because the proposed action at Buffalo Bivouac involves the implementation of an existing bivouac site near the Buffalo Drop Zone, the overall environmental disturbance footprint would be reduced. Approximately 14 acres of land within the proposed Buffalo Bivouac site is classified as “human disturbed” and “barren.”

Depending upon the gravel source, additional acreages of vegetation could be disturbed. A typical gravel pit according to ITAM (USARAK 2005c) standards would be approximately 10 acres in size which may be required for constructing the hardened bivouac site.

The temporary disturbance to vegetation communities during clearing could cause an increase in the presence of invasive species similar to Section 3.3.2.3. In addition, the use of the area for bivouacking would create the potential for invasive plant species introduction due to increased human activity; however, as bivouac activities already occur within this area, the proposed hardened bivouac site would not likely increase this potential. Soldier use of the pads could reduce the spread of any invasive plant species into the surrounding areas. BMPs as discussed in Section 3.3.2.3 would also be implemented.

## **Alternative 2 – Mary and Sue Lakes**

Impacts would be minor and similar to those for Alternative 1. However, no existing bivouac activities and associated disturbances occur within the proposed 172-acre Mary and Sue Lakes Bivouac design footprint. Therefore, removal of all 80 acres of previously undisturbed vegetation would be necessary under this alternative, compared to the Buffalo Bivouac alternative which could incorporate existing barren and human disturbed areas within the bivouac design footprint. See Section 2.2.3.2 for timber harvesting techniques and for salvageable and non-salvageable timber information.

Depending upon the gravel source, additional acreage of vegetation could be disturbed. A typical gravel pit according to ITAM (USARAK 2005c) standards would be approximately 10 acres in size which may be required for constructing the hardened bivouac site.

The potential for invasive species impacts would be similar to those discussed under the Buffalo Bivouac Alternative.

## **3.4 WILDLIFE AND FISHERIES**

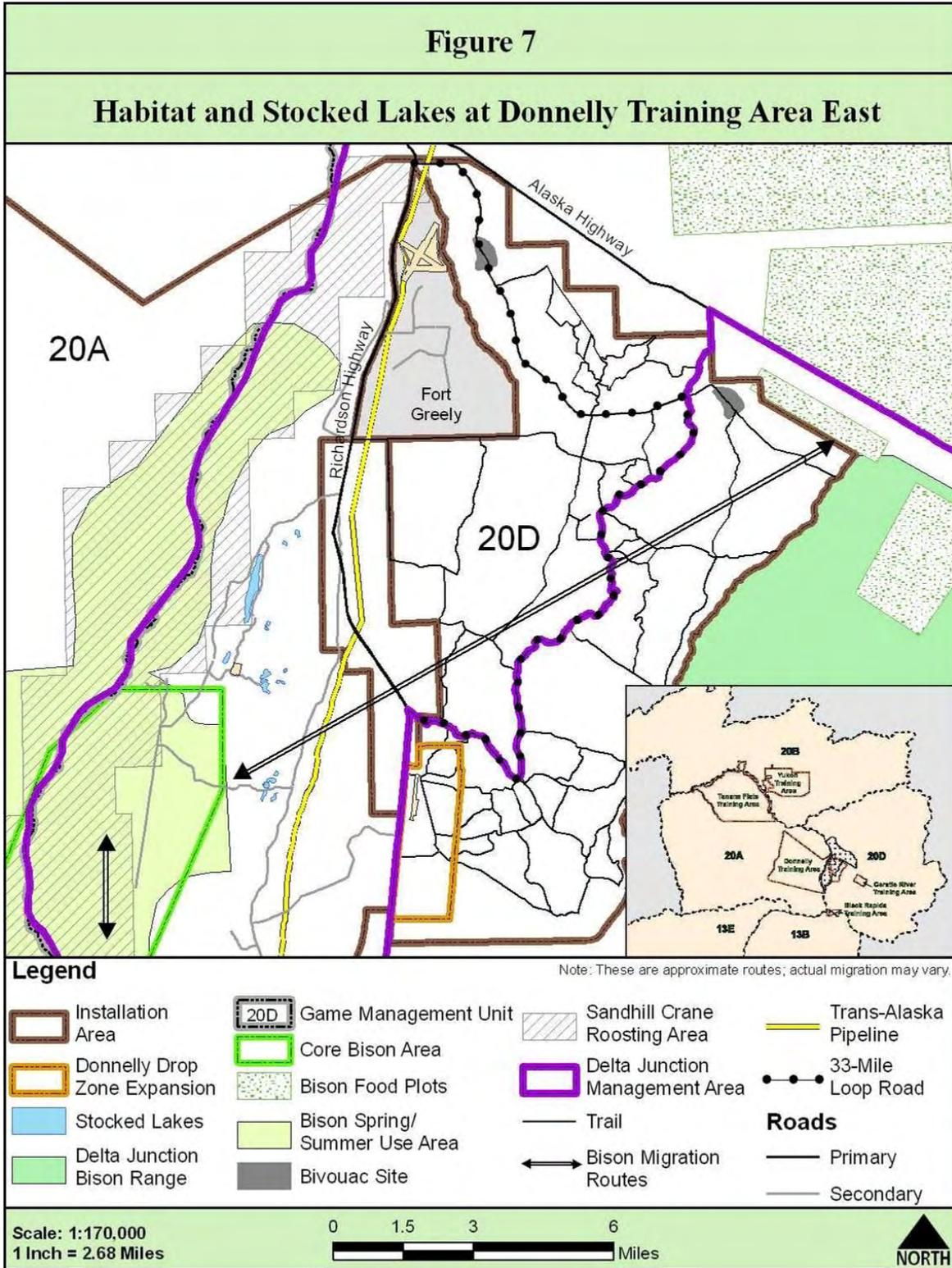
Wildlife and fisheries resources at DTA East, including priority wildlife species, are set forth in Section 3.2.6 of the BAX/CACTF EIS (2006) and are summarized within this section. Figure 7 provides an overall perspective of habitat characteristics and stocked lakes within DTA East. Wildlife and fisheries characteristics unique to each of the proposed project areas are discussed in Section 3.4.1.

During the initial agency scoping period (see Section 1.7), the USFWS determined that no threatened or endangered species occur in the area and there are no designated or proposed critical habitat units in interior Alaska and therefore, the proposed project would not adversely affect listed resources. Furthermore, preparation of a Biological Assessment or further consultation under the ESA is not required (Appendix A), although the American peregrine falcon and Arctic peregrine falcon (delisted within the past decade) are present (USARAK, 2006a). DTA East has two special interest management areas, the Delta bison area and the sandhill crane roosting area. Restrictions in these areas limit disturbance when bison and sandhill cranes are present (see Figure 7).

The USARAK Natural Resources staff has developed a system to rank priority species and quantify availability of high value habitat. Rankings for each mammal and bird species are based on the following factors: rarity, population trends, habitat specialization, spatial distribution, sensitivity to disturbance from military construction, training or land management practices, potential to respond to management and recovery efforts, and status as game animals. Table 3.4-1 lists priority species and rationale for priority species designation (USARAK, 2006a).

### Mammals

Large mammals on DTA East include black bear, grizzly bear, moose, caribou, and bison. DTA typically has three or four wolf packs, though the structure, distribution, and numbers of packs in a given area are highly variable. Other furbearers on the training area include lynx, beaver, river otter, pine marten, muskrat, mink, coyotes, red fox, wolverine, and two species of weasel. A small mammal survey was conducted at DTA and found eleven species of small mammals, with the masked shrew, tundra vole, meadow vole, and northern red-backed vole captured most frequently (USARAK, 2006a).



**Table 3.4-1. List of Priority Wildlife Species and Rationale for Selection**

Species	Rationale for Selection as a Priority Species	Percent of DTA East with Moderately and Highly Preferred Habitat
<b><i>Mammals</i></b>		
Bison	High-profile species; Delta Bison Area is managed as a special interest area; managed as a game species	45.2
Black Bear	Requires large space; susceptible to human disturbance; DTA has large tracts of habitat; managed as a game species; responsive to management and conservation efforts	53.7
Brown Bear	Requires large space; susceptible to human disturbance; DTA has large tracts of habitat; managed as a game species	76.4
Caribou	High profile species; DTA is managed as a special interest management area for caribou; susceptible to disturbance; managed as a game species	37.5
Gray Wolf	Requires large space; susceptible to human disturbance; DTA has large tracts of habitat; managed as a game species	81.4
Little Brown Bat	Relatively uncommon in Alaska; sensitive to disturbance; responsive to management and conservation efforts	20.0
Lynx	Relatively uncommon; DTA has large tracts of habitat; susceptible to disturbance; managed as a game species	54.2
Meadow Jumping Mouse	Relatively uncommon; habitat specialist; susceptible to disturbance	36.7
Moose	High profile species; managed as a game species	66.6
Wolverine	Relatively uncommon; DTA has large tracts of habitat; susceptible to disturbance; managed as a game species	91.2
<b><i>Birds</i></b>		
Boreal Owl	Relatively uncommon; requires large tracts of land; DTA has large tracts of habitat; susceptible to disturbance; responsive to management and conservation efforts	40.3

**Table 3.4-1. List of Priority Wildlife Species and Rationale for Selection**

Species	Rationale for Selection as a Priority Species	Percent of DTA East with Moderately and Highly Preferred Habitat
Great Gray Owl	Relatively uncommon; requires large tracts of land; DTA has large tracts of habitat; susceptible to disturbance; responsive to management and conservation efforts	40.5
Northern Goshawk	Relatively uncommon; requires large tracts of land; DTA has large tracts of habitat; sensitive to disturbance	51.4
Olive-sided Flycatcher	Relatively uncommon; requires large tracts of land; DTA has large tracts of habitat; susceptible to disturbance; responsive to management and conservation efforts; AKNHP Species of Concern	26.9
Rusty Blackbird	Widespread population declines throughout range; AKNHP Species of Concern	0.8
Sandhill Crane	Relatively uncommon; susceptible to disturbance; DTA includes special interest management areas	20.3
Sharp-tailed Grouse	Susceptible to disturbance; managed as a game species	28.1
Trumpeter Swan	Relatively uncommon; habitat specialists; DTA has large tracts of habitat; susceptible to disturbance	0.7

Avian Species

DTA East includes a wide variety of high quality bird habitat, with at least 123 avian species identified, including game birds, waterfowl, passerines, and raptors. Upland game species found on DTA include three species of both ptarmigan and grouse. The Delta Junction area, including DTA East and West, is a major flyway for spring and fall migrating birds. Twenty-eight species of ducks and geese use lands and waterways on the training area. Approximately 300,000 sandhill cranes, a large portion of the world's population, migrate through DTA from late April through mid-May (USARAK, 2006a).

Other birds at DTA include black-backed woodpecker, gray-cheeked thrush, varied thrush, bohemian waxwing, Townsend's warbler, blackpoll warbler, Smith's longspur, white-winged crossbill, and rusty blackbird. A variety of other more common birds found on DTA include three species of loon, two grebe, three gull, one tern, one kingfisher, and six woodpecker. All native birds in Alaska are protected under the MBTA (U.S.C. 703), except grouse and ptarmigan, which are protected by the State of Alaska. Golden eagles have been observed to nest on Donnelly Dome, located to the west of Richardson Highway from the proposed enhancements. In addition, adult golden eagles have been observed to hunt at the Donnelly Flats, located to the north of the project areas.

### Reptiles and Amphibians

Wood frogs are the only amphibians on DTA. No reptiles exist on DTA.

### Fisheries

DTA East is within the Delta Junction Management Area for fisheries. Sixteen lakes on DTA, ranging from 3 to 320 acres, are stocked by the Alaska Department of Fish and Game (ADFG). Naturally occurring populations of lake chub, northern pike, sculpin, and the northern longnose sucker are found in lakes at DTA.

Major streams on DTA are generally silt laden and do not support fisheries (see Section 3.5). Jarvis Creek and the Delta River are glacially fed and flow from the north side of the Alaska Range to the Tanana River. Downstream of DTA, the Tanana River provides year-round habitat for some species, overwintering habitat for others, and supports migratory species. The mouth of the Delta River is important to chum salmon. Grayling migrate through these glacial streams to clear tributaries to spawn, and a few clear streams provide summer habitat for grayling.

### **3.4.1 Affected Environment of Proposed Enhancement Projects**

The following describes wildlife and fisheries resources associated with each proposed enhancement project.

#### **Donnelly Drop Zone Expansion**

##### Mammals

Bison sometimes migrate through the northern portion of the Donnelly Drop Zone Expansion area in early spring and late summer on their way to and from the Delta River. This migration occurs prior to the calving season (which occurs between late April and early June) and it is highly unlikely that bison calve in the Donnelly Drop Zone. During late fall Bison typically migrate onto farms surrounding DTA East where they remain throughout the winter (ADFG, 2007). The Donnelly Drop Zone is within the overlapping range of the Macomb and Delta caribou herds. Caribou have only begun using this area within the last five to ten years and are commonly seen along Richardson Highway in the vicinity of Donnelly Dome and the Donnelly Drop Zone, though it is highly unlikely that calving occurs in the area. During the agency scoping period, ADFG commented that the area within the proposed Donnelly Drop Zone Expansion may provide winter habitat for regional moose and caribou. Availability of winter habitat is important to the survivability and health of these species during this time of year. Wolves, grizzly bears, wolverines, and coyotes are also present at the site.

##### Avian Species

The Donnelly Drop Zone is located in an area of high quality sharp-tailed grouse habitat. Sharp-tailed grouse are found in shrub habitats and regenerating burns in this area. Other species of concern have been documented, and include the bohemian waxwing, white-winged crossbill, and olive-sided flycatcher. This area is also within the territory of an irregularly active golden eagle nest. Breeding bird surveys in the area have documented dozens of other bird species, with white-crowned sparrows and fox sparrows being especially abundant.

### Amphibians

Wood frogs likely occur throughout scrub-shrub wetlands in the Donnelly Drop Zone. Though they have not been confirmed in this area, the habitat is suitable, and wood frogs are relatively common in similar habitat in other areas of DTA.

### Fisheries

Jarvis Creek is located directly to the east of the Donnelly Drop Zone and is an important migration route for grayling moving between summer habitat in mountain streams to the south and winter habitat lower in the drainage. In addition, Ober Creek, located directly adjacent to the proposed drop zone expansion area provides spawning grounds for grayling (see Figure 8, page 3-41).

### **DTA East Trail Network Upgrade**

A majority of the species discussed in Section 3.4 occur within the habitats that are directly adjacent to the existing trail network as the trails bisect virtually every habitat found within DTA East. In addition, bison migrate through DTA East during February and March, and by April, most of the herd is located along the Delta River floodplain, where they calve. This migration area overlaps with many of the existing maneuver trails and areas proposed for expansion at DTA East. Six existing trails also cross Jarvis Creek, which supports the grayling population, and three existing trails cross Ober Creek.

### **Hardened Bivouac**

#### *Buffalo*

The Buffalo Bivouac site (Alternative 1) is not located in any areas with important habitat.

#### *Mary and Sue Lakes*

The Mary and Sue Lakes Bivouac site (Alternative 2) partially overlaps with the bison calving migration area. There is a lake located adjacent to the western boundary of the proposed bivouac site, though it is unknown what fish species it may contain.

### **3.4.2 Environmental Consequences**

Overall impacts to wildlife and fisheries would be minor, with the primary impact occurring due to habitat loss and alteration. See Section 3.1 for impact assessment methodology. Impacts are further discussed by enhancement alternative below. Indirect impacts resulting from wildlife and fisheries disturbance to subsistence and to recreation are further discussed in Sections 3.8.2 and 3.9.2, respectively. BMPs to help reduce impacts to wildlife and habitat restoration and enhancement practices are discussed in Chapter 4.0 and the ITAM Five-Year Plan (USARAK, 2005c). This includes continued monitoring of military training effects on wildlife and fishery populations, minimizing disturbance to vegetation (habitats), facilitating in recovery of disturbed areas (i.e., seeding) and compliance with Federal and State wildlife and fisheries conservation and management regulations.

#### **3.4.2.1 No Action**

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use. The No Action Alternative would result in the continued current use of DTA East. As new construction of the proposed facilities would not occur, there would be no anticipated direct impacts to wildlife and fisheries. Soil

erosion resulting from continued trail use would occur; this activity could indirectly affect the water quality of adjacent waterways during rainfall and snowmelt, and in turn indirectly impact fisheries.

### **3.4.2.2 Donnelly Drop Zone Expansion**

#### **Proposed Action**

Clearing of vegetation to expand the Donnelly Drop Zone would result in minor adverse impacts to wildlife and fisheries. Creation of the Donnelly Drop Zone Expansion would result in a reduction of 650 forested acres and 1,200 acres of scrub-shrub habitat, converting these acreages into early successional vegetation (grasses and other low-lying vegetation) (see Section 3.3.2.2). Woody vegetation removal would change the habitat structure, to the detriment of some local wildlife species, but to the benefit of others (e.g., those that prefer edge habitat, open areas, or early successional vegetation communities). On-going maintenance disturbances (mowing/woody growth clearing) to maintain the Donnelly Drop Zone surface would keep vegetation in early successional stages, creating additional habitat for large mammals such as bison and moose that prefer this type of vegetation. The phased clearing approach and use of multiple clearing techniques would reduce the short-term indirect impacts to large mammal species such as caribou, bison and moose. The amount of available food sources, such as lichen, sedges and small shrubs consumed by these species would be preserved; greater preservation of existing low-lying vegetation (up to 90 percent) would be anticipated and the extent of temporary disruption would be spread out over a longer period of time (See Section 3.4.2.2). Both these factors would reduce the instantaneous impact of vegetation clearing and better maintain winter habitat and food sources for wildlife species.

Direct negative effects would only occur if bison and moose were present or if bison were attempting to migrate during large intensive training events. Clearing activities within the proposed Donnelly Drop Zone could create a temporary and localized disruption to bison migration if these activities are conducted during the spring migration (early February through mid-April) or fall migration (July 1 until bison are gone). Training activities would be modified if bison or moose were in the area; however, there is a small risk of injury to animals if remaining vegetation concealed their locations. The conversion of habitat within the drop zone is not anticipated to have any noticeable long-term consequences on these large mammal populations.

Other priority mammal species, such as black and grizzly bear, gray wolf, lynx, and wolverine, would lose some of their preferred habitat on DTA East. The ecosystem impacts to these management priority mammal species would be minor due to their large range areas and variety of habitats utilized by these species. The little brown bat could potentially be impacted through the loss of larger woody vegetation which can serve as roosting habitat (University of Michigan, 2007). This impact would be minimal as a majority of the expansion clearing area is scrub-shrub vegetation which would not provide appropriate roosting habitat. Preferred habitat for the meadow jumping mouse would likely increase as this species typically lives in moist grassland (University of Michigan, 2007). Creation and maintenance of early successional habitats could also be beneficial to species such as snowshoe hares and their predators, including lynx and coyote.

The bird species most likely to be affected is the sharp-tailed grouse, which prefers shrub habitats, open areas for breeding grounds, and regenerating areas previously burned by wildfire. Suitable habitat in this area is widespread. Grouse densities and the importance of the Donnelly Drop Zone area to grouse are unknown. Development and use of the Donnelly Drop Zone during grouse breeding periods could disrupt breeding and be detrimental to local populations. However, the Donnelly Drop Zone Expansion could also enhance portions of sharp-tailed grouse

habitat, creating early successional habitat, though of lesser quality than habitat currently available. Continued monitoring of these species would help determine any impacts to these species due to habitat conversion. Preferred habitat of the rusty blackbird could increase as this species tends to prefer scrubby habitats including wet meadows (Dick, 2007). Though this area is not designated as sandhill crane roosting area (Figure 7), their preferred habitat could be increased as these populations nest in open grasslands, such as wet meadows (see Section 3.3.2.2); however, these species typically prefer to be far from human habitation (University of Michigan, 2007).

Impacts to the white-winged crossbill, Townsend's warbler, and blackpoll warbler could occur because the preferred habitat of these species includes boreal forest types, which would be cleared for the Donnelly Drop Zone Expansion. Impacts would be minor as similar habitat is available in nearby areas.

Impacts to migratory bird species would be minimized through avoiding vegetation clearing to the greatest extent practicable during the USFWS Region 7 guidelines for interior Alaska (May 1 through 15 July). It is likely that the presence and operation of machinery within the area prior to these dates would reduce the likelihood of migratory bird species nesting within the area.

Wood frogs could be impacted through disruption of habitat during construction or training events.

The potential for increased turbidity and sediment loads during and after vegetation removal and due to wetland disruption (see Section 3.3.2.3) could affect fish species such as grayling and sculpin which have been observed in small unnamed perennial streams to the north and east of the proposed drop zone expansion area (see Section 3.5.1). In addition, Ober Creek located adjacent to the southeast corner of the proposed drop zone expansion area provides spawning grounds for grayling. No direct impacts would occur to these fisheries. Indirect impacts to these fisheries could include a loss of eggs if siltation occurs after these species lay their eggs. These impacts would be reduced as this alternative involves clearing methods based upon vegetation density and soil type, allowing for more rapid revegetation and stabilization of soils and a phased approach, reducing the amount of exposed soils at a given time. In addition, USAG Alaska would maintain a 50-foot buffer on either side of mapped intermittent and ephemeral streams within the proposed drop zone expansion area and would maintain a 100-foot buffer along Ober Creek to avoid siltation. The Proposed Action would not adversely affect essential fish habitat.

Noise from construction and training activities may disturb animals or displace them to less favorable habitat; however, wildlife responses to noise may be species-specific, and could result in either avoidance or habituation. Avoidance could cause species to under-use high quality habitat near disturbance areas, resulting in decreased fecundity and survival (USARAK, 2006a).

### **3.4.2.3 DTA East Trail Network Upgrade**

#### **Proposed Action**

The DTA East Trail Network Upgrade would result in minor habitat loss. Approximately 4,190 acres of vegetation would be cleared (see Section 3.3.2.3) to accommodate the proposed 92-foot wide trail width, resulting in loss of habitat. Portions of the 25-foot trail shoulders would be graded and stabilized with native grassy vegetation, allowing for up to 54 percent (2,260 acres) to revert back to grassy vegetation. Periodic maintenance of the trail shoulders would reduce overall quality of any habitat that re-established in these areas. Overall loss of vegetative habitat at DTA East would be up to 2 percent. As the existing trails transverse through virtually every habitat type within DTA East, the likelihood exists that the proposed trail upgrades would impact preferred habitat of priority wildlife species listed in Table 3.4-1. These impacts would be minor

as they would occur adjacent to existing trails, and would therefore, not increase the amount of edge habitat and would not likely cause a reduction in a specific preferred habitat of any particular species. In addition, preferred habitat of the rusty blackbird could increase as this species tends to prefer scrubby and disturbed habitats including roadsides (Dick, 2007). The proposed trail upgrades would not increase overall military use of the DTA East trail network beyond the projected levels defined in previous NEPA documentation (see Section 1.6); therefore, no noticeable increase of military trail use beyond those activities reviewed in previous NEPA documentation would be anticipated.

Upgrades to trails that cross over streams would temporarily impact fisheries habitat. Grayling and sculpin have been recorded within DTA East streams affected by the proposed trail upgrades such as Ober Creek. Instream construction (streambed stabilization) would cause localized disruption to streambed habitat and would create a temporary increase in turbidity (also see Section 3.5.2.3); these impacts would be minor as silts and other sediments are common in streams throughout DTA East. Increased sedimentation in streams typically carrying lower amounts of sediments such as Ober Creek would experience a temporary increase in sediments during construction. Localized impacts could occur to eggs of aquatic species in these stream reaches if construction occurs after these species lay their eggs and would be minor compared to the overall watershed. Impacts to streams requiring a fish habitat permit through ADNR would be further reduced through required permit mitigation measures. Indirect impacts to Clearwater Creek and its fisheries such as sedimentation carried by channelized surface water flows during flooding events along proposed north-south aligned trail upgrades (see Section 3.5.2.3) would be minimized through the use of BMPs and mitigation measures (see Chapter 4.0)

Upgrades to existing permanent stream crossings would increase the linear amount of bridged and culverted streams. As these impacts would occur adjacent to existing culverted areas, impacts to fisheries habitat would be minor. The proposed all-season crossings of Jarvis Creek would create some degree of shading, and if determined necessary, permanent placement of abutments or supporting structures would cause permanent and localized impacts to stream habitat. These impacts would be minor and would be offset by removal of vehicles maneuvering the stream channel.

Impacts to fisheries could also occur to Jarvis Creek if gravel were excavated from Jarvis Creek. Impacts to fisheries and habitat within Jarvis Creek would be minimized as gravel would be mined from outside of the active channel (i.e. in dry areas) and would occur at least 150 feet from vegetated banks to avoid channel destabilization. These requirements would minimize direct impacts to these resources and would reduce indirect impacts such as the siltation by reducing the potential for creek bank erosion. In addition, ADNR and the USACE, would require a permit for this type of activity which includes guidelines for protecting water quality and fish habitat. No impacts would occur to essential fish habitat.

Gravel extraction from Jarvis Creek would occur within an area that grayling migrate through on their way to clear tributaries for spawning. This excavation would be conducted under a permit from the ADNR Office of Habitat Management and Permitting, which would ensure the continuation of fish passage and fish habitat. Therefore, no impacts to fish or fish habitat are anticipated from gravel extraction.

#### **3.4.2.4 Hardened Bivouac**

##### **Alternative 1 – Buffalo Bivouac**

Establishment of the Buffalo Bivouac alternative would result in minor loss of vegetation and habitat. Under this alternative, approximately 80 acres of vegetation (see Section 3.3.2.4) would

be cleared to accommodate the proposed gravel bivouac pads, storage facility, access spurs, and perimeter trail within the 172-acre bivouac design footprint. This would predominantly result in the removal and fragmentation of broadleaf forests and scrub-shrub habitats. In addition, the Buffalo Bivouac site does not contain important habitat for species at DTA East and is currently used as a non-hardened bivouac site; therefore, impacts to wildlife would be minor. As no surface waters exist within the proposed Buffalo Bivouac site, there would be no anticipated impacts to fisheries.

As discussed in Section 3.3.2.4, up to 10 additional acres of vegetation could be disturbed due to gravel extraction for the proposed bivouac pads, resulting in an additional minor adverse impact to habitat.

### **Alternative 2 – Mary and Sue Lakes**

Establishment of the Mary and Sue Lakes Bivouac alternative would result in similar minor impacts as those discussed in Section 3.4.2.4. Under this alternative, approximately 80 acres of vegetation (see Section 3.3.2.4) would be cleared to accommodate the proposed gravel bivouac pads, storage facility, access spurs and perimeter trail within the 172-acre bivouac design footprint. This would predominantly result in the removal and fragmentation of scrub-shrub habitats. As discussed in Section 3.3.2.4, up to 10 additional acres of vegetation could be disturbed due to gravel extraction for the proposed bivouac pads, resulting in an additional minor impact to habitat. The relatively small loss of habitat would pose a negligible effect on preferred habitat for priority species at DTA East, and therefore, impacts would be minor.

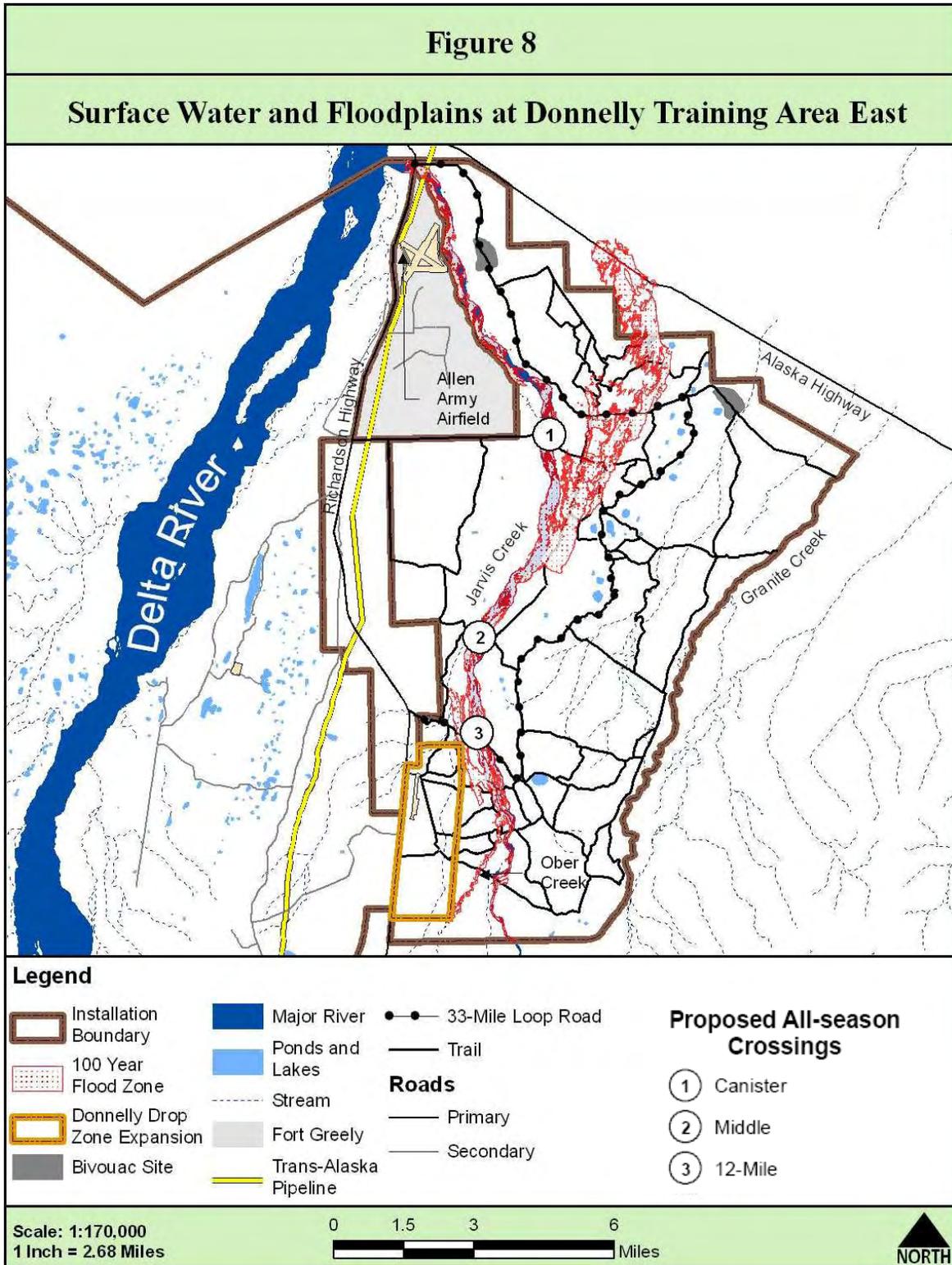
While the bison calving migration passes through most of the bivouac area, this only comprises a small area of the migration and would not likely impact bison. The lake located adjacent to the western boundary of the bivouac site is not a stocked lake and would not likely experience impacts from construction of the hardened bivouac pads; a riparian buffer at least 75 feet wide would be maintained along its edge. No impacts would occur to essential fish habitat.

## **3.5 SURFACE WATER AND FLOODPLAINS**

Surface water resources, including drainage basin flooding characteristics in DTA East are set forth in Section 3.2.2 of the BAX/CACTF EIS (2006) and are summarized within this introduction. Surface water and floodplain characteristics unique to each of the proposed project areas are discussed in Section 3.5.1.

### Surface Water

DTA's surface waters are diverse, including numerous rivers, streams, ponds, and lakes. Most surface water within DTA East either drains directly into the Delta River, located to the west of DTA East, or into its major tributary, Jarvis Creek, which bisects DTA East and runs South to North (Figure 8). Jarvis Creek drains into the Delta River at the northern boundary of DTA. On the eastern boundary of DTA, these larger streams are perennial (having year-round flow) and are glacial-fed. From October to May, flows are typically limited to groundwater seepage from aquifers into streams, and many small streams freeze solid (zero discharge). Snowmelt typically begins in May and reaches its peak in June, followed by the peak melting of glaciers in July. After July, most of the snow has melted at higher elevations, and rainfall sustains a steady flow during August and September (USARAK, 2006a). Ober Creek is another perennial stream within DTA East and drains the southeastern portion of DTA East for approximately 3 miles where it empties into Jarvis Creek. Both Jarvis Creek and Ober Creek are located within the Delta River watershed.



Granite Creek is an intermittent stream (seasonally flowing) and drains northeast. As indicated on Figure 8, several unnamed intermittent streams exist elsewhere within DTA East between Granite and Jarvis creeks. These streams commonly lose all their flow once they reach outwash plain strata (Salcha-Big Delta Soil and Water Conservation District, et al, 1995; also see Section 3.2.1) and typically do not have well-defined channels. During extreme runoff events, flowing water has been observed where these streams cross the Alaska Highway; however, under normal conditions, the upper and lower reaches of these streams do not appear to be hydraulically connected to the surface (Salcha-Big Delta Soil and Water Conservation District, et al, 1995). According to aerial photography (Google, 2007), portions of these streams shown on Figure 8 are not continuous features and disappear underground. Although these streams are not directly connected to Clearwater River, they are located within the Clearwater River watershed.

Due to the glacial-fed sources of Jarvis Creek, its waters typically carry clay and silt-sized material (rock silt) derived from their glacial endpoints. High stream flows tend to have lower concentrations of dissolved solids. Sediment load concentrations also change rapidly with changes in stream discharge. Thus, more than 99 percent of the annual sediment load is transported during the summer, and it is evenly distributed during this time period (USARAK, 2006a). Ober Creek and the intermittent streams (when flowing) typically carry lower amounts of sediment. Dissolved solids within these waters ultimately empty into the Delta River which also carries higher concentrations of dissolved solids due to glacially-fed water sources.

In comparison, the Clearwater River originates from springs surfacing in the Clearwater Bog located near the Tanana River (NRCS, 2008). Historically, the Clearwater River had very low sources of sediments; however, development within the watershed has changed drainage patterns from subsurface and sheet flow to channelized flows. These channelized flows have also created erosion problems (NRCS, 2008). The development of north-south roads within the watershed can act as pathways of concentrated surface water flows, acting as floodwater channels which deposit sediments into the Clearwater River during flooding events (NRCS, 2008). In response to Coho salmon and Arctic Graying fisheries concerns from sedimentation in the Clearwater River, the NRCS initiated the Delta Clearwater Watershed Project. The purpose of the project are to reduce flooding and erosion threats on the Clearwater River system, protect important fishery habitat from sediment deposition, and to reduce flood damage to cropland, the Alaska Highway, local roads and general recreation areas.

Surface water quality values on DTA meet the primary standards set by the Alaska Drinking Water Standards (18 AAC 80). However, aluminum, iron, and manganese concentrations were higher than the state's secondary standards. DTA water contains calcium carbonate and is slightly basic. The pH measurements from DTA ranged from 7.9 to 8.4, within the limits established by the state's standards (6.5-8.5) (USARAK 2006a).

### Floodplains

Floodplain studies within DTA East have shown areas of 100-year floodplain located along both Jarvis and Ober Creeks. The most recent 100-year floodplain evaluation within DTA East was conducted by the U.S. Army Engineer Research and Development Center Cold Regions Research and Engineering Laboratory (ERDC-CRREL). ERDC-CRREL's 2006 report, *Jarvis Creek Floodplain Delineation within the DTA Interim Report to the U.S. Army Alaska*, as well as previous studies within DTA East have shown that aufeis<sup>5</sup> is the primary cause of flooding along

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<sup>5</sup> Aufeis is an ice sheet that forms on the creek bed and adjacent floodplain areas over the winter as normal channels freeze solid or are otherwise dammed so that flowing water and groundwater forced to the surface spreads out in a shallow layer over the surface and freezes forming thick ice accumulations within the active floodplain.

Jarvis Creek with some additional flooding extending near the mouth and upstream of Ober Creek (ERDC, 2006). See Figure 8 for 100-year floodplain (flood zone) mapping resulting from this study. As shown on this figure, large areas of Jarvis Creek's 100-year floodplain can extend beyond the typical path of flow due to augeis conditions.

### **3.5.1 Affected Environment of Proposed Enhancement Projects**

The following describes surface water and floodplain characteristics associated with each proposed project area (see Figure 8).

#### **Donnelly Drop Zone Expansion**

USAG Alaska finalized a wetland delineation of the Donnelly Drop Zone expansion area in November of 2007. The wetland delineation also included the identification of surface water features. The wetland delineation was approved by the USACE and confirmed no lakes or ponds exist within the Donnelly Drop Zone or expansion area. In addition, the delineation confirmed the stream feature displayed on Figure 8 within the proposed Donnelly Drop Zone expansion area does not exist. Other less well-defined and unmapped ephemeral and intermittent streams were discovered within the proposed Donnelly Drop Zone Expansion during the wetland delineation work. These streams flow with clear water, primarily during spring break-up and summer rain events (USAG Alaska, 2007). During the section 404 permitting process, it was decided that these have to be mapped and buffered. Mapping using GPS is on-going during times when water is present, and must be approved by the USACE.

As shown on Figure 8, both Jarvis and Ober creeks and their 100-year floodplains are located outside of the proposed Donnelly Drop Zone expansion area.

#### **DTA East Trail Network Upgrade**

Figure 8 depicts Jarvis and Ober creeks in proximity to the proposed trail network upgrade. No trails run directly along the banks of Jarvis Creek; however, six trails run perpendicular, where low water crossings<sup>6</sup> occur. The southern two low water crossings of Jarvis Creek and its 100-year floodplain average approximately one-tenth of a mile from floodplain edge to floodplain edge. The remaining four crossings of Jarvis Creek and its 100-year floodplain located downstream (to the north) of Jarvis's Creek confluence with Ober Creek average approximately 0.5 miles from edge of floodplain to edge of floodplain.

Three existing trails also cross Ober Creek. These crossings of Ober Creek and its 100-year floodplain vary between 0.1 and 0.2 of a mile from floodplain edge to floodplain edge. The other named surface water feature is Granite Creek which runs along the eastern boundary of DTA East. This intermittent creek flows to the northeast and typically loses its water to the outwash plain prior to leaving the DTA. Only during extreme runoff events does water flow into Rhodes Creek or the Delta-Clearwater River or Bog area, which eventually feed into the Tanana. None of the proposed trail upgrades involve crossings of Granite Creek.

According to aerial imagery (Google, 2007) the existing trail network also has up to seven intermittent stream crossings. These crossings would require jurisdictional review to determine whether or not they are regulated under Section 404 of the Clean Water Act (CWA).

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<sup>6</sup> A low-water crossing is where a road, without a bridge, dips across a normally dry creek bed or drainage area.

## **Hardened Bivouac**

### *Buffalo*

Figure 8 illustrates the surface waters potentially affected by the proposed hardened bivouac sites. No surface waters, perennial streams, or floodplains occur within the area for the proposed Buffalo Bivouac location. Jarvis Creek is located approximately 0.5 miles to the west of the proposed Buffalo Bivouac site.

### *Mary and Sue Lakes*

A small lake (Sue Lake) is located within approximately 200 feet of the west, southwest portion of Mary and Sue Lakes Bivouac site (Figure 4b and Figure 8). This lake is located within a glacial depression and is approximately 14 acres in size. These glacial depression lakes tend to collect water flowing from surrounding slopes (2005 Wetland Assessment). In addition, this bivouac site is not located within any mapped floodplains.

## **3.5.2 Environmental Consequences**

Overall impacts to surface water and floodplains would be minor to moderate with the direct adverse impact occurring due to trail hardening activities and establishment of an all-season crossing of Jarvis Creek. See Section 3.1 for impact assessment methodology. Impacts are further discussed by the No Action and proposed enhancement alternatives below. Indirect impacts of surface water quality degradation to fisheries, subsistence and recreation are further discussed in Sections 3.4.2, 3.8.2, and 3.9.2, respectively. Implementation of BMPs and design aspects to help reduce surface water impact are discussed in Chapter 4.0 and the ITAM Five-Year Plan (USARAK, 2005c). This includes monitoring construction sites for drainage or erosion issues, use of environmentally sound designs to prevent impediment of surface water flows and erosion, and reseeding/planting of disturbed areas with native or other appropriate vegetation.

### **3.5.2.1 No Action**

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use. The No Action Alternative would result in the continued current use of DTA East. As new construction of the proposed facilities would not occur, there would be no anticipated direct impacts to surface waters. Soil erosion resulting from continued trail use would occur; this activity could indirectly affect the water quality of adjacent waterways during rainfall and snow melt. Vehicles would continue to cross Jarvis Creek using low water crossings.

### **3.5.2.2 Donnelly Drop Zone Expansion**

#### **Proposed Action**

Impacts to streams within the Donnelly Drop Zone Expansion would be minor. A 50-foot vegetated buffer would be maintained along either side of all mapped ephemeral and intermittent stream channels within the Donnelly Drop Zone expansion area. In addition, a 100-foot vegetated buffer would be maintained along Ober Creek. These vegetated buffers would reduce impacts of sedimentation into watercourses during construction when the potential for erosion would be increased (also see Section 3.2.2.2). No permanent and direct impacts would be anticipated as construction equipment would be restricted from the streambeds and no filling of these channels would be performed. Indirect impacts could occur from the possibility for erosion and sedimentation entering nearby streams during construction (see Section 3.2.2.2 and 3.5.2.2) and before vegetation becomes re-established (see Section 3.3.2.2). Potential impacts to Jarvis

Creek, the major receiving watercourse would be experience minor adverse impacts as silts and sediments are currently common within its glacially-fed water. Clear (low-sediment) tributary streams do occur within the areas and could be impacted. An unnamed creek forms in an area east of the proposed expansion area and north of the mid-line of the proposed expansion which appears to be formed by a shallow water table fed by intermittent channels. This complex could be directly impacted by erosion/sedimentation. BMPs would be utilized to control sedimentation (see Chapter 4.0). All ground disturbance and stockpiling of vegetation would be done within the area of proposed expansion, and outside of the 100-year floodplains of Jarvis and Ober creeks. This alternative would help maintain soil organics and would be performed in phases which would in turn allow for vegetation to more rapidly re-establish itself over smaller areas of disturbed soils (see Section 3.2.2.2 and Section 3.3.2.2); therefore, minimizing any indirect impacts of soil erosion and deposition into adjacent waterways.

### 3.5.2.3 DTA East Trail Network Upgrade

#### Proposed Action

Impacts to surface water and floodplain resources within DTA East would be minor as stream disturbances would occur directly adjacent to existing disturbed areas. The linear feet of stream and floodplain potentially affected by the three proposed all-season crossings and additional stream crossings are presented in Table 3.5-1. The extent of impact to these features would be determined under the CWA Section 404 permitting process prior to trail expansion. USARAK would comply with all mitigation required as a condition for receiving CWA 404 permits.

**Table 3.5-1. DTA East Trail Network Upgrade Potential Stream Impacts**

Location	Linear feet of stream	Linear feet of floodplain (including stream)
Canister Crossing	1,100	1,385
Middle Crossing	1,219	1,614
12-Mile Crossing	645	836
Jarvis Other <sup>1</sup>	1,580	1,858
Ober Creek	109	130
Riverine Other <sup>2</sup>	40	0

<sup>1</sup>Includes the three crossings of Jarvis Creek not being considered for an all-season crossing.

<sup>2</sup>Includes the 7 identified crossings of other unnamed streams identified through aerial photography.

A Finding of No Practicable Alternative (FNPA) was prepared to address unavoidable impacts to the 100-year floodplain of Jarvis and Ober creeks. The FNPA determined that no practicable alternative exists to avoid 100-year floodplain impacts due to the alignment of the existing trail network (See Appendix C). The Army will take all practicable measures to minimize potential harm to or within the 100-year floodplain. Proper site design and permitting requirements would address impairment of drainage along the trail network and floodplain impacts. The placement of fill material (gravel) for trail stabilization and upgrades within the 100-year floodplain of Jarvis and Ober creeks would be minor as the volume of fill would represent a small percentage of the overall 100-year floodplain capacity, and would therefore, not cause detectable changes to flood elevations or flood course. The loss of vegetation and wetlands (see Section 3.3.2.3 and Section 3.6.2.3) and increased impervious surface (gravel trailbeds) would increase runoff potential and runoff intensity; however, additional features to facilitate and control drainage and runoff (e.g., culverts and roadside ditches) would be incorporated during trail upgrade design and layout to minimize these impacts. BMPs would also be used to reduce sedimentation into adjacent streams. The cumulative effect of the proposed development would not create an obstruction to

the floodplain, increase the water surface elevation of the base flood, or increase the flood heights or velocities associated with either creek.

The all-season crossings proposed for Jarvis Creek would be predominantly located outside of the active channel and above the 100-year floodplain. Hydrologic studies and a stream flow analysis would be conducted prior to the selection of a structure to reduce or avoid above-stream and downstream channel impacts; however, these studies and available crossing options may determine the need for permanent abutments along the banks or permanent supporting structures placed within the stream channel. As military vehicles would no longer utilize the low water crossings where all-season crossings are established, overall beneficial impacts would occur to surface waters by eliminating vehicles entering the streams in these locations, and by reducing streambank erosion through eliminating the need for vehicles to traverse up and down the bankslopes for crossings.

Localized direct impacts would occur to Ober Creek's streambed and streambanks in locations where trail crossings are expanded or upgraded. Intermittent streams would also be impacted from road widening activities and could result in additional linear feet of culverted stream. Overall impacts would be minor as these activities would occur adjacent to existing disturbed areas of streams from trail use and BMPs (see Section 4.4) would be implemented to reduce water quality and stream morphology impacts during and after construction. In addition, a vegetative buffer, at least 75 feet wide, would be maintained along surface waters in circumstances where the trail upgrades run parallel to surface water resources to further protect water quality. Beneficial impacts would include the reduction of streambank erosion from hardening and stabilizing the stream approaches within the improved trails. Indirect impacts to fisheries are discussed in Section 3.4.2.3.

Impacts to surface water could also occur to Jarvis Creek if gravel were excavated from Jarvis Creek. Impacts to Jarvis Creek water quality and streambed at the active channel would be avoided or minimized as gravel would be mined from outside of the active channel (i.e. in dry areas) and would occur at least 150 feet from vegetated banks to avoid channel destabilization. These requirements would minimize the potential for indirect impacts such as creek bank erosion and sedimentation. Vegetated bars would also be left undisturbed. In addition, ADNR and the USACE would require a permit for this type of activity which includes guidelines for protecting water quality and fish habitat. No impacts would occur to the 100-year floodplain as this activity would not result in an increase in flood elevations, nor would it change the flood course of Jarvis Creek.

The proposed trail upgrades have the potential to exacerbate sediment concerns within the Clearwater River (also see Section 3.2.2.3). Although the Clearwater River is located outside of the study area and to the north of DTA East, the eastern portion of DTA East is located within the Clearwater River watershed. The north-south trail upgrades proposed to the east of Jarvis Creek, within the Clearwater River watershed, have the potential for transporting sediments within these north-south corridors during extreme flooding events, potentially reaching the Clearwater River located to the north. As development within the region has resulted in increased sedimentation to Clearwater River, no direct impact would result to Clearwater River as a result of the Proposed Action, and therefore, these impacts are further discussed in Chapter 5, Cumulative Effects Analysis. Mitigation and BMPs would help reduce the level of impact to both resources within DTA East and outside DTA boundaries (i.e. Clearwater River) by controlling the amount of concentrated surface water flow and sedimentation both during and after construction activities (see Chapter 4.0).

### **3.5.2.4 Hardened Bivouac**

#### **Alternative 1 –Buffalo Bivouac**

No perennial surface waters or floodplain resources exist within the proposed Buffalo Bivouac site; therefore, no direct or indirect impacts to these resources would be anticipated. The slight increase of impervious surface would be spread out over the establishment of 25 2.8-acre hardened pads. This increase of impervious surface and distance to surface water resources would make surface water runoff impacts unlikely. In addition, SPPCP measures would be employed to prevent spills and effectively address cleanup strategies before potential spill contaminants from Soldier equipment could reach water resources.

#### **Alternative 2 – Mary and Sue Lakes**

No perennial surface waters or floodplain resources exist within the proposed Mary and Sue Lakes Bivouac site; therefore, no direct impacts to these resources would be anticipated. The slight increase of impervious surface would be spread out over the establishment of 25 2.8-acre hardened pads. The lake located directly adjacent to the western boundary of the proposed bivouac site could experience indirect impacts to water quality as the proposed bivouac site would be within the drainage basin of the lake. A vegetative buffer, at least 75 feet wide would also be maintained alongside the lake to further protect water quality. In addition, the low runoff potential of soils within the area suggest that the hydrology of the lake is not dependent upon surface water runoff from the adjacent lands; therefore development of the bivouac site and localized changes in surface water hydrology patterns would not be anticipated to significantly affect the source of hydrology for the lake (USDA, 2005). SPPCP measures would be employed to prevent spills and effectively address cleanup strategies before potential spill contaminants from Soldier equipment could reach water resources.

## **3.6 WETLANDS**

Wetland resources, including wetland type, trafficability, and management at DTA East are set forth in Section 3.3.3 of the BAX/CACTF EIS (2006) and are summarized within in this section. Wetland characteristics unique to each of the proposed project areas are discussed in Section 3.6.1.

Wetlands within DTA have been mapped under the National Wetlands Inventory (NWI) program by the USFWS in 1988. This study used aerial photos and maps to predict and classify wetland areas based on vegetation, visible hydrology, and topography. In 1997 and 1998, R. Lichvar completed a field survey to more precisely describe wetland ecotypes at DTA using the NWI survey and an ecological land survey (USARAK, 2006b). In addition, a wetland delineation was finalized in November of 2007 within the area of the proposed Donnelly Drop Zone Expansion (USAG Alaska, 2007a). The USACE has approved this delineation and corresponding acreages are used within this EA document in reference to the Donnelly Drop Zone and expansion footprint.

Wetland types occurring within DTA East include palustrine, riverine, and lacustrine. Palustrine shrub wetlands are the most common types of wetlands found on DTA (Table 3.6-1).

**Table 3.6-1. NWI Wetland Communities at DTA East Proposed Enhancement Sites**

Type of Wetland	Approximate Acres/ Percent of Wetland Type	
<b><i>Donnelly Drop Zone</i></b>		
PUB <sup>1</sup>	0/0	
PEM <sup>2</sup>	<1/<1	
PSS <sup>3</sup>	369/99	
PFO <sup>4</sup>	0/0	
L2AB3H <sup>5</sup>	0/0	
R5UBH <sup>6</sup>	0/0	
R5USC <sup>7</sup>	0/0	
Total Wetlands	18 percent of Drop Zone Expansion Area	
<b><i>Trail Network Upgrade</i></b>		
PUB	1/<1	
PEM	8/1	
PSS	777/79	
PFO	165/7	
L2AB3H	<1/<1	
R5UBH	18/2	
R5USC	15/2	
Total Wetlands	21 percent of Trail Upgrade Area	
<b><i>Bivouac Site</i></b>	<b>Buffalo</b>	<b>Mary and Sue Lakes</b>
PUB	0/0	0/0
PEM	0/0	0/0
PSS	0/0	0/0
PFO	0/0	0/0
L2AB3H	0/0	0/0
R5UBH	0/0	0/0
R5USC	0/0	0/0
Total Wetlands	0	0

Source: USFWS (2007)/USAG Alaska 2007.

<sup>1</sup>Palustrine, unconsolidated bottom.

<sup>2</sup>Palustrine, emergent.

<sup>3</sup>Palustrine, scrub-shrub.

<sup>4</sup>Palustrine, forested.

<sup>5</sup>Lacustrine, littoral, aquatic bed, rooted vascular, permanently flooded.

<sup>6</sup>Riverine, unknown perennial, unconsolidated bottom, permanently flooded.

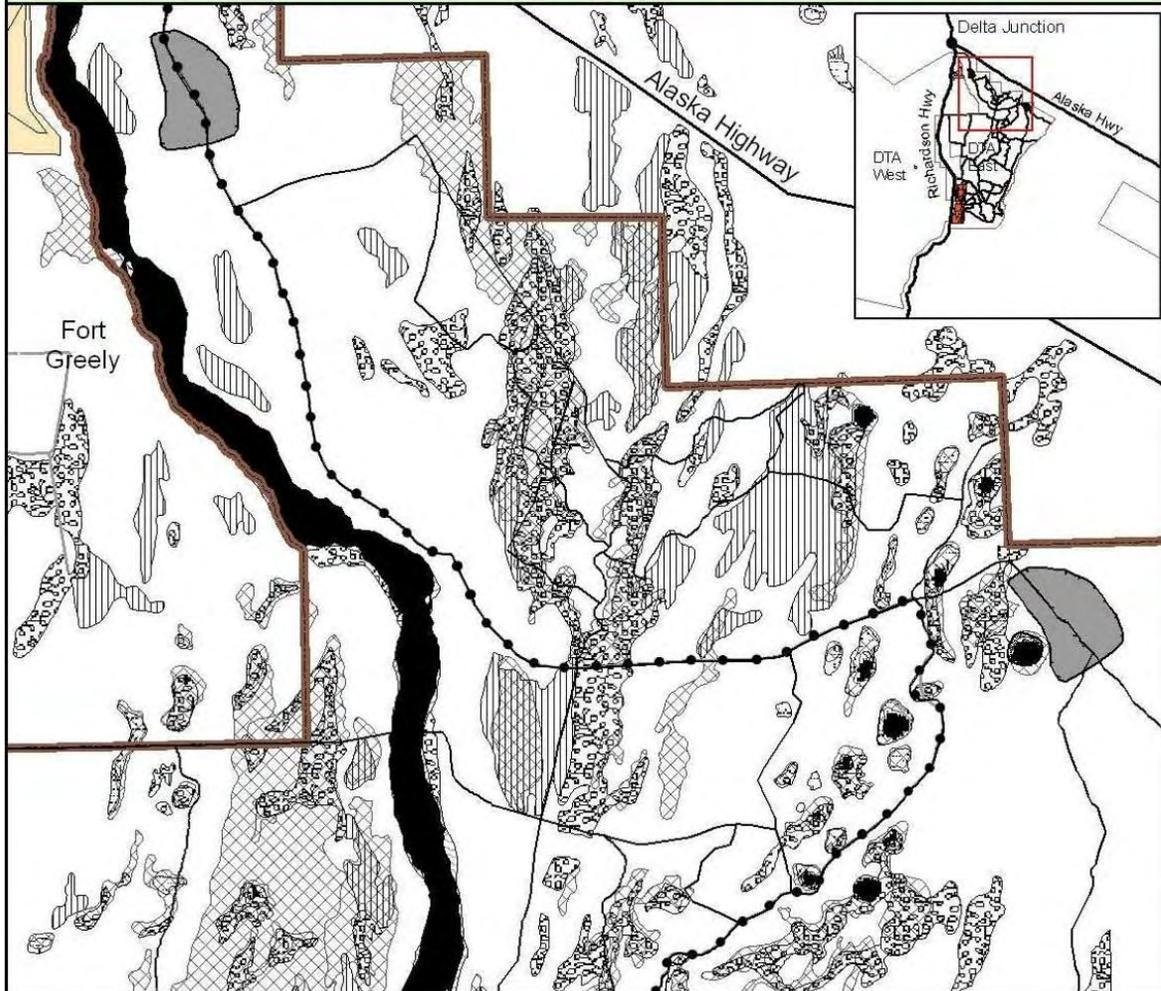
<sup>7</sup>Riverine, unknown perennial, unconsolidated shore, seasonally flooded.

Figures 9a through 9d show the extent of DTA East wetlands within the proximity of the proposed project areas. The wetlands within the figures are based upon NWI mapping and the prevalence of NRCS mapped hydric soils<sup>7</sup> (units containing 50 percent or greater hydric units). Figure 9d also contains findings from the approved November 2007 wetland delineation within the proposed Donnelly Drop Zone Expansion.

<sup>7</sup> Hydric soils are those soils formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils often indicate the presence of wetlands.

Figure 9a

Wetlands at Donnelly Training Area East (Figure 1 of 4)



Legend

- |                        |                   |        |       |
|------------------------|-------------------|--------|-------|
| Installation Boundary  | Bivouac Site      | L1UBH  | PFO   |
| Ponds Lakes and Rivers | 33-Mile Loop Road | L2AB3H | PSS   |
| Hydric Soils           | Trail             | L2USC  | PUBH  |
|                        |                   | PAB    | R5UBH |
|                        |                   | PEM    | R5USC |

Scale: 1:60,000  
 1 Inch = .92 Miles



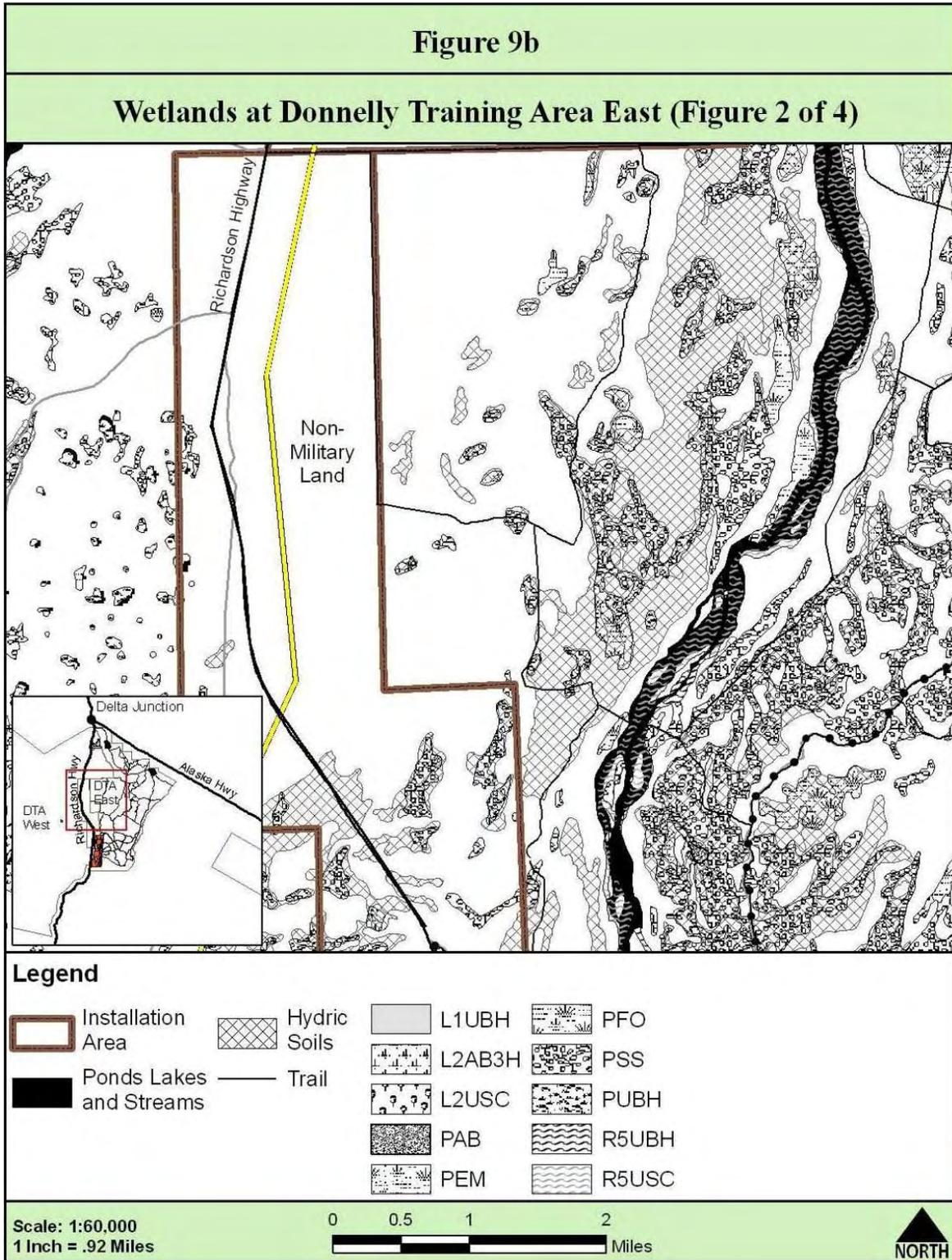
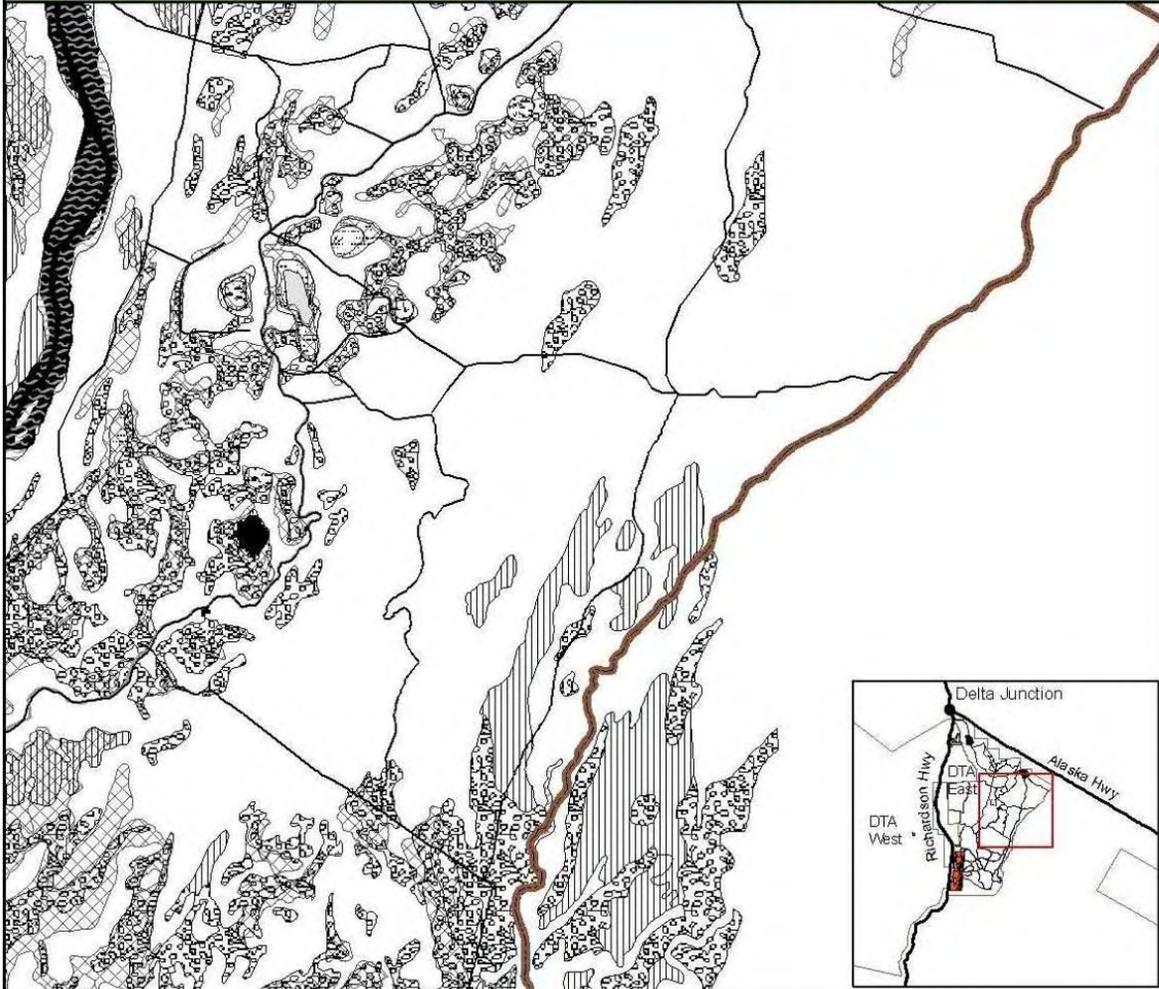


Figure 9c

Wetlands at Donnelly Training Area East (Figure 3 of 4)



Legend

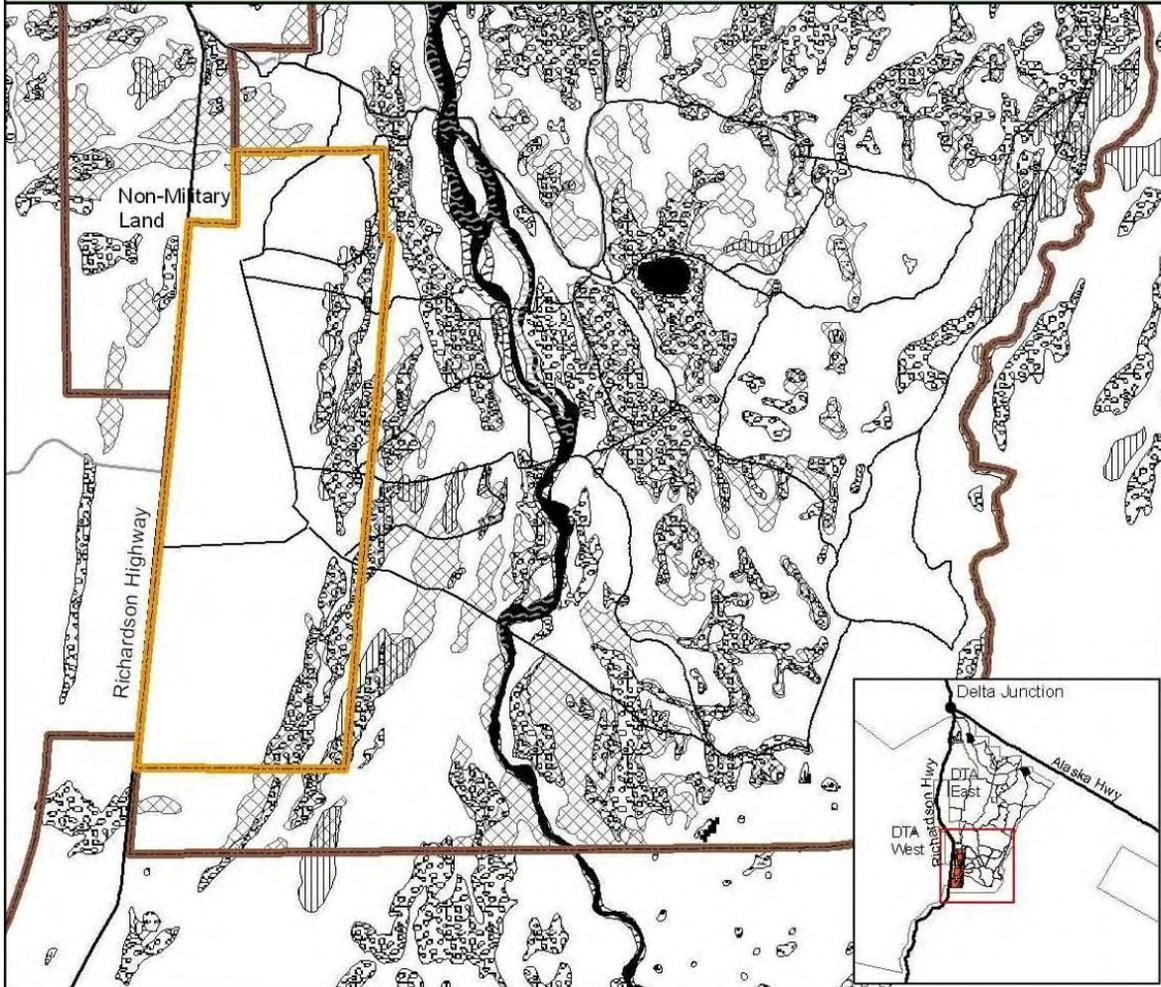
Installation Area	Hydric Soils	L1UBH	PFO
Ponds Lakes and Streams	Trail	L2AB3H	PSS
		L2USC	PUBH
		PAB	R5UBH
		PEM	R5USC

Scale: 1:60,000  
 1 Inch = .92 Miles



Figure 9d

Wetlands at Donnelly Training Area East (Figure 4 of 4)



Legend

Installation Boundary	Hydric Soils	L1UBH	PFO
Donnelly Drop Zone Expansion	Trail	L2AB3H	PSS
Ponds Lakes and Streams		L2USC	PUBH
		PAB	R5UBH
		PEM	R5USC

Scale: 1:60,000  
 1 Inch = .92 Miles



To assist in the broad management of wetland resources on Army training lands, USAG Alaska classifies wetlands as either “higher function” or “other”. These distinctions are not mandated by Federal or State policies. USAG Alaska classifications are determined using simplified hydrogeomorphic (HGM) classifications and examination of four core functions performed by HGM wetlands (USAG Alaska and USACE, 2006):

- 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 the purposes of this EA, the impacts analysis in Section 3.6.2 will consider these functions; however, the actual HGM functional assessments have not been conducted for the wetland systems potentially affected by the proposed enhancement projects. Wetland functional assessments would be conducted by USAG Alaska natural resource staff, as necessary prior to construction activities. Typically higher function wetlands 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, 2006).

### **3.6.1 Affected Environment of Proposed Enhancement Projects**

The following describes wetland characteristics associated with each proposed project area (see Figure 1).

#### **Donnelly Drop Zone Expansion**

According to the November 2007 wetland delineation, 369 acres of predominantly scrub-shrub wetlands occur within the Donnelly Drop Zone and expansion footprint (see Figure 9d).

#### **DTA East Trail Network Upgrade**

According to NWI mapping, approximately 985 acres of wetlands occur within the proposed trail upgrade areas and hydric soil mapping indicates the potential for an additional 100 acres of wetlands; both subject to field delineation and Section 404 jurisdictional determination. According to NWI mapping (Figure 9a through 9d), wetlands within the trail network upgrades are predominantly palustrine scrub-shrub (79 percent), followed by palustrine forested (17 percent), riverine (4 percent), and palustrine unconsolidated bottom and lacustrine (both under 1 percent).

#### **Hardened Bivouac**

NWI and soils mapping did not indicate the presence of wetlands within either proposed bivouac sites. Wetland field verification is planned for the spring of 2008; however, the presence of wetlands is considered to be unlikely in either bivouac areas.

### **3.6.2 Environmental Consequences**

A FNPA was prepared to address unavoidable impacts to wetlands. The FNPA determined that no practicable alternative exists to entirely avoid wetlands as each proposed project involves enhancements to existing infrastructure that are already located within areas classified as wetlands (See Appendix B). Implementation of BMPs discussed in Chapter 4.0 and project design to avoid and minimize wetland disturbance would help reduce wetland impacts. This includes environmentally sound design to reduce or avoid wetland impacts and to prevent disruption to wetland hydrology, avoidance of wetland areas for stockpiling and construction

staging areas, and reseeded/planting of disturbed areas with native or other appropriate vegetation. In addition, USAG Alaska will adhere to all mitigation requirements imposed as a condition to receiving a CWA 404 permit, to ensure no significant impact.

Impact are further discussed by the No Action and proposed enhancement alternatives below. Indirect impacts of wetland disturbance to wildlife and fisheries, surface water and floodplains, subsistence, and recreation are discussed in Sections 3.4.2, 3.5.2, 3.8.2, and 3.9.2, respectively.

Overall impacts to wetlands would be minor, with the direct impacts occurring due to woody vegetation removal at the Donnelly Drop Zone and expansion footprint (wetland conversion) and trail upgrade activities (wetland loss). Together, the projects would result in the loss of up to 1,085 acres of wetlands (up to 5 percent of the total estimated DTA East wetland cover) and the conversion of up to an additional 369 acres of scrub-shrub wetlands to emergent systems (approximately 1 percent of total DTA East wetlands). Analysis of potential wetland impacts for each proposed enhancement is based on the extent of permanent wetland loss or conversion of wetland community (i.e. forest wetland to emergent wetland). It is assumed that DTA East is approximately 104,600 acres, of which approximately 22,270 acres contain areas classified as wetlands (USARAK, 2006a). The following categories will be used in assessing potential impacts resulting from the proposed enhancement alternatives. Percentage levels of impacts were determined from professional evaluations and assessments.

- **None** – No measurable impacts are expected to occur.
- **Minor** – Small but measurable adverse impacts are expected. Adverse impacts would occur to less than 5 percent of wetlands at DTA East.
- **Moderate** – Noticeable adverse impacts that would have a measurable effect on wetlands. Adverse impacts would occur to between 5 and 10 percent of wetlands at DTA East.
- **Severe** – Adverse impacts would be obvious. Adverse impacts would occur on greater than 10 percent of wetlands within DTA East.
- **Beneficial** – Impacts would benefit wetlands.

The first three qualitative impact categories (none, minor, and moderate) are considered insignificant in this analysis. The next category (severe) is considered significant.

### 3.6.2.1 No Action

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use. The No Action Alternative would result in the continued current use of DTA East. No new construction activities would occur; therefore, there would be no loss of wetlands. Impacts could occur to wetlands from off-trail use. As areas of existing degraded trails are often associated with unstable and wet soils, areas directly adjacent to these degraded segments have a higher likelihood to be wetlands. Impacts to wetland vegetation and soils would continue to occur from trail proliferation of off-trail vehicle use in these areas.

### 3.6.2.2 Donnelly Drop Zone Expansion

#### Proposed Action

Under the Proposed Action, minor impacts to wetlands are anticipated. Clearing of vegetation within the Donnelly Drop Zone and expansion footprint would result in the potential conversion of approximately 369 acres of palustrine scrub-shrub communities into palustrine emergent. This would result in the conversion of approximately 1 percent of wetlands within DTA East. The

conversion of these wetland communities would alter their habitat for wildlife (see Section 3.4.2.2). The extent of conversion would be dependent upon vegetation removal method. Hydro-ax removal would reduce the amount of disturbance to lower lying vegetation, potentially allowing for the retention of current wetland vegetative structure. In addition, the depth of the hay rake would be set to prevent ground penetration and disturbance to the low lying vegetation and root structure within these wetland communities. Those scrub-shrub communities which contain a higher percentage of trees would be the most likely to be converted to a different scrub-shrub species dominated community or to an emergent community.

Overall impacts to the functioning of these wetlands would be minor. No impervious surfaces would be created that would affect groundwater recharge or surface water flows. The compaction and rutting of soils during clearing could affect surface water flows, creating localized ponding in highly compacted areas and rutted areas. This impact, however, would be reduced through remediation (restore original grades and seeding using native wetland species in areas of disturbed wetlands with exposed soils). Water quality functions provided by these wetlands would remain, as these systems would continue to filter out sediments and reduce amounts of dissolved solids reaching Ober and Jarvis creeks. In addition, wildlife habitat would be impacted as these wetlands would be converted from forested and scrub-shrub habitat to emergent (grassy) wetland types (see Section 3.4.2.2).

During an October 29, 2007, meeting between the USAG Alaska Natural Resource staff and the USACE, the USACE requested a functional assessment be prepared for the wetlands within the Donnelly Drop Zone Expansion. USAG Alaska staff completed the functional assessment in December of 2007 (USAG Alaska, 2007b). The functional assessment determined that the primary wetland habitat type in the Donnelly Drop Zone expansion area is black spruce or a combination of black and white spruce; listed as a Category IV (habitat is of medium to low value for evaluation species) and is the most common type of wetland habitat within Interior Alaska. The functional assessment further concluded that these scrub-shrub wetland habitats would be disturbed; however, disturbance would be limited to tree removal and associated indirect temporary impacts to surrounding ground vegetation and soils.

In addition, the USACE, USFWS, and EPA request intermittent stream channels be protected. As a result, USAG Alaska will maintain a 50-foot buffer on either side of intermittent or ephemeral streams and will maintain a 100-foot buffer along Ober Creek. Although trees greater than 5 feet or 1 inch in diameter would be removed within these vegetated buffers, trees would be hand-cleared to minimize disturbance and the remaining stumps would be scored by a chainsaw blade to facilitate decomposition.

### **3.6.2.3 DTA East Trail Network Upgrade**

#### **Proposed Action**

Under the Proposed Action, minor adverse impacts to wetlands are anticipated. Direct impacts to wetlands would occur from the placement of fill to accommodate widened trails. Approximately 985 acres of wetlands could be impacted by the proposed trail upgrades (see Table 3-6.1) with the potential for an additional 100 acres of wetlands based on the presence of hydric soils; resulting in the loss of up to 5 percent of total wetland areas within DTA East. Field delineation and jurisdictional determination would be required to determine the actual extent of impacts to wetlands. The potential also exists for reducing the degree of wetland impact. For example, trails could be widened in the direction opposite of wetland areas (into uplands), avoiding wetland impacts. In locations where wetlands occur on both sides of the trail, trails could be restricted to below the standard 92-foot width, reducing the overall wetland impact. These

avoidance and minimization measures may be a requirement of Section 404 permitting. Section 4.5 provides additional BMPs and mitigation measures possible.

Upgrades and repair to the existing trails would reduce the need for vehicles to maneuver off trail, reducing impacts to adjacent wetlands and causing beneficial impacts.

Overall impacts to wetland function would be reduced as these wetlands would be located adjacent to existing trails. Semi-impervious (gravel) surfaces would be expanded along the trail network; however, these amounts are not anticipated to change groundwater recharge or surface water flows. Trail design guidelines (ITAM; USARAK, 2005c) and BMPs would be implemented to prevent impacts to surface water flow (See Section 4.2 and Section 4.5). Temporary impacts created adjacent to construction areas would be reduced through remediation (restore original grades and seeding using native wetland species in areas of disturbed wetlands with exposed soils). Water quality functions provided by these wetlands would remain, as these systems would continue to filter out sediments and runoff from the adjacent trail systems, reducing amounts of dissolved solids reaching perennial streams and their tributaries. Though the overall acreage of wetlands would be reduced, impacts to wildlife habitat would be minimal as impacts would occur adjacent to the existing trail network.

#### **3.6.2.4 Establishment of a Hardened Bivouac**

##### **Alternative 1 –Buffalo Bivouac**

No wetland resources exist within the proposed Buffalo Bivouac site; therefore, no direct or indirect impacts would be anticipated.

##### **Alternative 2 – Mary and Sue Lakes**

No wetland resources exist within the proposed Mary and Sue Lakes Bivouac site; therefore, no direct or indirect impacts would be anticipated.

### **3.7 CULTURAL RESOURCES**

Cultural resources, including prehistory, history, and ethnography of DTA East are set forth in Section 3.2.7 of the BAX/CACTF EIS (2006) and are summarized within this introduction. The prehistoric and historic information that follows provide a context for both the existing and potential cultural resources at DTA East. Section 3.7.1 of this EA discusses known cultural and historic resources within DTA East including historic properties, archaeological sites and Native American cultural sites.

#### Prehistoric

The land currently encompassed by DTA East can be interpreted through two differing prehistoric chronologies; one that has been present in Alaskan archaeology since the mid 1960s and another proposed by Charles Holmes in the mid-1990s. The traditional Alaskan chronology divided the prehistoric era into periods based on tool forms. Three traditions in Alaskan prehistory emerge in this classification: the American Paleoarctic Tradition, the Northern Archaic Tradition, and the Athapaskan Tradition. Robertson et. al. describes the traditions as follows (Robertson et. al., 2006):

- **American Paleoarctic Tradition** (12,000 - 6,000 before present [BP]) – This tradition includes the Denali Complex, which Robertson et al. (2006) note was “originally defined by West (1967)” and which “included distinctive microblade cores, core tablets and their derivative microblades, large blades, biconvex bifacial knives, certain end scraper forms, and burins. West (1981) later stated the Denali Complex is a regional variant of the

- American Paleoarctic Tradition defined by Anderson (1970a, b). Also included with this tradition is the Chindadn Complex which is also called the Nenana Complex (Cook, 1969). The defining characteristic of the Chindadn Complex is the presence of Chindadn points – bifacially flaked triangular or tear dropped shaped projectile points..." (Robertson et. al., 2006).
- **Northern Archaic Tradition** (6,000 - 2,000 BP) – This tradition is defined by the presence of side-notched projectile points (Anderson, 1968; Robertson et. al., 2006). Despite “generalized resemblances between this tradition and the Archaic cultures of the Great Plains of the lower 48 states... it is uncertain that any of the Northern Archaic traits, other than most likely the side-notched points, originated outside of the western subarctic region” (Clark, 1981; Robertson et. al. 2006). The correlation between the introduction of Northern Archaic technologies and the “full establishment of the taiga forest” makes these technologies comparable with the forest oriented Archaic cultures in lower latitudes (Anderson, 1968; Robertson et. al., 2006).
  - **Athapaskan Tradition** (2,000 BP – 1880 *Anno Domini*) – This tradition included a “reorganization of raw materials” with a de-emphasis in “stone tool making” and an “increased emphasis in on the manufacture of items from native copper and organic materials” (Robertson et. al., 2006). Those cultures generally considered to be ancestors of the Athapaskan tribes that currently inhabit interior Alaska are included in this tradition (Robertson et. al., 2006).

Earlier scholars have suggested that an intermediary period known as the Late Denali Complex in which microblades reappeared, took place after the Northern Archaic Tradition (Dixon, 1985; Robertson et. al., 2006). Present convention accepts the occurrence of microblades within the Northern Archaic Tradition (Robertson et. al., 2006).

Holmes (1996, 2000) has proposed an alternative chronology for the Tanana Valley, in which artifact form is not the sole focus (Robertson et. al., 2006). Instead, Holmes proposes time periods “according to environmental and cultural criteria,” and which allows for increased flexibility compared to more traditional chronologies (Holmes, 2000; Robertson et. al., 2006). The chronological periods that Holmes suggests include the Beringian Period, the Transitional Period, the Early Taiga Period, the Middle Taiga Period, the Late Taiga Period, and the Athapaskan Period. Characteristics of the Beringian Period, the Transitional Period, the Early Taiga Period, the Middle Taiga Period, and the Late Taiga Period are (Robertson et. al., 2006):

- **Beringian Period** (greater than 11,000 BP) – During this period, the land connection between Alaska and Siberia was still in existence, and the boreal forest had yet to form in Beringia. Artifact assemblages from this period vary with the presence of microblades. Site environment, function, and seasonality may all attribute to these differences. Holmes uses the term Eastern Beringian Complex to describe these early assemblages (Robertson et. al., 2006).
- **Transitional Period** (11,000 – 8,500 yr. BP) – Substantial climate changes occur during this period, causing the land connection between Alaska and Siberia to disappear, animals to become extinct, and forestation to begin. Spruce-birch forest replaced the shrub tundra was replaced by 9,000 BP (Robertson et. al., 2006).
- **Early Taiga Period** (8,500 – 5,000 BP) – The boreal forest becomes fully established and the American Paleo Tradition is replaced by the Northern Archaic Tradition (Robertson et. al. 2006, 2006).
- **The Middle Taiga Period** (5,000 – ca. 2,500 yr BP) – The Northern Archaic Tradition artifact types continue, including microblades and burins (Robertson et. al., 2006).

- **Late Taiga Period** (ca. 2,500 yr BP - modern) – Microblade technology disappears from the archaeological record and the Athapaskan Tradition in Alaska begins, leading to the technology shift described above, as well as ethnically recognizable Athapaskan groups (Robertson et. al., 2006).

### Historic

During Euro-American contact, the lands currently encompassed by DTA East were inhabited by Lower-Middle Tanana Athabascans (Andrews, 1975; McKennan, 1981; Mishler, 1986). Traditional settlement patterns were based on seasonal patterns that followed the caribou hunt during winter subsistence preparations, and fish camp and berry and root collecting locations during the summer (McKennan, 1981; Robertson et. al., 2006). These activities were often communal in character, involving the participation of several local bands, connected through common interests, geography, and intermarriage. Although attempts have been made to identify boundaries of the tribal bands living in the lower Tanana River valley, natural landscape features appear to be the only discernable boundaries of settlement pattern (McKennan, 1981; Robertson et. al., 2006).

Settlement patterns and subsistence activities of traditional Athabaskan groups were dramatically altered by the influx of Euro-American traders, miners, missionaries, and explorers into the Tanana River valley. The development of the fur trade and access to trade goods also significantly affected the traditional material culture. Likewise, the introduction of mission schools and Euro-American religious doctrine contributed greatly to the dissemination of traditional settlement patterns and practices (Robertson et. al., 2006).

The discovery of gold in the Tanana uplands created a surge of Euro-American settlement in the late 1890s. Along with the increased economic importance of the Tanana Valley, the importance of reliable transportation routes and communication systems also rose. Within the first the years of the 1900s, existing trails, including the Bonnifield, Donnelly-Washburn, and the Valdez-Fairbanks, witnessed a substantial increase in use and development. This increase in trail use also spurred the development of several roadhouses and posts along the various trails. In 1906, Congressional appropriations were made to fund improvement projects along the Valdez-Fairbanks trail, crossing the Alaska Range south of Delta Junction and following the Tanana River to Fairbanks. The Alaskan Railroad was completed in 1923 and the Alaskan Highway in 1942, solidifying connections between the Alaskan interior and exterior (Robertson et. al., 2006).

The advancement of World War II lead to the increased military establishment in Alaska. Airfields were created near Delta Junction at Fort Greely, in Fairbanks at Ladd Field (which later became Fort Wainwright), and 26 mile southeast of Fairbanks at Eielson Air Force Base. Each of these locations was established as a lend-lease base and cold weather testing station, but soon expanded to encompass military support for World War II operations, and later for the Cold War (Robertson et. al., 2006). Evidence of Cold War operations on DTA East include the Donnelly Flats MIDAS Ground Station site, as well as the existence of several Cold War Era buildings located within the Fort Greely cantonment area (USARAK, 2006c;; Price, 2006).

### **3.7.1 Affected Environment**

The following section describes the affected environment for the proposed project areas (see Figure 1). Cultural Resource Management procedures are defined in Army Regulation 200-4, *Cultural Resources Management*, Headquarters, Department of the Army. Cultural Resources are comprised of:

- Historic properties (buildings, structures, districts, landscapes, etc., as defined by Army Regulation 200-4 [AR 200-4] and the National Historic Preservation Act [NHPA]);
- Archaeological sites (as defined and governed by the Archaeological Resources Protection Act [ARPA], AR 200-4 and the NHPA); and
- Native American sacred sites (as identified in Executive Order 13007 and the American Indians Religious Freedom Act) to include:
  - TCPs as defined in the NHPA and as described in National Register Bulletin 38); and
  - Sites and artifacts associated with Native American Graves (as defined and governed by the Native American Graves Protection and Repatriation Act [NAGPRA]).

### Existing Cultural and Historic Resources

DTA East contains an abundant collection of cultural resources, which are identified in the 2006 Annual Report for DTA and Fort Wainwright, and the 2006 ICRMP for Fort Greely (Robertson et. al., 2006; USARAK, 2006c). Since 1963, there have been at least 24 archaeological investigations conducted within the parameters of DTA and Fort Greely (Robertson et. al., 2006; USARAK, 2006c). These studies have found that within the boundaries of DTA East and Fort Greely<sup>8</sup>, there are approximately 406 archaeological sites. Of these 406 sites, 133 have been evaluated for listing on the NRHP, while the remaining 271 sites have not been evaluated. Of the 133 sites that have been evaluated, 64 have been determined eligible and 69 have been determined ineligible for listing on the NRHP (see Appendix C).

The majority of archaeological surveys conducted in DTA have been concentrated in DTA East, which makes up approximately 25 percent of the total area contained in DTA. Beginning in 2002, USAG Alaska began systematic archaeological survey of large blocks within DTA East. These surveys, unlike previously conducted surveys, encompassed 100 percent pedestrian coverage of the survey areas, along with aggressive sub-surface testing strategies. Between 2002 and 2006, approximately 58,900 acres of DTA East were surveyed, in which over 290 sites were identified (Robertson et. al., 2006). Areas surveyed during this time include the proposed project areas for the Donnelly Drop Zone Expansion and the proposed Buffalo Bivouac site. Although no specific study has been conducted for the proposed DTA East Trail Network Upgrade, numerous of these previous studies include portions of this project as well.

All of the 290 sites identified have been found in three high probability areas: 1) high points; 2) bluffs or terraces overlooking a major river site or drainage; and 3) lake margins. Significant environmental factors that contribute to site placement most often consist of viewshed (the encompassing area visible from the site), elevation relative to the immediately surrounding terrain, and distance to water. Areas with the highest probability are generally lake edges and ridgelines. Other high probability areas include “elevated portions of clear streams and anadromous fish streams, stream confluences and islands,” as well as “benches adjacent to steeper slopes and leading edges of terraces” (Robertson et. al., 2006). Because archaeological investigations generally focus on areas of high probability, these findings may be intrinsically biased; however, full coverage surveys on DTA lands with low probability, such as flat areas of

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<sup>8</sup> Fort Greely information is also included within the discussion of DTA East cultural resources as it provides a collective context of military history within the region. Fort Greely's history dates back to 1942 when 1st Lt. William L. Brame led an advance detail of 15 men to the Big Delta area to establish an Army Air Force Base. Throughout World War II, the sole purpose of the base was as a transfer point for the Lend-Lease program to Russia which explains some of the history of military structures (i.e., the MIDAS site) occurring at DTA East.

spruce forest that lack water, wetlands areas, and sloped of more than 40 degrees, have failed to identify any archaeological sites (Robertson et. al., 2006).

One archaeological district (different from a historic district in that it contains strictly archaeological resources), the Donnelly Ridge Archaeological District, is comprised of 20 sites and is located within DTA East (Robertson et. al., 2006). There are no pre-federal buildings (built prior to the United States' purchase of Alaska) or structures or historic districts located on DTA East. Currently, there are no historic structures, buildings, or districts at DTA East that are formally listed on the NRHP. There is one historic building site/property located on DTA East, located approximately 3.25 miles northeast of Donnelly Dome. The site consists of the remains of the Donnelly Flats MIDAS Ground Station (see Donnelly Drop Zone Expansion below). There are currently no TCPs within the boundaries of DTA East. There are no National Historic Landmarks or World Heritage properties located within the boundaries of DTA East (Robertson et. al., 2006; USARAK, 2006c). For more information on the cultural resources located on DTA East and for cultural contexts refer to the *Annual Report, Archaeological Survey, Evaluation, and Mitigation: Donnelly Training Area, Fort Wainwright, Alaska 2006* and the *Integrated Cultural Resource Management Plan, Fort Greely, Alaska* (Robertson et. al. 2006; USARAK, 2006c).

### **Donnelly Drop Zone Expansion**

The entire proposed Donnelly Drop Zone expansion area has been surveyed for cultural resources. The only cultural resource located within the proposed Donnelly Drop Zone expansion area is the Donnelly Flats MIDAS Ground Station. The site consists of the remains of the Donnelly Flats MIDAS Ground Station and includes eight buildings/structural remnants. The remaining building is the Power Plant, which has been gutted (Price, 2006). Structural remnants include:

- Foundation, concrete vault and crypto vault shells, and the tiled bathroom floor of the American Disabilities Act buildings
- Concrete radome support and adjacent concrete building foundation of Receiver 1
- An earthen mound with protruding metal fragments where Receiver 2 was located
- Concrete radome support and adjacent concrete building foundation of Receiver 3
- Concrete foundation of the Vehicle Warm Storage
- Foundation and concrete radome support of the Angle Tracking building
- Original Access Road

The Donnelly Flats MIDAS Station has been evaluated for NRHP eligibility and recommended as not eligible for listing; the Alaska State Historic Preservation Office (AK SHPO) has concurred with the non-eligible designation (Appendix A).

Donnelly Dome is located to the southwest of the proposed Donnelly Drop Zone expansion area. This geological feature may be considered a TCP by several of the Native Alaskan tribes in the region. The Donnelly Dome area is being evaluated at this time and is currently an area of high interest to several of the Native Alaskan tribes within the region. Currently, USAG Alaska has contracted with Clarus Environmental Services to conduct a formal TCP study.

### **DTA East Trail Network Upgrade**

Approximately 76 percent of the proposed DTA East trail upgrades project area has been surveyed. This will likely have increased to 90 to 95 percent by the end of the 2008 field season. The surveys indicate six NRHP eligible archaeology sites, six ineligible archaeology sites, and seven unevaluated archaeology sites exist within the proposed trail upgrade area. The number of

sites would likely increase as a result of required surveys that would occur prior to construction activities.

### **Hardened Bivouac**

#### *Buffalo*

The entire proposed Buffalo Bivouac site area has been surveyed for cultural resources. No cultural resources were identified.

#### *Mary and Sue Lakes*

None of the proposed Mary and Sue Lakes Bivouac site has been surveyed for cultural resources. No known resources exists, however as the area contains high probability area due to its position in the landscape and adjacency to Sue Lake, a high likelihood exists that archaeological sites would be identified through required surveys prior to construction activities.

### **3.7.2 Environmental Consequences**

Overall cultural resource impacts due to implementation of the alternatives could be moderate (without mitigation measures). Together, the proposed DTA East Trail Network Upgrade and the Mary and Sue Lakes Bivouac alternatives could disturb approximately 4 percent of the eligible or not evaluated cultural resource sites. As both the DTA East trail upgrades and Mary and Sue Bivouac sites have not been fully surveyed, it is likely that impacts to cultural resources would be reduced to only minor impacts either through completed surveys of the sites, avoidance, or through mitigation (Section 4.6 of this EA) and the Section 106 consultation process.

Analysis of potential cultural resource impacts is based on the nature of proposed activities and their potential to affect cultural resources. The innate character of cultural resources makes any impact potentially irreversible and the potential loss of data irretrievable. The relative severity of impacts has been defined based on the probability of disturbance to sites considered eligible for listing on the NRHP and those sites identified but yet to be evaluated for eligibility for listing on the NRHP. Evaluated sites that were found ineligible for listing on the NRHP were not considered in the analysis, either because they did not provide any additional cultural resource information, or because all available data has been extracted or recorded from those sites. The following categories will be used in assessing potential impacts resulting from the proposed enhancement alternatives. Percentage levels of impacts were determined from professional evaluations and assessments.

- **None** – No measurable adverse impacts on cultural resources are expected from this action.
- **Minor** – Less than 2 percent of the total sites located within DTA East would be impacted during construction.
- **Moderate** – Between 2 and 5 percent of the total sites located within DTA East would be impacted during construction.
- **Severe** – More than 5 percent of the total sites located within DTA East would be impacted during construction.
- **Beneficial** – Impacts are expected to support, upgrade, or further protect cultural resources.

The first three qualitative impact categories (none, minor, and moderate) are considered insignificant in this analysis. The next category (severe) is considered significant. Together, the projects could result in the loss of over 13 archaeological sites identified as either eligible or not evaluated, representing approximately 4 percent of the 335 eligible or not evaluated

archaeological sites within DTA East and Fort Greely. Mitigation measures have been developed to offset adverse impacts (Section 4.6). This includes surveying all non-surveyed areas with archaeological potential, treating all unevaluated sites as National Register eligible, and avoidance of sites through design.

Impacts that may be common to alternatives include those potentially caused by land clearing techniques (individual tree removal, blading, and hydro-ax (see Section 2.2.1.3) and the location of gravel sources. These techniques would all disturb organic soil layers in at least the top ten inches, thus potentially disturbing archaeological sites in the DTA East Trail Network Upgrade Alternative and the Hardened Bivouac Alternative 2.

The location of gravel sources should also be considered, with the goal of locating those sources in areas that have been thoroughly surveyed to avoid impacts to unidentified sites.

NAGPRA concerns are common to all alternatives in which sites have been identified, as well as to alternatives in which no survey has been conducted. Though several areas have been surveyed for archaeological sites, the potential for burials is present in any alternative location as surveys consist of sampling and may not be conclusive as to the presence of burials at any given site.

### **3.7.2.1 No Action Alternative**

*Donnelly Drop Zone Expansion:* Under the No Action Alternative, the Donnelly Drop Zone would not be expanded. The existing drop zone dimensions would be retained, limited C-17 aircraft to dropping paratroopers from one plane at a time. The type of mass tactical aircraft formations at DTA would also be limited. Implementation of the No Action Alternative would have no impacts on existing cultural resources located in or near the proposed project area.

*DTA East Trail Network Upgrade:* Under the No Action Alternative, the DTA East trail network would not receive upgrades to the existing trails or firebreaks, although routine trail maintenance would continue. Implementation of the No Action Alternative would have no significant impacts on existing cultural resources located within the proposed project area. Though some impacts consistent with use of the trails and the immediate right of way for training maneuvers (such as mild road bed erosion and general maintenance practices) may occur to sites that are located on or in the near vicinity of existing trails, these impacts are anticipated to be minor.

*Hardened Bivouac:* Under the No Action Alternative, there would be no new construction, upgrades or improvements to a bivouac area. Use of existing, un-established bivouac areas would continue. Implementation of the No Action Alternative would have no significant impacts on existing cultural resources located within or near the existing, un-established bivouac area (near the proposed Alternative 1 – Buffalo Bivouac), or to cultural resources located near the proposed project areas. Although some impacts consistent with the use of the area for training maneuvers (such as surface disturbance from ground troops and vehicle operations, and from munitions impact) may occur to sites that are located near vicinity of the proposed project areas, these impacts are anticipated to be minor.

### **3.7.2.2 Donnelly Drop Zone Expansion**

#### **Proposed Action**

Implementation of the Proposed Action would have no impacts on any archaeological site located within the confines of DTA East. All land clearing activities would take place within the proposed project area, which has been fully surveyed with no archaeological sites identified. Implementation of Alternative 1 is also anticipated to have no impact on the MIDAS site located entirely within the proposed project area. No action, alteration, or modification is scheduled for any element of the MIDAS site under the Proposed Action. Land clearing activities required for

the implementation of Alternative 1 are not likely to affect the existing building and structural remnants of the site. Therefore, no impacts are anticipated for cultural resources located on either DTA East or Fort Greely under the Proposed Action. USAG Alaska has requested SHPO concurrence regarding this determination of no effects to historic properties (see Appendix A).

### 3.7.2.3 DTA East Trail Network Upgrade

#### Proposed Action

Implementation of the Proposed Action would have a moderate to severe impact (without mitigation measures) to archaeological sites that are located on or within 50 feet of the centerline of the currently existing trails. However, as discussed in Section 3.7.2, these impacts would likely be reduced to minor due to BMPs and mitigation measures (see Section 4.6). The overall project area has been 76 percent surveyed for archaeological and historic resources. There are approximately 19 sites located within 50 feet of the centerline of the existing trails, six of which are NRHP eligible, and seven of which have been identified but not evaluated for NRHP eligibility (Table 3.7-1). Those sites that have not been evaluated should be treated as potentially eligible for listing on the NRHP. Areas near the proposed Jarvis Creek crossings tend to have a low probability of containing archaeological sites, due to the likelihood that sites located along the creek would be subject to being scattered by the constant change in creek flow and alignment. Trail improvement activities, including land clearing, widening roadbeds, and V-ditch excavation, all have the potential to disturb existing sites, exposing and scattering artifacts. In order to minimize impacts to these sites, mitigation measures such as burying surface and shallow sites to avoid disturbance from ground clearing activities, and rerouting the proposed roadway to avoid potentially damaging site should be considered. Also, potential gravel sources should be placed in previously surveyed areas, away from identified sites to avoid the potential for impact to NRHP eligible or potentially eligible sites. There are no historic properties located within the proposed project area.

**Table 3.7-1. Archaeological Sites Located in the Project Area for the Proposed DTA East Trail Network Upgrade**

SITE NO.	NRHP STATUS	RESOURCE TYPE	CULTURAL AFFILIATION
XMH-277	Eligible	Site	Unknown
XMH-284	Eligible	Site	Unknown
XMH-290	Not Eligible	Site	Unknown
XMH-292	Eligible	Site	Unknown
XMH-880	Not Eligible	Site	Unknown
XMH-881	Eligible	Site	Unknown
XMH-882	Eligible	Site	Unknown
XMH-883	Not Eligible	Site	Unknown
XMH-884	Not Eligible	Site	Unknown
XMH-895	Not Evaluated	Site	Unknown
XMH-922	Not Evaluated	Site	Unknown
XMH-925	Not Evaluated	Site	Unknown
XMH-983	Not Evaluated	Site	Unknown
XMH-1089	Not Evaluated	Site	Unknown
XMH-1094	Not Eligible	Site	Unknown
XMH-1155	Not Evaluated	Site	Unknown
XMH-1161	Not Evaluated	Site	Unknown

**Table 3.7-1. Archaeological Sites Located in the Project Area for the Proposed DTA East Trail Network Upgrade**

SITE NO.	NRHP STATUS	RESOURCE TYPE	CULTURAL AFFILIATION
XMH-1172	Not Eligible	Site	Unknown
XMH-00130	Eligible	Site	Unknown

### 3.7.2.4 Hardened Bivouac

#### Alternative 1 – Buffalo Bivouac

The proposed project area has been 100 percent surveyed for both archaeological and historic resources. There are no resources located within the proposed project area, thus implementation of Alternative 1 will have no impact on cultural resources. Potential gravel sources should be placed in previously surveyed areas, away from identified sites, to avoid the potential for impact to NRHP eligible or potentially eligible sites.

#### Alternative 2 – Mary and Sue Lakes

Implementation of Alternative 2 could cause severe impacts (without mitigation) to cultural resources located on DTA East. However, as discussed in Section 3.7.2, these impacts would likely be reduced to minor due to BMPs and mitigation measures (see Section 4.6). The proposed project area has not been surveyed for archaeological resources; however, there are no known historic properties located within the proposed project area. The proposed project area is located near Mary and Sue lakes, in a high probability area, creating the potential for impacts to unidentified archaeological sites. In order to minimize impacts to these potential sites, a full survey of the area should be done prior to implementation of Alternative 2 to identify any sites. Appropriate measures should then be taken to address any NRHP eligible sites that are identified. Potential gravel sources should be placed in previously surveyed areas, away from identified sites, to avoid the potential for impact to NRHP eligible or potentially eligible sites.

## 3.8 SUBSISTENCE

Subsistence<sup>9</sup>, including detailed information about subsistence resources, proximity and community information, resource availability, and resource use in the DTA East is set forth in Section 3.3.7 of the BAX/CACTF EIS (2006). No specific subsistence activities are unique to any of the proposed enhancement sites, and therefore, Section 3.8.1 serves as a summary of subsistence activities which could occur for all three proposed enhancements (see Figure 1).

### 3.8.1 Affected Environment

The areas of DTA East being considered for the proposed enhancements possess a wide range of plants, animals and fish suitable for regional subsistence activities. A variety of subsistence resources are readily available on DTA East. Due to the size and relatively remote location of these areas, natural resources, and wildlife populations are generally well preserved. DTA annually hosts a variety of hunting activities based on access and available big game populations (USARAK, 2006a).

DTA is situated within Federal Subsistence Game Management Unit (GMU) 20 (see Figure 7). GMU 20 is subdivided into six very large subunits. DTA East is in subunit 20D and makes up

<sup>9</sup> Subsistence has been legally defined to include the customary and traditional uses of fish, plant materials, and game in all of Alaska's rural areas. Customary and traditional use is defined by a long-established, consistent pattern of use and incorporating beliefs and customs that have been transmitted from generation to generation. This use plays an important role in the economy of the community.

approximately 2.5 percent of the subunit. Federal subsistence management regulations apply to all of GMU 20. Immediately south of DTA East, and running along the length of the Richardson Highway to the town of Glennallen, are vast tracks of Federal land. Much of this land is very similar to that found in DTA East and is managed to allow a subsistence harvest. The close proximity of these lands to a major public highway also offers ready access to game and plant resources (USARAK, 2006).

Regional rural populations with recognized subsistence interests and rural status on DTA East include Healy Lake Village, Village of Dot Lake, Native Village of Tanacross, Native Village of Tetlin, Northway Village, Delta Junction, Big Delta, Deltana, and Dry Creek. Data gathering on subsistence activities on (and around) USARAK lands is currently ongoing (USARAK, 2006a).

Subsistence practices depend upon the availability and accessibility of customary useful subsistence resources. The type and availability of vegetation are discussed in Section 3.3 and the types and availability of wildlife and fish are discussed in Section 3.4 of this EA. Because many recreational users of DTA East engage in gathering of resources important to subsistence (i.e., berries, fish and fowl), the factors governing recreational access to various areas of DTA East (as described in Section 3.9) are relevant to the issue of subsistence access.

### **3.8.2 Environmental Consequences**

USAG Alaska conducted an Alaska National Interest Lands Conservation Act 810 Review and determined that the Proposed Actions would not adversely affect subsistence resources. Overall, the Proposed Actions would have little effects on subsistence activities. See Section 3.1 for impact assessment methodology. Impacts associated with loss, disruption, or conversion of habitat were not determined to impact overall populations of species at DTA East (see Section 3.4.2). Justification for this conclusion is provided with further discussion of the No Action and proposed enhancement alternatives below.

#### **3.8.2.1 No Action**

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use. The No Action Alternative would result in the continued current use of DTA East. Therefore, no impacts would occur to subsistence.

#### **3.8.2.2 Donnelly Drop Zone Expansion**

##### **Proposed Action**

No direct impacts would be anticipated for subsistence. Clearing activities for the Donnelly Drop Zone Expansion would result in a minor loss of vegetation and habitat within DTA East (see Sections 3.3.2.2 and 3.4.2.2). However, this loss would be negligible to the overall available lands within DTA and the surrounding region. Caribou activity within the proposed Donnelly Drop Zone expansion area could also be impacted, however, this was also determined to be minor and temporary in nature. In addition, expansion of the existing Donnelly Drop Zone would cause additional acreage of land that is restricted during drop zone use, however, these closures would be temporary and occur only during training activities. Impacts associated with the loss of wood cutting areas within the proposed drop zone expansion would be reduced as other lands at DTA East would be made available for wood cutting (see Section 3.3.2.2).

### **3.8.2.3 DTA East Trail Network Upgrade**

#### **Proposed Action**

No direct adverse impacts would be anticipated for subsistence under the Proposed Action. Clearing activities associated with trail widening would result in a minor loss of vegetation and habitat within the DTA East (see Section 3.3.2.3). However, this loss would be negligible to the overall available lands within DTA and the surrounding region (see Section 3.4.2). Beneficial indirect impacts could result from improved trail networking within DTA East. These improved trails would make areas within DTA East more accessible to users. As discussed in Section 3.4.2.3, the trail upgrades would not result in increased military use, and therefore, no noticeable impacts to subsistence would occur from military use.

### **3.8.2.4 Hardened Bivouac**

#### **Alternative 1 –Buffalo Bivouac**

No direct impacts would be anticipated for subsistence. Clearing activities for the hardened bivouac, storage facility, access spurs, and perimeter trail would result in a moderate loss of vegetation and habitat within the proposed bivouac site. The area would also be permanently closed to public access. However, this loss would be negligible to the overall available lands within DTA East and the surrounding region (see Section 3.4.2).

#### **Alternative 2 – Mary and Sue Lakes**

Impacts to subsistence would be similar to Alternative 1.

## **3.9 PUBLIC ACCESS AND RECREATION**

Public access and recreation in the DTA East are set forth in Section 3.3.7 of the BAX/CACTF EIS (2006). No specific public access and recreation activities are unique within any of the proposed enhancement sites; therefore, Section 3.9.1 serves as a summary of public access and recreation activities which could occur at any of the three proposed enhancements (see Figure 1).

### **3.9.1 Affected Environment**

The public must obtain permission via a Recreational Access Permit before entering military lands. Using their permit number, interested parties must call the USARTRAK automated check-in phone system and indicate where they will be going. When individuals check in, the latest information on military range closures and construction can be obtained. Access is closed during range operations or other military activities that are incompatible with outdoor recreation. USARAK lands are available for a variety of recreational uses, such as hunting, fishing, trapping, off-road recreational vehicles (ORRV) use, hiking, boating, picnicking, berry picking, bird watching, skiing, and dog sledding. Due to its acreage, condition, and proximity to population centers, DTA East is a popular recreational destination for Alaska residents. USARAK also provides wildlife viewing opportunities for Soldiers, civilians, Alaska residents, and visitors. Programs include wildlife viewing platforms, nature trails, interpretive signs, public presentations, and cooperative publications with Federal, State, and local agencies.

DTA East is readily accessible to the public, containing over 150 miles of existing trails, some of which are overgrown and not drivable. 33-Mile Loop Road is the primary access artery to training areas within DTA East, but it is severely degraded in locations and may be impassable in some areas when wet (except in the winter). This trail starts at the northern boundary of DTA East, runs south-southeast through the proposed Buffalo Bivouac site and then makes a jog to the southwest near the proposed Mary and Sue Lakes Bivouac site and the runs west, north of the

Donnelly Drop Zone. Much of DTA is available to ORRV and aerial access. ORRV and winter trails exist across both the eastern and western parts of the training area. The 33-Mile Loop Road is one of the more popular trail systems on DTA East and serves as a primary access to the Granite Mountains, a popular hunting area located to the south off military lands. A series of other trails run north-south and east-west which connects into 33-Mile Loop Road.

### **3.9.2 Environmental Consequences**

Overall impacts to public access and recreation would be beneficial. See Section 3.1 for impact assessment methodology. The Army must manage its lands to meet the primary military mission: military readiness. Public access to recreation on Army lands in Alaska is an important part of many residents' lifestyles. In accordance with the Sikes Act, USAG Alaska works to ensure that its lands are available for public use, as much as possible, without affecting its primary military mission. In addition, impacts associated with loss, disruption, or habitat conversion were not determined to impact overall populations of species at DTA East (see Section 3.4.2). Impacts are further discussed by the No Action and proposed enhancement alternatives below.

#### **3.9.2.1 No Action**

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use. The No Action Alternative would result in the current continued use of DTA East. Therefore, no impacts would occur to public access and recreation.

#### **3.9.2.2 Donnelly Drop Zone Expansion**

##### **Proposed Action**

No direct impacts to recreation would be anticipated under the Proposed Action. Clearing associated with the Donnelly Drop Zone would reduce woodland hunting recreation as the area would be converted to scrubland and grass habitats. This reduction, however, would not affect existing recreational opportunities within DTA East. Anticipated military use of DTA East is not anticipated to increase from this activity beyond the future levels as addressed in previous NEPA documentation (see Section 1.6). Expansion of the existing Donnelly Drop Zone would cause additional acreage of land that is restricted during drop zone use; however, these closures would be temporary and occur only during training activities.

#### **3.9.2.3 DTA East Trail Network Upgrade**

##### **Proposed Action**

Beneficial impacts to recreation would occur under the Proposed Action. Improvements to the existing trail network and repair of degraded trails would allow for additional access to areas within DTA East. The potential exists for installation of a few additional access gates along trail segments for public safety that would be closed during military training. As access gates already exist within DTA, and the local community and Army have established recreational use procedures for DTA East lands (see Section 3.9.1), the additional access gates, if determined necessary, would have minimal to no impact to recreation use at DTA East. Anticipated military use of DTA East is not anticipated to increase from this activity beyond the future levels of use addressed in previous NEPA documentation (see Section 1.6); therefore, no noticeable impacts would occur to recreation from military use of the upgraded trail network at DTA East.

During training events the non-permanent bridges established across Jarvis Creek would be closed to the public. However, the bridges would be placed in areas that will not inhibit existing

low-water crossings of Jarvis Creek by the public, preventing potential adverse impacts to public access of adjacent state lands.

#### **3.9.2.4 Hardened Bivouac**

##### **Alternative 1 –Buffalo Bivouac**

No direct impacts to recreation would be anticipated under this alternative. Clearing associated with the bivouac site and pad placement would reduce woodland hunting and recreation, as the area would be permanently closed to public access. This reduction, however, would not affect existing recreational opportunities within DTA East. Anticipated military use of DTA East is not anticipated to increase from this activity beyond the future levels of use addressed in previous NEPA documentation (see Section 1.6)

##### **Alternative 2 – Mary and Sue Lakes**

Impacts would be similar to those discussed under Alternative 1.

### **3.10 FIRE MANAGEMENT**

Fire management in the DTA East is set forth in Section 3.2.3 of the BAX/CACTF EIS (2006) and is summarized within this section. Fire management issues unique to each of the proposed project areas are discussed in Section 3.10.1.

#### **Fuels Types**

The vegetation (fuels) on the floor of Alaskan forests is composed almost entirely of small, fast drying fuels (USARAK, 2006a). 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.

Common fuels found on DTA East include the following (USARAK, 2006a):

##### Needleleaf Forest

*Black spruce* – These trees are highly flammable and are generally located in areas with wet soils and cooler, north-facing aspects. Crown fires are common and typically result in extensive mortality.

*White spruce* – White spruce is less flammable and generally located in lowland riparian areas. Crown fires may occur during drought conditions.

##### Mixed Forest

*Mixed spruce/ hardwood* – The conifers are generally white spruce with black spruce sometimes present. Black spruce is highly flammable and susceptible to crown fire, while white spruce is both less flammable and less conducive to crown fire. The associated hardwoods are generally less flammable and may include birch, aspen, and/or cottonwood. Surface fuels include mosses, lichens, leaf litter, grasses, and shrubs. Fires in these mixed tree stands generally exhibit moderate intensity. Communities of bluejoint reedgrass also occurs in patches within this forest community and within deciduous hardwoods, dominating cleared area. Fires within this grass start easily, spread quickly, and may burn intensely.

## Tundra

In these areas, very flammable grasses dominate. Dwarf birch and willow may be present and are generally highly flammable, especially if they have a high lichen content. In alpine tundra, short shrubs, mosses, and lichens dominate. Vegetation in these areas ranges from moderately to highly flammable. These communities typically occur at higher elevations and are not present within the proposed enhancement study area.

## **Fire History**

Fire history records are extensive for DTA East. Most large fires in this area can be attributed to typical high winds, and large areas of grass and black spruce (USARAK, 2006a). These vegetation types can carry fire rapidly, especially in high wind events. Fire will always play a significant role at DTA East due to the weather patterns and natural vegetation types of the area.

The fire management strategy for this area is addressed through a three-phase program: (1) prevention; (2) hazard fuel reduction; and (3) stationing of an Initial Attack Response Team during training events. Ignition sources for the DTA area, associated with both military training and other non-military actions (lightning and recreational use), will continue to cause fires in DTA East, as they have in the past. In general, large fires happen during hot, dry, and windy conditions.

The three potential sources of fires are (1) military training; (2) human, either military or civilian, and not associated with military training; and (3) natural (lightning). Incendiary devices from military training are the major cause of fires on installation lands (USARAK, 2006a). Specific devices include artillery/bullets, phosphorous shells, blasts, and flares. Other less common causes of fire are lightning, field burning, cigarettes, recreation, trash burning, and campfires.

Between 1950 and 2002, 53 known fires burned over 93,000 acres on and around DTA East. The USDA and the U.S. Department of the Interior classify a large fire as 100 acres or larger in timber fuel types, and as 300 acres or larger in grass fuel types (USARAK, 2006a). Eleven large fires (greater than 100 acres) have burned on or around DTA East since 1950. Of the 53 recorded fires between 1950 and 2002, the source of 26 fires is attributed to military training, 19 to human activities, four to natural sources, and the source of the final four were attributed to unknown sources. Only three of the 26 fires attributed to military training were greater than 100 acres.

## **Fuels Management**

Three management actions are used by USARAK to prevent wildfires. First, a fire danger rating system is used to reduce the likelihood of a fire by limiting military activities. Certain military activities are restricted when thresholds of wildfire risk are reached (USARAK, 2006a). Second, wildfire danger is reduced through the mechanical removal of accumulated fuels, through prescribed burning, and/or construction and maintenance of fire or fuel breaks. The third fire management action is that of an Initial Attack Response Team. This wildland fire team (including a fire engine) remains on scene during all military training activities to provide both a wildfire safety briefing to incoming training units and a rapid initial response to potential wildfires in the area.

Recent fuels management projects on DTA include the removal of dead spruce, creation of fuel breaks, and prescribed burns. These projects reduce fuels, removing highly flammable spruce, and promote regeneration of less flammable hardwoods. The Jarvis North Fire Mitigation Project was initiated in 1999 to mitigate potential fire risks from increased military use of DTA East (USARAK 2006a). The potential increased fire risks from military lands, and possible

subsequent threat to private lands and residences, was recognized and incorporated into project planning.

As part of the Jarvis North Fire Mitigation Project, deciduous stands of hardwoods are used to stage fire suppression activities, as typical fire intensity in hardwoods is low to moderate, which is less than that of black spruce stands. By converting spruce stands to hardwoods within the fuel break, potential fire intensity will decrease and contribute to overall fire suppression tactics.

### **3.10.1 Affected Environment of Proposed Enhancement Projects**

#### **Donnelly Drop Zone Expansion**

As discussed in Section 3.3, the area of the proposed Donnelly Drop Zone Expansion is comprised of primarily scrub and needleleaf forest (i.e., Black and White Spruce). Needleleaf forests cover 31 percent of the Donnelly Drop Zone Expansion; less than 1 percent is mixed forest; less than 1 percent is broadleaf forest; and another 59 percent of this area is covered by scrub ecotypes.

Based on the vegetation type, fire history and historical weather patterns, the area is very susceptible to high winds and fire starts. Typical fires in this area exhibit high rates of spread and intensities (USARAK, 2006a). However, local fire scars, the presence of hardwoods, and an established road system all serve as natural fire breaks that reduce the risk of fire spread. Most recently, a 1999 fire occurred within northeast corner of the proposed drop zone expansion area which burned approximately 550 acres of spruce forest.

#### **DTA East Trail Network Upgrade**

Existing maneuver trails associated with the DTA East trail upgrades are located in a variety of habitat, including human disturbed areas, broadleaf forest, needleleaf forest (i.e., Black and White Spruce), mixed forest, and scrub communities. Needleleaf forest covers 25 percent of the proposed trail upgrades; 2 percent of this area is covered by mixed forest ecotypes, 15 percent is broadleaf forest, and 49 percent of this area is covered by scrub ecotypes.

Like the Donnelly Drop Zone Expansion, based on vegetation type, the fire history, and historical weather patterns, the area is very susceptible to high winds and fire starts. Typical fires in this area exhibit high rates of spread and intensities (USARAK, 2006a). However, local fire scars, the presence of hardwoods, and an established road system all serve as natural fire breaks that reduce the risk of fire spread. Previous fires have occurred throughout the proposed trail upgrade areas (approximately 70 percent, or 3,200 acres), most of which occurred during 1987 and 1999.

#### **Hardened Bivouac**

Vegetation in both the Buffalo Bivouac site and the Mary and Sue Lakes Bivouac site consists of scrub, broadleaf forest, and needleleaf forest. The Buffalo Bivouac site is also adjacent to a disturbed area.

Needleleaf forests cover 10 percent of the Buffalo Bivouac site; there are no mixed forests; 58 percent is broadleaf forest; and another 24 percent of this area is covered by scrub ecotypes.

Needleleaf forests cover 4 percent of the Mary and Sue Lakes Bivouac site; less than 1 percent is mixed forest; 20 percent is broadleaf forest; and another 76 percent of this area is covered by scrub ecotypes. The scrub ecotypes are a result of a 1987 burn and are in early succession back to forested types.

Based on the vegetation types and historical weather patterns, both areas are very susceptible to high winds and fire starts. Fire history data indicates that wildfire starts in the Buffalo Bivouac are fairly uncommon (USARAK, 2006a). The Mary and Sue Lakes Bivouac site has a history of being susceptible to fires, with the most recent burn of approximately 130 acres occurring in 1987. Historical sources of wildfire starts include human causes and military training (USARAK, 2006a). To date, no fires have moved off military lands north of Buffalo Bivouac, where private property exists and people reside.

Local fire scars, the presence of hardwoods, and an established road system all serve as natural fire breaks that reduce the risk of fire spread.

### **3.10.2 Environmental Consequences**

Overall impacts to fire management would be beneficial primarily due to the reduction of the amount of fuels and the amount of activities occurring off-trail. Impacts are further discussed by the No Action and proposed enhancement alternatives below. In addition, BMPs and existing mitigation practices would continue at DTA. This includes monitoring of fire weather indices and prohibition of pyrotechnics use during training exercises when indices are high to extreme and continued update and implementation of fire management plans prepared by USARAK.

#### **3.10.2.1 No Action**

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use. Under this alternative, efforts would continue to immediately extinguish fires resulting from training and other activities conducted in DTA East. Mitigation measures to reduce the fire risk at DTA would continue. Because there would be no change in the condition of the facilities at DTA East and mitigation measures would continue to be implemented; no impact to fire management would occur.

#### **3.10.2.2 Donnelly Drop Zone Expansion**

##### **Proposed Action**

Considering the military training use (airborne insertion of paratroopers) of the area within the Donnelly Drop Zone Expansion and the removal of vegetation, overall impacts to fire management are expected to be both minor and beneficial.

Historical sources of wildfire starts in the area of the Donnelly Drop Zone Expansion include natural causes, human causes, and military training. Military training consists of specific risks such as pyrotechnics and munitions, support vehicle exhausts, general range maintenance, bivouac and other support activities, and soldier behavior (cigarettes, campfires, etc.).

Under this alternative, the frequency of natural fires would not increase and could potentially decrease due to the clearing of primary drop hazards including trees and stumps on approximately 2,040 additional acres (see Section 3.3.2.2). Clearing of drop hazards over the approximate one-year period would reduce fuel loads.

Fire starts from recreational users could potentially decrease, as the area would be subject to additional closures during clearing activities and during paratrooper drops. Support vehicle exhausts (identified as a specific risk) during construction would temporarily increase the risk of fire during drop zone clearing.

Construction of the Donnelly Drop Zone Expansion would achieve military training goals and projected future increase of use as discussed in previous NEPA documentation (see Section 1.6).

The risk of fire starts is increased proportionate to the level of military activity (USARAK, 2006a). At this time increased training activity is not anticipated; therefore, the risk associated with military training activity would not increase.

### **3.10.2.3 DTA East Trail Network Upgrade**

#### **Proposed Action**

Under the Proposed Action, impacts to fire management are expected to be both minor and beneficial.

Similar to the Proposed Action for the Donnelly Drop Zone Expansion, the frequency of natural-caused fires would not increase and could potentially decrease due to the clearing of approximately 4,190 acres (see Section 3.3.2.3) to accommodate the DTA East trail upgrades. The widening of trails would reduce the amount of fuels and act as effective firebreaks, reducing the spread of wildfire.

Fire starts from recreational users could potentially decrease, as the improved trails would also reduce the need for recreational users to maneuver off-trail to avoid degraded trails. Support vehicle exhausts (identified as a specific risk) during construction would temporarily increase the risk of fire during trail construction.

Construction and use of the upgraded DTA East trail network would not result in greater military use than analyzed in previous NEPA documents. Therefore, the risk of the fire starts would not increase. In addition, the repair of trails would reduce the need for vehicles to travel off-trail into surrounding vegetation, reducing the likelihood of fire starts. Firefighting equipment access to active fires would also be improved throughout DTA East, potentially reducing the extent of acres burned or duration of wildfire.

### **3.10.2.4 Hardened Bivouac**

#### **Alternative 1 –Buffalo Bivouac**

Under this alternative, impacts to fire management are expected to be both minor and beneficial.

Although the site is located near Delta Junction and bivouacking is considered a specific risk, no additional risks would be added under this alternative as the site is currently used for bivouac activities. Fire risk would increase within this area as Soldiers would be directed to concentrate bivouacking activities within the area. However, the hardened pads would provide a more fire resistant surface than the existing available non-hardened bivouac site. The use of the hardened pads and mitigation measures discussed in Section 3.10.2 would help avoid fire starts and decrease any potential increased risks of fire due to Soldier bivouacking activities

Fire history data indicates that wildfire starts in the Buffalo Bivouac area are fairly uncommon (USARAK, 2006a). To date, no fires have moved off military lands north of Buffalo Bivouac, where private property exists and people reside. Under this alternative, the frequency of natural fires would not increase and could potentially decrease due to the clearing of 80 acres of vegetation (see Section 3.3.2.4) for the bivouac area (including pads, access spurs, and perimeter road). The clearing of vegetation would reduce fuel loads. In addition, local fire scars, the presence of hardwoods, and an established road system all serve as natural fire breaks that reduce the risk of fire spread.

The frequency of fires related to military training could also potentially be reduced. Fire start risks due to bivouacking currently exist within the area as the site is currently used for bivouac

activities. The establishment of hardened pads would allow for Soldiers to conduct bivouac activities away from fuel sources, reducing the potential of fire start.

### **Alternative 2 – Mary and Sue Lakes**

Under this alternative, impacts to fire management are expected to be moderate considering the proposed use of the site, which is considered a specific risk; and the vegetation types.

Historical sources of wildfire starts in the Mary and Sue Lakes area include human causes and military training (USARAK, 2006a). As described in Alternative 1, military use of the proposed bivouac site would increase the risk of fire starts, however, the use of hardened pads and BMPs and mitigation measures would reduce such risks.

Similar to Alternative 1, the fuel load within the area would decrease due to the clearing of approximately 80 acres (see Section 3.3.2.4) to accommodate the Mary and Sue Lakes Bivouac (including pads, access spurs, and perimeter road). In addition, the establishment of hardened pads would allow for Soldiers to conduct bivouac activities away from fuel sources, reducing the potential of fire start. Also, local fire scars, the presence of hardwoods, and an established road system may serve as natural fire breaks that reduce the risk of fire spread. Impacts due to construction would be similar to Alternative 1.

Unlike the Alternative 1, this alternative currently has no bivouac activities occurring in the area, therefore, an increased potential exists for fire starts as this is a new activity within this area. Construction and use of the Mary and Sue Lakes Bivouac would result in greater military use of the area. The risk of fire starts is increased proportionate to the level of military training activity (USARAK, 2006a, 2004).

## **3.11 SOCIOECONOMICS**

Socioeconomics, including detailed information about demographics; housing, social and public services, public education, and regional economic activity, is discussed in Section 3.3.6 of the BAX/CACTF EIS (2006) and is summarized in this section.

DTA East is located within the Southeast Fairbanks Census Area. Most of the area is unincorporated and is not a well-defined region in terms of political, economic or social boundaries. For census purposes, this southeast Fairbanks area includes the region surrounding the Alaska Highway between the Fairbanks North Star Borough and the Canadian border. The non-native community of Delta Junction, Big Delta, Deltana, and Fort Greely are the closest communities directly affected by DTA East activities.

### **3.11.1 Affected Environment of Proposed Enhancement Projects**

#### **Demographics**

According to the most recent Census (2000), Delta Junction, Deltana, and Big Delta's population data (Table 3.11-1) indicates a higher proportion of white individuals and a lower proportion of Alaska Native individuals when compared to statewide averages. These areas also exhibits a smaller proportion of black or Hispanic persons. The population data for Fort Greely indicates a slightly lower proportion of white individuals and American Indian and Alaska Natives; and a higher proportion of black and Hispanic individuals when compared to the state.

The age profile of Delta Junction, Big Delta, and Deltana contrasts with Fairbanks, Anchorage, and the state average as there is a larger proportion of older individuals – twice Alaska's proportion over age 62 (Census, 2007). Fort Greely has no individuals over the age of 65. The median age in Delta Junction (36) and Deltana (38.8) is higher than those of Fairbanks (29),

Anchorage (32); and the State (32.4). The median age in Big Delta (29.4) is roughly the same as Fairbanks and slightly lower than Anchorage and the State. The median age on Fort Greely (23.4) is lower than Fairbanks, Anchorage, and Alaska.

#### Housing, Social and Public Services, and Public Education

Previous DTA manpower reductions created surplus housing and depressed property values. Some 26 percent of houses were vacant according to the 2000 Census, a situation that has recently reversed as a consequence of the Space and Missile Defense Command (SMDC) and other big construction projects. (USARAK, 2006a).

Because the area surrounding DTA East has a small and dispersed population, it does not have the public facilities that are available in larger metropolitan areas. While some medical services are provided by the Delta Junction Family Medical Center, including emergency care, most medical services are obtained in Fairbanks (USARAK, 2006a). As part of the SMDC project, Federal funds amounting to \$25 million have been earmarked for infrastructure development. These funds have financed a new fire station, ambulance, and fire protection equipment.

The Delta School District, which is closest to DTA East, exhibits a somewhat higher student/teacher ratio and lower expenditures per student than Fairbanks and Anchorage (USARAK, 2006). With a lower tax base, the district cannot fully supplement state educational expenditures. As a result, less is spent per student. A new elementary school was opened in 2005 and significantly upgraded the quality and capacity of Delta Junction's school district.

Recent economic activities have increased the demand for utility services by both commercial and residential customers (USARAK, 2006a). Golden Valley Electric Association, the region's primary electricity provider, is increasing its power generation capabilities in the Delta area to handle current and forecasted demands.

The region's social services and public safety are funded through a combination of Federal, State and local sources (USARAK, 2006a). These services have expanded to meet the population increase from the area's recent increased economic activity.

**Table 3.11-1. Area Population Data for 2000**

Population by Race	Delta Junction		Fort Greely		Deltana		Big Delta	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Population in 2000	840	100	461	100	1,570	100	233	100
<i>One Race</i>	820	97.6	432	93.7	1,494	95.2	731	97.6
White	768	91.4	303	65.7	1438	91.6	715	95.5
Alaska Native or American Indian	34	4.0	6	1.3	14	0.9	11	1.5
Black or African American	9	1.1	91	19.7	19	1.2	1	0.1
Asian	8	1.0	0		17	1.1	4	0.5
Native Hawaiian or Other Pacific Islander	0	0	9	2.0	0	0	0	0
Other Race	1	0.1	17	3.7	6	0.4	0	0
<i>Two or More Races</i>	20	2.4	29	6.3	76	4.8	18	2.4
<i>Hispanic or Latino (of any race)</i>	7	0.8	71	15.4	18	1.1	7	0.9
<i>Not Hispanic or Latino</i>	833	99.2	390	84.6	1,552	98.9	730	97.5

Source: U.S. Census Bureau 2007

Regional Economic Activity

Income and poverty data displayed in Table 3.11-2 indicate a substantially lower per-capita income and higher poverty level for Delta Junction, Fort Greely, Deltana, and Big Delta than the state.

**Table 3.11-2. Area Income and Poverty Statistics**

	<b>Delta Junction</b>	<b>Fort Greely</b>	<b>Deltana</b>	<b>Big Delta</b>
Per Capita Income	\$19,171	\$12,368	\$18,446	\$14,803
Median Household Income	\$43,500	\$33,750	\$50,066	\$49,000
Median Family Income	\$58,250	\$32,969	\$53,021	\$53,125
Percent of Population Below Poverty Level	19.4	10.4	15.1	30

Source: U.S. Census Bureau 2007

Given Department of Labor privacy regulations, insufficient data exists to produce detailed tables of employment and income for the Delta Junction, Deltana, Big Delta, and Fort Greely communities (USARAK, 2006a). As a result, the entire Southeast Fairbanks Census Area must be used to assess local conditions. The average monthly earnings in the Southeast Fairbanks Census region in year 2004 were \$3,250. The recent increases in area construction is reflected in increased construction employment and average wages. Outside of construction, government employment remains the largest and highest paying employer, representing 34 percent of total jobs in the region.

**3.11.2 Environmental Consequences**

Overall, the Proposed Actions would have little effects on socioeconomics. See Section 3.1 for impact assessment methodology. Justification for this conclusion is provided with further discussion of the No Action and proposed enhancement alternatives below.

**3.11.2.1 No Action**

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use. There would be no impacts to socioeconomics under the No Action Alternative. There would be no displacement of population or elimination of housing stock and existing trends in population and housing would not be affected. Growth in area population would be incremental, based on normal growth factors, as new development occurs in the area. Unemployment rates would remain unchanged because no new jobs would be created. In addition, there would not be an increase in infrastructure requirements.

**3.11.2.2 Donnelly Drop Zone Expansion**

**Proposed Action**

No impacts to socioeconomics would occur under the Proposed Action for the Donnelly Drop Zone Expansion. The proposed enhancements would not have a large enough effect on the local economy to alter the population of the city of Fairbanks or the areas surrounding DTA East, nor to overburden the existing infrastructure (e.g., water supply, wastewater treatment, and public services). There would be no noticeable changes in housing values or unemployment rates. The proposed enhancements would result in a temporary increase in local employment during construction; however, no additional permanent staff would be necessary.

### **3.11.2.3 DTA East Trail Network Upgrade**

#### **Proposed Action**

The impacts from the Proposed Action would be similar to those discussed for the Proposed Action for the Donnelly Drop Zone Expansion.

### **3.11.2.4 Hardened Bivouac**

#### **Alternative 1 –Buffalo Bivouac**

The impacts associated with the establishment of the Buffalo Bivouac would be similar to those discussed for Alternative 1 of the Donnelly Drop Zone Expansion.

#### **Alternative 2 – Mary and Sue Lakes**

The impacts associated with the establishment of a hardened bivouac at Mary and Sue Lakes would be similar to those discussed for Alternative 1 of the Donnelly Drop Zone Expansion.

## **3.12 ENVIRONMENTAL JUSTICE**

Environmental Justice, including minority and low income communities and impacts on children is discussed in Section 3.3.9 of the BAX/CACTF EIS (2006) and is summarized in this section.

### **3.12.1 Affected Environment of Proposed Enhancement Projects**

Environmental Justice is defined 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. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, tasks Federal agencies to make achieving Environmental Justice part of their mission by identifying and addressing disproportionately high and adverse public health or environmental effects of programs, policies, and activities on minority and low-income populations. In addition, the Department of Defense Strategy on Environmental Justice requires implementation of EO 12898, principally through compliance with the provisions of NEPA.

CEQ guidance was utilized to identify minority and low-income communities (CEQ, 1997). CEQ defines the following population groups as minorities:

- Black/African American
- Asian
- Native Hawaiian or Other Pacific Islander
- American Indian or Alaska Native
- Hispanic populations (regardless of race)

According to CEQ, a minority population exists where either:

- The minority population of the affected area exceeds 50 percent; or
- The minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

CEQ defines low-income using the annual statistical poverty thresholds from the U.S. Census Bureau. A low-income population exists when the low-income population percentage in the area of interest is meaningfully greater than the low-income population in the general population. For purposes of the analysis, “meaningfully greater” equates to 5 percent above the general population. In this analysis, the “general population” is considered the State of Alaska.

As discussed in Section 3.11.1, the population in Delta Junction, Big Delta, and Deltana indicates a higher proportion of white individuals and a lower proportion of Alaska Native individuals when compared to statewide averages. This area also exhibits a smaller proportion of black or Hispanic persons. Fort Greely has a slightly lower proportion of white individuals and a slightly higher proportion of black and Hispanic individuals when compared to the State. Income and poverty data indicate a substantially lower per-capita income and higher poverty level for Delta Junction, Fort Greely, Big Delta, and Deltana than the State.

### **3.12.2 Environmental Consequences**

Overall, there would be no disproportionate impact to minority or low-income groups living in the region. Justification for this conclusion is provided in the discussion of the No Action and proposed enhancement alternatives below.

#### **3.12.2.1 No Action**

Under the No Action Alternative, USAG Alaska would not construct the proposed enhancements, and existing infrastructure at DTA East would remain in use. As a result, no actions would occur that would impact minority and low income populations.

#### **3.12.2.2 Donnelly Drop Zone Expansion**

##### **Proposed Action**

While there are minority and low income populations living in Delta Junction, this alternative would not disproportionately impact these groups. The Proposed Action would result in an equal, non-significant impact on all living within the region.

#### **3.12.2.3 DTA East Trail Network Upgrade**

##### **Proposed Action**

The impacts from the Proposed Action would be similar to those discussed for of the Proposed Action for the Donnelly Drop Zone Expansion.

#### **3.12.2.4 Hardened Bivouac**

##### **Alternative 1 –Buffalo Bivouac**

The impacts associated with the establishment of the Buffalo Bivouac would be similar to those discussed for Alternative 1 of the Donnelly Drop Zone Expansion.

##### **Alternative 2 – Mary and Sue Lakes**

The impacts associated with the establishment of a hardened bivouac at Mary and Sue Lakes would be similar to those discussed for Alternative 1 of the Donnelly Drop Zone Expansion.

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## **4.0 MITIGATION MEASURES**

As defined in CEQ Regulation 40 CFR 1508.20, “mitigation,” includes:

- Avoiding the impact altogether
- Minimizing impacts by limiting the degree or magnitude of the action
- Rectifying the impact through repairing, rehabilitating, or restoring
- Reducing or eliminating the impact over time by preservation and maintenance operations
- Compensating for the impact by replacing or providing substitute resources or environments

USARAK and USAG Alaska have extensive programs and policies in place to reduce and avoid impacts from daily military operations, training, and construction activities. These programs and policies aid in the reduction environmental impacts and provide means for restoration. The following regulations and programs detail BMPs currently in place to respond to new or increasing impacts:

- Compliance with training exercise regulations and wildfire prevention as stipulated by USARAK Range Regulation 350-2 and continued update and implementation of fire management plans prepared by USARAK.
- Application of the ITAM program to inventory and monitor, repair, maintain, and enhance training lands.
- Continued implementation of the INRMP which helps maintain natural resource sustainability.
- Continued implementation of ICRMPs which help maintain cultural resource sustainability.
- Use of the RTLA and LRAM programs to inventory land conditions, monitor vegetation trends, repair damaged areas, and minimize future damage.
- Implementation of a soil and water monitoring program for DTA.
- Comply with Executive Order 11988 – Protection of Floodplains to minimize adverse impacts to floodplains.
- Continued assessment and management of subsistence resources for all users per guidelines outlined in the INRMP.
- Continued establishment of government-to-government relationships with Alaska Native tribes whose interests may be significantly affected by USARAK activities. This would ensure efficient and effective communication between both leadership and staff members of tribal governments and USARAK.

As a standard practice, USARAK would implement BMPs outlined in the above list during all construction activities for all three proposed enhancements.

### **4.1 SOILS**

The Proposed Actions would have minor to moderate adverse impacts on soil resources; primarily through increasing soil erosion potential. The following measures should be implemented to minimize impacts to soils:

- A project construction sequence should be implemented to minimize the extent of exposed soil at any given time.
- Wet the construction area to control fugitive dust emissions and foster soil stabilization

- Seed and fertilize, as necessary, the area immediately following construction to aid in the establishment of protective vegetative cover. Manual planting or geotextiles, as necessary, would be used in areas susceptible to higher wind erosion to aid in the establishment of protective vegetative cover.
- Tree and vegetation removal activities would preferably occur during winter months when soils are frozen. However, some non-frozen areas could be hand cleared or hydro-axed if no rutting from clearing equipment results.
- Utilize BMPs, common in the construction industry in Alaska, to localize impacts and to ensure soils would not erode from the site or enter waterways. These include:
  - Avoid permafrost whenever possible.
  - When working in permafrost, minimize the footprint of the disturbed area, take into account how thermokarsts (melting ice wedges) would affect local drainage, and slow or prevent thawing of permafrost by providing insulation (vegetative cover) as soon as possible following disturbance.

## **4.2 VEGETATION**

The Proposed Actions would have minor adverse impacts to vegetation, primarily from the loss of vegetative communities from all three proposed enhancements. The following measures should be implemented to minimize impacts to vegetation:

- Continued use of environmental limitations overlays to protect vulnerable habitats, indicating areas where maneuver training is and is not allowed.
- Continued management of vegetation, including invasive species monitoring and management.
- Continued implementation of RTLA and LRAM programs to minimize and to rehabilitate vegetation damage, and to gather long-term monitoring data.
- Continued implementation of a recreational vehicle use policy at USARAK.
- Continue to make available usable timber that cannot be sold in a timber sale to the public at no cost.
- Re-seed areas directly affected by construction with native grass or other appropriate vegetation.
- Revegetate any areas that are not recovering naturally through the LRAM program.
- Retain as much existing vegetation as possible to provide cover, concealment and realism.
- Retain 50-foot vegetation buffer areas along either side of ephemeral and intermittent streams or other specifically designated areas. A 100-foot buffer would be maintained along Ober Creek.
- Conduct only hand clearing of trees greater than 1 inch in diameter, or 5 feet in height within 50-foot vegetation buffer areas along either side of ephemeral and intermittent streams or other specifically designated areas. Trees would be cleared to the mineral soil and the remaining stumps would be scored by a chainsaw blade to facilitate decomposition. Trees would be moved to an area outside of the buffer zone and ground by a hydro-ax.
- Implement invasive species prevention measures during construction activities such as washing of construction equipment prior to on-site construction activities and require gravel pits to be free of invasive species.

### **4.3 WILDLIFE AND FISHERIES**

The Proposed Actions would have minor adverse impacts to wildlife and fisheries, primarily resulting from loss of terrestrial habitat from the proposed trail upgrades and bivouac site. The following measures should be continued to minimize impacts to wildlife:

- Continued monitoring of effects of military training on select wildlife species (especially herd animals and waterfowl) and fisheries during vital seasons such as breeding, rearing of young, and migration.
- Continue annual moose, bison, and caribou surveys in partnership with ADFG and swan surveys with the USFWS.
- Continued development and implementation of an information and education program for personnel using USARAK lands.
- Continued compliance with Federal and State laws and regulations relating to fish and wildlife conservation or management.
- To the greatest extent practicable, vegetation clearing would be avoided during the May 1 through July 15 USFWS Region 7 guidelines to reduce impacts to nesting migratory birds. Visible bird nests would be identified and avoided.

### **4.4 SURFACE WATER**

The Proposed Actions would have minor adverse impacts to surface water, primarily resulting from trail upgrades at water crossings. Prior to the potential construction activities, USAG Alaska would submit both an individual CWA Section 404 permit and an ADNR Essential Fish Habitat application, detailing exact locations of surface water crossings and proposed crossing designs. As a condition for receiving these permits, the Army would comply with all permitting conditions designed to mitigate impacts to water resources. The following measures could also be implemented to reduce impact on surface water resources:

- Closely monitor all construction sites to detect and correct future changes in drainage patterns.
- Avoid designing roads and trails in the general direction of preferential water flow and at ground level.
- Design drainage to accommodate general local snowmelt runoff each spring and rainfall events throughout the year.
- Design trails to prevent bank erosion, widening of waterways, and increased sediment in streams
- As necessary, conduct additional hydrological investigations along north-south trending trails located within the Clearwater River watershed, improving trail designs to minimize concentrated surface water flows along these trails during flooding events. This may require the Army to conduct improvements to east-west trending trails first, while necessary hydrological studies are conducted along the north-south trending trails.
- Control sediment transport through utilization of silt fencing, hay bales, and stormwater retention/detention basins.
- All construction staging, fueling, and servicing operations would be kept at a minimum of 100 feet from surface waters.
- Employ SPPCP measures to prevent spills and effectively address cleanup strategies before potential spill contaminants could reach water resources.

- Temporary material storage piles would not be placed within the 100-year floodplain during the rainy season unless the following conditions are met: (1) storage does not occur when flooding is imminent; and (2) if storage piles consist of erosive material, they would be covered with plastic tarps (or something similar) and surrounded with compost berms or other erosion control devices. Material used within 12 hours of deposition is not considered a temporary material storage pile.

#### **4.5 WETLANDS**

The Proposed Actions would have minor impacts to wetlands, primarily resulting from the conversion and filling of wetlands associated with the Donnelly Drop Zone Expansion and DTA East Trail Network Upgrade. Prior to the potential construction activities, USAG Alaska would submit an individual CWA Section 404 permit application, detailing exact amounts of wetlands to be filled or converted and acres affected. As a condition for receiving the Section 404 permit, the Army will comply with all permitting conditions designed to mitigate impacts to water resources. The following additional measures could also be implemented to minimize impacts to wetlands:

- Stabilizing of all disturbed areas resulting from project construction using native vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.
- Narrow/confine trail widths in sensitive wetland habitats or when possible, widen trails to the upland direction to avoid wetland impact.
- Where possible, conduct vegetation clearing activities during the winter months when soils are frozen.
- Use of a hydro-ax within wetlands to reducing impacts to hydric soils and low-lying vegetation.
- Fill areas would be minimized for wetlands through site-specific design and limiting construction staging to upland areas.
- Where necessary, natural drainage patterns would be maintained by the installation of culverts of adequate number and size to prevent flooding or excessive drainage of adjacent wetlands.
- No fill or construction materials would be stockpiled in wetlands or waters of the U.S. without obtaining necessary permits. All equipment operation would be confined to the project footprint to prevent unnecessary damage to adjacent wetlands and vegetation.
- All cuts, fills, and disturbed areas resulting from project construction would be stabilized using native or other appropriate vegetation to minimize erosion and subsequent sedimentation of wetlands and streams.
- An 11-acre high value wetland area will be avoided within the Donnelly Drop Zone. Only hand clearing of trees would be conducted within this area.
- All additional avoidance, mitigation and compensation would be conducted as required by terms and conditions in the USACE Section 404 permit.

#### **4.6 CULTURAL RESOURCES**

The Proposed Actions would have moderate impacts to cultural resource (without mitigation), primarily resulting from disturbance to existing cultural sites or disturbance to areas that have not been surveyed associated with the proposed DTA East Trail Network Upgrade and Mary and Sue Lakes Bivouac site. However, required surveys and Section 106 consultation would reduce these potential impacts. Prior to construction activities, USAG Alaska would survey areas that have not undergone previous studies. The following measures should be implemented to minimize impacts to cultural resources:

- Continued evaluation for eligibility for inclusion in the NRHP of archaeological sites potentially impacted by placing ranges in use.
- Un-surveyed areas will be surveyed. Resources identified during survey will be evaluated. Those resources determined to be NRHP eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as applicable Alaska state standards for archaeology.
- Those sites that are currently identified but that have not been evaluated for NRHP eligibility will be treated as NRHP eligible sites; until such time that they are evaluated for NRHP eligibility. Once evaluated, sites determined to be NRHP eligible will be treated according to NRHP and the Secretary of the Interior's Standards for Archaeological Documentation and Preservation, as well as Alaska state standards for archaeology.
- Avoid cultural sites during design by utilizing information gathered from on-the-ground surveys.
- If any cultural resources are disturbed or discovered during this undertaking, the Environmental Resources Department archeologist shall be notified.
- Curation of archaeological material recovered per Memorandum of Agreement between USARAK and the University of Alaska Museum.
- Initiate and continue consultations with Alaska Native tribes to identify and evaluate TCPs that may be present on military managed lands in the interior of Alaska.
- Continued development and implementation of an information and education program for personnel using USARAK lands and the public. This would enhance the conservation of cultural resources on USARAK lands.

While mitigation for the Donnelly Drop Zone Expansion Proposed Action, and the proposed Establishment of a Hardened Bivouac alternatives, is addressed under the common mitigation strategies above, additional mitigation strategies should be explored for the proposed DTA East Trail Network Upgrade. To avoid potentially significant impacts to surface or shallow sites within the proposed project area of the DTA East Trail Network Upgrade, trails, roads, and firebreaks should be redirected around sensitive sites where possible. Other alternatives to minimizing damage to sensitive sites is through the use of geo-textile fabric and earthen fill, which could be placed over important sites to preserve the information present there, while at the same time allowing traffic to pass over the site. In some instances, it may be possible to bury the site beneath to roadbed to avoid creating adverse impacts to the site.

#### **4.7 PUBLIC ACCESS AND RECREATION**

Primarily beneficial impacts are anticipated to public access and recreation through enhancing and improving the trail network, allowing for easier access throughout DTA East. Continuing the following management practices would serve to minimize public access and recreation impacts:

- Continued implementation of recreational vehicle use policies, per the INRMP. The INRMP outline specific actions to maintain and improve public access and recreation opportunities on USARAK lands.
- Continued implementation of the USARTRAK automated check-in phone system. This would provide information regarding daily closures and should greatly simplify the public access process.
- Continued monitoring of recreational usage of each training area through the USARTRAK phone system. This would inform USARAK and ADFG regarding use patterns, which should improve management for public access and recreation.

- Continued maintenance of kiosks at all primary entrances to recreational areas on USARAK lands and provision of visitor maps and information. Information kiosks can help users quickly identify areas designated for recreational use, as well as the times and locations of military activities.
- Determine placement of access gates to allow for maximum continued recreational use and to maximize public safety.
- Determine the placement of bridges in areas that will not inhibit existing low-water crossings of Jarvis Creek by the public.

## 5.0 CUMULATIVE EFFECTS ANALYSIS

CEQ regulations that implement NEPA procedural provisions define cumulative effects as “the impact on the environment which result from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.” USAG Alaska evaluated the potential cumulative impacts of the Proposed Action 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 the National Environmental Policy Act*, Executive Office of the President, January, 1997). Table 5.0-1 lists the other actions that were reviewed to complete the cumulative impact analysis. In addition, this analysis takes into consideration the current and projected levels of military activity at DTA East analyzed in previous NEPA documentation (see Section 1.6). This analysis considers levels of DTA use analyzed within these documents.

**Table 5.0-1. Past, Present, and Future Actions**

Project or Activity	Time Frame	Spatial Extent (if known)	Probability of Project or Activity Occurring in the Future
<b>Past Military</b>			
Training Heavy Mechanized Division Light Infantry Brigade	1950s to present 1960 to 1984 1984 to 2003	Throughout DTA East 16,800 MIMs/year	High Low High
Development of cantonment area, ranges, and infrastructure	1950s to present	3,124 acres	High
Passing of the Sikes Act, 1960, opening portions of military land to recreational access	1960-present	DTA	High
Buildings and Facilities	1970s to present	Fort Greely Cantonment	High
U.S. Air Force	1940s to present	Airspace	High
<b>Recent Military</b>			
BAX/CACTF Training Facility Construction/Use	2006 to 2035	4,600 acres	High
33-Mile Loop Road Upgrade	2005 to 2006	151 acres	High
Cold Regions Test Center (CRTC) Vehicle Test Track and Facility	2003 to 2005	80 acres	High
Space Missile Defense Command and Infrastructure	2003 to present	624 acres	High
Integrated Training Area Management (ITAM) Projects	2000 to present	136 acres	High
Jarvis North Fire Mitigation	2003 to present	550 acres	High
Maneuver Corridor	2005	54 acres	High

**Table 5.0-1. Past, Present, and Future Actions**

<b>Project or Activity</b>	<b>Time Frame</b>	<b>Spatial Extent (if known)</b>	<b>Probability of Project or Activity Occurring in the Future</b>
U.S. Air Force Training	1997 to present	Airspace	High
Stryker Brigade, Airborne Brigade and other Army training	2004 and beyond	86,100 MIMs/year	High
UAV Landing Strip	2004 to present	1 acre	High
<b>Future Military</b>			
ITAM Projects	2006 and beyond	Variable	High
Range Operations Center	2006 to 2008	2 acres	High
C-17 Landing Strip	2006 to 2010	35 acres	High
Direct Fire Range	2006	1 acre	Medium
U.S. Air Force Training	2006 and beyond	Airspace	High
Stryker Brigade, Airborne Brigade and other Army training	2004 and beyond	86,100 MIMs/year	High
BAX/CACTF Use	2008 to 2035	4,600 acres	High
<b>Past – Other Activities and Projects</b>			
Development of Delta Junction and Big Delta Communities (including agricultural lands)	Early 1900s to present	150,000 acres Private land	High
Delta Clearwater Watershed Project	1990s to present	Clearwater River watershed	High
Richardson and Alaska Highways Construction/Use	1920s to 1948/ 1920s to present	10 acres (DTA only)	High
Trans-Alaska Pipeline Construction/Operations and Maintenance	1973 to 1976/ 1973 to present	10 acres (DTA only)	High
Multiple use land management	Pre 1950s to present		High
Subsistence	Pre-history to present	Throughout region	High
Recreation	Early 1900s to present	Throughout region	High
<b>Future – Other Activities and Projects</b>			
Development of Delta Junction and Big Delta Communities	2005 and beyond	Throughout private lands	High
Alaska Railroad Expansion	2007	60 acres	Medium-High
Tanana River Bridge	Unknown	Unknown	Medium-High

**Table 5.0-1. Past, Present, and Future Actions**

Project or Activity	Time Frame	Spatial Extent (if known)	Probability of Project or Activity Occurring in the Future
Natural Gas Pipeline	Unknown	Along Trans-Alaska Pipeline right-of-way	Low to High
Richardson Highway Upgrade	2005 to 2006	10 acres	High
Richardson and Alaska Highways	2005 and beyond		High
Delta Agricultural Use Project	2005 and beyond		High
Multiple use land management	2005 and beyond	Tanana Valley Management Plan	High
Subsistence	2005 and beyond	On public lands	High
Recreation	2005 and beyond	On public and private lands	High

Though certain direct and indirect impacts are determined insignificant, they require further evaluation for potential contributions to cumulative impacts on the resource. Three levels of cumulative effects analyses were considered to evaluate the resources or issues covered in this EA (Quick Look, Analysis and Discussion, and Detailed Analysis). The level of analysis taken was based on Quick Look questions (USAEC, 2007). Quick Look questions are used to determine if detailed cumulative effects analyses are needed for each resource or issue. If the answers to the Quick Look questions are not adverse (resulting in a brief no, or a yes indicating beneficial programs such as the ITAM are in place to offset adverse impacts) the likelihood of significant cumulative impacts is small and no further analysis is necessary. If the answer to a Quick Look question is less certain, more detailed attention would be required to address potential effects using a second level of analysis (Analysis and Discussion). Issues that have definite, potentially significant, incremental impacts require more rigorous analysis (Detailed Analysis).

This cumulative effects analysis (CEA) considers direct and indirect impacts determined from the alternatives analysis presented in Chapter 3.0; recommended mitigation measures presented in Chapter 4.0; the answers to the Quick Look questions; and the past, present, and future projects in Table 5.0-1 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 DTA East and adjacent lands (including Fort Greely and the community of Delta Junction to the north, DTA West to the west, and Federal and State lands to the east and south).

As illustrated by answers to the Quick Look questions in Section 5.1, the likelihood of significant cumulative impacts is small and no further analysis is necessary for surface water resources, subsistence, public access and recreation, wildfire management, socioeconomics and environmental justice. A second level of analysis (Analysis and Discussion) was required to address potential cumulative impacts to soils, vegetation, wildlife and fisheries resources, wetlands and cultural resources (see Section 5.2). It was determined, based on the Quick Look questions, that no resources required a Detailed Analysis level of discussion.

## 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 Guidance Manual* (USAEC, 2007) to determine the potential for cumulative impacts from the Proposed Actions and No Action Alternative. The Quick Look questions analysis for each of these seven topics is presented below.

### 5.1.1 Surface Water

USAG Alaska determined that the No Action Alternative, and the three Proposed Actions (Donnelly Drop Zone Expansion, DTA East Trail Network Upgrade, and Hardened Bivouac) would cause minor adverse impacts to surface water (see Section 3.5.2). For the cumulative impacts analysis, USAG Alaska limited the scope to the Jarvis Creek and Ober Creeks and the other perennial and intermittent streams located within DTA East, examining past recent and future military projects within Table 5.0-1. Due to potential indirect impact to Clearwater River, USAG Alaska also considered actions within DTA East that occur within the Clearwater River watershed. Past military projects involving trail construction and range facility construction have impacted surface waters, with the primary impact being from low-water crossings of Jarvis Creek or filling and culverting of smaller stream channels or bridging smaller streams. Current military training activities indirectly impact water quality from erosion and sedimentation caused by off-trail use. Future foreseeable military use of DTA East is not anticipated to create direct impacts to surface water. Vehicle use and training activities may continue to cause indirect impacts of sedimentation; however, these impacts would be reduced through the continued and future implementation of the ITAM program.

As discussed in Section 3.5, Jarvis Creek’s waters typically carry a high load of sediments due to glacial source waters, therefore, the temporary increased in sediment during construction and soil stabilization period following construction of the proposed enhancements and other existing or future military projects would not result in cumulative impacts. Impacts to smaller perennial streams with less turbid waters would be temporary and localized, and would therefore not result in cumulative impacts to the watershed as a whole. Cumulative indirect impacts to Clearwater River (concentrated flows and sedimentation) due to proposed and future Army development and other non-military development within the Clearwater River watershed could occur. However, use of mitigation measures (including hydrological studies and trail design), BMPs, and the continued efforts of the Delta Clearwater Watershed Project would help reduce and minimize sedimentation to the Clearwater River. To control erosion and sediment runoff during construction, contractors would prepare project specific stormwater pollution prevention plans in order to comply with NPDES permits. Use of the plans and the associated BMPs would minimize the impact of sediment loading to these streams from current, proposed and future construction activities. In addition, the improved trail network and drainage along trails would reduce the amount of off-trail use, potentially reducing sediment loads of streams due to trail erosion and off-trail use.

Impacts from the upgrades of the trail network including loss of linear feet of stream were determined to be minor. The crossing of these features would occur at existing stream crossings. In addition, improvements made during the trail enhancements would stabilize stream banks and help keep vehicles within the trail system, reducing indirect sedimentation impacts. The all-season crossings of Jarvis Creek would replace existing low water crossing sites. The new all-season crossings would keep military vehicles out of the stream channel and banks, avoiding stream bank erosion and vehicles entering the active channel. No current or foreseeable future

projects within DTA East would result in significant losses of stream; therefore, cumulative impacts of stream loss would be minor.

None of the proposed enhancements are anticipated to result in measurable changes to flood elevations or to flood water course. In addition the upgraded (widened) trails would be designed to preserve flow conditions (i.e. culverts). No cumulative impacts to floodplains would be anticipated.

<b>Surface Water Quick Look Table</b>	
<u>No</u> <sup>1</sup>	Would the Proposed Action result in a significant impact to surface water? <i>Impacts to floodplains and waterways, lakes or ponds, or water quality would be minor.</i>
<u>No</u> <sup>1</sup>	Does the Proposed Action involve development of new facilities or maneuver areas within surface water or floodplain?
<u>No</u> <b>DZ</b> <b>HB-1</b> <b>HB-2</b>	Is the proposed site effectively within a floodplain?
<u>Yes</u> <b>NA</b> <b>TE</b>	<i>Existing trails part of the proposed DTA East trail upgrades cross floodplain areas of Jarvis and Ober Creeks, however, enhancements to these trails would not change the overall flood elevation or course of floodwaters.</i>
<u>No</u> <b>HB-1</b> <b>HB-2</b>	Are streams, lakes, or ponds present within the footprint?
<u>Yes</u> <b>NA</b> <b>DZ</b> <b>TE</b>	<i>The proposed Donnelly Drop Zone expansion area contains a few unnamed perennial and intermittent streams. The proposed DTA East trail upgrades contains existing trails cross areas of Jarvis and Ober Creeks, and other unnamed small perennial and intermittent streams.</i>
<u>No</u> <sup>1</sup>	Does the Proposed Action increase the level of intensity of military activity at DTA? <i>The proposed enhancements, while contributing to creating a more comprehensive training facility, are not anticipated to increase levels of military activity at DTA. Current and project levels of military activity analyzed in the NEPA documents referenced in Section 1.6 are not anticipated to change. The proposed Donnelly Drop Zone Expansion would allow more Soldiers to enter the expanded drop zone area at one time, by allowing a single pass to deploy all paratroopers as opposed to several passes. However, this periodic change of training formation would not increase overall intensity of use.</i>
<u>No</u> <sup>1</sup>	Are there other potential impacts to surface water that individually or collectively could result in significant cumulative effects?
<u>No</u> <sup>1</sup>	Has sedimentation/pollution been a downstream issue in the past? <i>The rivers carry high sediment loads. Other than the potential for soil erosion, the proposed enhancements would not result in any additional sources of pollution.</i>
<u>No</u>	<b><i>Is additional cumulative effects analysis needed?</i></b>
<b>CEA Level: (1) Quick Look</b>	

**Table Key:** **NA:** No Action Alternative; **DZ:** Donnelly Drop Zone Expansion; **TE:** DTA East Trail Network Upgrade; **HB-1:** Hardened Bivouac Alternative 1 – Buffalo Bivouac; **HB-2:** Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

### 5.1.2 Subsistence

USAG Alaska determined that the No Action Alternative, and the three Proposed Actions (Donnelly Drop Zone Expansion, DTA East Trail Network Upgrade, and Hardened Bivouac) would cause no impacts to subsistence (see Section 3.8.2). For the cumulative impacts analysis, USAG Alaska limited the scope to include impacts within DTA East and GMU 20D, examining past recent and future military projects within Table 5.0-1. The proposed enhancements would reduce the amount of available habitat within DTA East by approximately 2 percent. Current and foreseeable future military actions are not anticipated to significantly reduce the amount of available habitat. Continued and future use of DTA East by the military could temporarily change the concentrations of wildlife populations during training or slightly reduce the quality of habitat within training areas, resulting in potentially minor adverse cumulative impacts to subsistence. Continued and future implementation of the ITAM program would help maintain sustainable resources at DTA East, reducing cumulative impacts.

<b>Subsistence Quick Look Table</b>	
<u>No</u> <sup>1</sup>	Would the Proposed Action result in a significant impact to the availability of any subsistence resources?
<u>No</u> <sup>1</sup>	Is the area considered to be critical for subsistence access or resource sustainability?
<u>No</u> <b>NA</b> <b>DZ</b> <b>TE</b> <b>HB-1</b>	Does the Proposed Action involve development new facilities or maneuver areas?
<u>Yes</u> <b>HB-2</b>	<i>The proposed Mary and Sue Lakes Bivouac would involve construction in an area currently not designated for any type of military use. The 172-acre footprint would constitute less than 1 percent of the available habitat at DTA East.</i>
<u>No</u> <sup>1</sup>	Does the Proposed Action increase the level of intensity of military activity at DTA? <i>The proposed enhancements, while contributing to creating a more comprehensive training facility, are not anticipated to increase levels of military activity at DTA. Current and project levels of military activity analyzed in the NEPA documents referenced in Section 1.6 are not anticipated to change. The proposed Donnelly Drop Zone Expansion would allow more Soldiers to enter the expanded drop zone area at one time, by allowing a single pass to deploy all paratroopers as opposed to several passes. However, this periodic change of training formation would not increase overall intensity of use.</i>
<u>No</u>	<b>Is additional cumulative effects analysis needed?</b>
<b>CEA Level: (1) Quick Look</b>	

**Table Key:** **NA:** No Action Alternative; **DZ:** Donnelly Drop Zone Expansion; **TE:** DTA East Trail Network Upgrade; **HB-1:** Hardened Bivouac Alternative 1 – Buffalo Bivouac; **HB-2:** Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

### 5.1.3 Public Access and Recreation

USAG Alaska determined that the No Action Alternative, and the three Proposed Actions (Donnelly Drop Zone Expansion, DTA East Trail Network Upgrade, and Hardened Bivouac) would cause no impacts to public access and recreation and that the DTA East trail upgrades could cause beneficial impacts to public access (see Section 3.9.2). For the cumulative impacts analysis, USAG Alaska limited the scope to include impacts within DTA East and surrounding state lands and the community of Delta Junction, examining past recent and future projects within

Table 5.0-1. The proposed enhancements would not reduce the amount of available recreational lands within DTA East. In addition, public access would be improved by hardening repairing damaged roads, allowing for all-season use. The Sikes Act allows lands within DTA to be available for recreational use. Current and future training activities at DTA East would result in temporary closures of training areas. In addition, the improved access road may require the Army to place additional access control gates to implement the range safety closures during training. No foreseeable changes are anticipated to land use within DTA East within the adjacent State parklands. The proposed Mary and Sue Lakes Bivouac would result in the establishment of a 172-acre bivouac site in an area currently not designated for such use. This would result in the reduction of less than 1 percent of the available recreation lands at DTA East, and would not have any detectable cumulative impacts. As none of the other Proposed Actions would reduce public access or recreation within DTA East, no cumulative impacts would occur to existing land use.

<b>Public Access and Recreation Quick Look Table</b>	
<u>No</u> <sup>1</sup>	Would the Proposed Action result in a significant impact to public access and recreation?
<u>No</u> <sup>1</sup>	Are any areas within the project's footprint considered to be critical or very important for access and recreation within the region of influence?
<u>No</u> <b>NA</b> <b>DZ</b> <b>TE</b> <b>HB-1</b>	Does the Proposed Action involve development new facilities or maneuver areas?
<u>Yes</u> <b>HB-2</b>	<i>The proposed Mary and Sue Lakes Bivouac would involve construction in an area currently not designated for any type of military use. The 172-acre footprint would constitute less than 1 percent of the available lands at DTA East.</i>
<u>No</u> <sup>1</sup>	Does the Proposed Action increase the level of intensity of military activity at DTA? <i>The proposed enhancements, while contributing to creating a more comprehensive training facility, are not anticipated to increase levels of military activity at DTA. Current and project levels of military activity analyzed in the NEPA documents referenced in Section 1.6 are not anticipated to change. The proposed Donnelly Drop Zone Expansion would allow more Soldiers to enter the expanded drop zone area at one time, by allowing a single pass to deploy all paratroopers as opposed to several passes. However, this periodic change of training formation would not increase overall intensity of use.</i>
<u>No</u>	<i>Is detailed cumulative effects analysis needed?</i>
<b>CEA Level: (1) Quick Look</b>	

Table Key: **NA**: No Action Alternative; **DZ**: Donnelly Drop Zone Expansion; **TE**: DTA East Trail Network Upgrade; **HB-1**: Hardened Bivouac Alternative 1 – Buffalo Bivouac; **HB-2**: Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

### 5.1.4 Fire Management

USAG Alaska determined that the No Action Alternative, the Donnelly Drop Zone Expansion, DTA East Trail Network Upgrade, and the Buffalo Bivouac Alternative would have minor to beneficial impacts and the Mary and Sue Lakes Alternative would have moderate impacts to fire management (see Section 3.10.2). For the cumulative impacts analysis, USAG Alaska limited the scope to include impacts within DTA East and surrounding state lands and the community of Delta Junction, examining past recent and future projects within Table 5.0-1. The proposed enhancements would reduce the amount of fuel within DTA East by removing up to 4,300 acres of vegetation. In addition, the widened trails would serve as effective firebreaks and would allow

for easier emergency response equipment access. The proposed Mary Sue Lake Bivouac poses a moderate impact to fire management as it would introduce Soldiers and bivouac training into an area not currently used for bivouacking. Historical sources of wildfire starts in DTA East include human causes and military training. Current and future training activities at DTA East would result in the potential for fire starts. As the overall enhancements would reduce the amount of fuel and would improve firebreak and access conditions, cumulative impacts including the moderate increase of the risk of fire due to the Mary and Sue Lakes Bivouac Alternative would be minor.

<b>Fire Management Quick Look Table</b>	
<u>No</u> <sup>1</sup>	Would the Proposed Action result in a significant impact to fire management?
<u>No</u> <b>NA</b> <b>DZ</b> <b>TE</b> <b>HB-1</b>	Does the Proposed Action involve development new facilities or maneuver areas which could pose a fire risk?
<u>Yes</u> <b>HB-2</b>	<i>The proposed Mary and Sue Lakes Bivouac would involve placement of a bivouac site in an area currently not designated for any type of military use.</i>
<u>Yes</u> <sup>1</sup>	Is the proposed site managed as Full or Critical fire management zones? <i>The entire DTA East is a major fire risk zone during specific weather conditions, and given the location of Delta Junction and prevailing winds, significant risks exist. All enhancements are located within a Full fire management category.</i>
<u>No</u> <sup>1</sup>	Does the Proposed Action increase the level of intensity of military activity at DTA? <i>The proposed enhancements, while contributing to creating a more comprehensive training facility, are not anticipated to increase levels of military activity at DTA. Current and project levels of military activity analyzed in the NEPA documents referenced in Section 1.6 are not anticipated to change. The proposed Donnelly Drop Zone Expansion would allow more Soldiers to enter the expanded drop zone area at one time, by allowing a single pass to deploy all paratroopers as opposed to several passes. However, this periodic change of training formation would not increase overall intensity of use.</i>
<u>Yes</u> <sup>1</sup>	Does the area contain flammable vegetative “fuels”? <i>All three proposed enhancements are located within or adjacent to forested areas.</i>
<u>Yes</u> <sup>1</sup>	Has fire management been an issue in the past? <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>
<u>No</u> <sup>1</sup>	Will fire risk be significantly impacted? <i>All three Proposed Actions involve clearing and removing vegetation, reducing fire potential. Both the DTA East Trail Network Upgrade and the Hardened Bivouac alternatives would increase the amount of Soldier activities confined to hardened surfaces (trails or pads), reducing fire risk.</i>
<u>No</u>	<b>Is additional cumulative effects analysis needed?</b>
<b>CEA Level: (1) Quick Look</b>	

**Table Key:** **NA:** No Action Alternative; **DZ:** Donnelly Drop Zone Expansion; **TE:** DTA East Trail Network Upgrade; **HB-1:** Hardened Bivouac Alternative 1 – Buffalo Bivouac; **HB-2:** Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

### 5.1.5 Socioeconomics and Environmental Justice

USAG Alaska determined that the No Action Alternative, and the three Proposed Actions (Donnelly Drop Zone Expansion, DTA East Trail Network Upgrade, and Hardened Bivouac) would cause no impacts to socioeconomic or Environmental Justice conditions within the Delta Junction community or other surrounding communities (see Sections 3.11.2 and 3.12.2). For the cumulative impacts analysis, USAG Alaska limited the scope to include the community of Delta Junction, examining past recent and future projects within Table 5.1-1. As no impacts would occur to these populations, no cumulative impacts would be anticipated.

As identified through the Quick Look questions, no socioeconomic or environmental justice cumulative impacts would be expected to occur associated with the Proposed Action.

<b>Socioeconomics and Environmental Justice Quick Look Table</b>	
<p><u>No</u><sup>1</sup> NA DZ TE HB-1 HB-2</p>	<p>Is the Delta Junction community undergoing rapid growth, or is the community seeing reduction in growth?</p>
<p><u>No</u><sup>1</sup> NA DZ TE HB-1 HB-2</p>	<p>Does the proposed action add to that trend or does it reduce (mitigate) that trend?</p>
<p><u>No</u><sup>1</sup> NA DZ TE HB-1 HB-2</p>	<p>Would the proposed action result in any significant impacts to any resource areas? <i>The Proposed Action would not result in significant impacts to any of the resource areas; therefore, there are no high and adverse impacts to Environmental Justice populations or children.</i></p>
<p><u>No</u><sup>1</sup> NA DZ TE HB-1 HB-2</p>	<p><b>Is additional cumulative effects analysis needed?</b></p>
<p><i>CEA Level: (1) Quick Look</i></p>	

Table Key: NA: No Action Alternative; DZ: Donnelly Drop Zone Expansion; TE: DTA East Trail Network Upgrade; HB-1: Hardened Bivouac Alternative 1 – Buffalo Bivouac; HB-2: Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

## 5.2 “ANALYSIS AND DISCUSSION” CUMULATIVE EFFECTS ANALYSIS

Based on the answers to the Quick Look questions below, USAG Alaska determined soils, vegetation, wildlife and fisheries, wetlands, and cultural resources would require the more detailed Level 2, *Analysis and Discussion*, CEA. This further level of analysis involves a separate discussion by alternative of cumulative impacts to these resources.

## 5.2.1 Soils

A severe cumulative impact to soils would result if the activities contribute to long-term erosion risks or to the overall amount of eroded and susceptible soils at DTA East. As presented both in the following Level 1 (Quick Look) and Level 2 (Analysis and Discussion) sections, overall cumulative impacts to soils due to implementation of the Proposed Actions would be minor. Together, the projects would result in minor adverse cumulative impacts to soils. In addition, beneficial cumulative impacts would result from hardening of trails and bivouac pads.

As identified through the Quick Look questions, the proposed Donnelly Drop Zone Expansion, the DTA East Trail Network Upgrade, and the Hardened Bivouac alternatives would result in minor adverse or temporary soil impacts; therefore, no further CEA analysis is required. CEA Level 2, Analysis and Discussion was necessary to determine cumulative impacts on soils regarding the No Action Alternative.

### 5.2.1.1 Level 1 Analysis

USAG Alaska determined that the Donnelly Drop Zone Expansion, DTA East Trail Network Upgrade, and Hardened Bivouac would cause minor adverse impact and the No Action Alternative would cause minor adverse to moderate soil resource impacts (see Section 3.2.2). For the cumulative impacts analysis, USAG Alaska limited the scope to the DTA East boundaries, examining past recent and future military projects within Table 5.1-1.

<b>Soils Quick Look Table</b>	
<u>No</u> <sup>1</sup>	Would the Proposed Action result in a significant impact to soil resources?
<u>No</u> <b>DZ</b> <b>TE</b> <b>HB-1</b> <b>HB-2</b>  <u>Yes</u> <b>NA</b>	Does the proposed implementation of enhancements jeopardize soil stability and increase erosion potential beyond the construction and stabilization period?  <i>The No Action Alternative would result in the continued off-trail use of both military and recreational vehicles. As Stryker vehicle use now occurs within DTA East, trail degradation and erosion of adjacent areas may continue to increase, despite ITAM restoration activities.</i>
<u>Yes</u> <sup>1</sup>	Are the proposed sites effectively managed as part of an installation ITAM program?
<u>No</u> <sup>1</sup>	Does the Proposed Action increase the level of intensity of military activity at DTA? <i>The proposed enhancements, while contributing to creating a more comprehensive training facility, are not anticipated to increase levels of military activity at DTA. Current and project levels of military activity analyzed in the NEPA documents referenced in Section 1.6 are not anticipated to change. The proposed Donnelly Drop Zone Expansion would allow more Soldiers to enter the expanded drop zone area at one time, by allowing a single pass to deploy all paratroopers as opposed to several passes. However, this periodic change of training formation would not increase overall intensity of use.</i>
<u>No</u> <sup>1</sup>	Are there other potential impacts to soil resources that individually or collectively could result in significant cumulative effects?
<u>No</u> <sup>1</sup>	Is the site characterized by gullies and/or poor vegetative cover?

<b>Soils Quick Look Table</b>	
<p><u>No</u> NA DZ TE HB-1 HB-2</p>	Are there sensitive soils within the proposed project that would require additional stabilization measures from the Proposed Action beyond standard BMPs?
<p><u>No</u><sup>1</sup></p>	Will permafrost be significantly impacted?
<p><u>No</u> DZ TE HB-1 HB-2 <u>Yes</u> NA</p>	<p><i>Is additional cumulative effects analysis needed?</i> <i>CEA Level: (1) Quick Look</i></p> <p><i>CEA Level: (2) Analysis and Discussion</i></p>

Table Key: NA: No Action Alternative; DZ: Donnelly Drop Zone Expansion; TE: DTA East Trail Network Upgrade; HB-1: Hardened Bivouac Alternative 1 – Buffalo Bivouac; HB-2: Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

### 5.2.1.2 Soils Level 2 Analysis

The additional analysis to assess the potential cumulative impact on soils included a review of the projects described in Table 5.0-1. Past and recent military construction projects resulting in the development of DTA East (including training ranges [BAX/CACTF], trails, related infrastructure, and the CRTC Test Track Facility) has resulted in the loss and disturbance to soils. The combined loss of soils from past and recent military activities represents 9,260 acres, or approximately 9 percent of the original 104,600 acres of soil resources within DTA East. In addition, past and current military training throughout DTA East and public use of DTA East trails has caused areas soil erosion along existing trails and streambanks. Future foreseeable military activities, including Stryker and Airborne Brigade training and DTA East recreational use would continue to cause disruption to soils. Proposed and future trail upgrades and future development activities within the Clearwater River watershed have the potential to create cumulative sedimentation within the Clearwater River. However, use of mitigation measures (including hydrological studies and trail design), BMPs, and the continued efforts of the Delta Clearwater Watershed Project would help reduce and minimize erosion and consequent sedimentation to the Clearwater River. In addition, future ITAM activities would continue to repair and restore disturbed areas.

### 5.2.1.3 No Action

Cumulative impacts to soils would result from the No Action Alternative. USAG Alaska's current training and future training requirements and use, and recreational use, of DTA East would continue to degrade the approximate 136 miles of trails proposed for upgrades. Though only segments of these trails are degraded and the ITAM program actively repairs degraded trails, both funding and the current and future use of larger military Stryker vehicles would pose additional stresses to the existing trail system. In addition, recreation users which utilize the trail system would also continue to degrade the trails and adjacent trail areas. This would result in minor adverse cumulative impacts along the 136 miles of existing trails as the possibility of trail degradation in the future would increase.

## 5.2.2 Vegetation

A severe cumulative impact to vegetation would result if loss of vegetative resources within DTA East exceeds 25 percent of the original vegetative cover within DTA East. As presented both in the Level 1 and Level 2 analysis in the following sections, overall cumulative impacts to vegetation due to implementation of the Proposed Actions would be minor to moderate. Total cumulative loss of vegetation within DTA East from the Proposed Actions and past, current and foreseeable future activities would constitute up to 11 percent of original vegetative cover. The Proposed Actions would contribute up to 2 percent of this total overall 11 percent loss in vegetation cover. Mitigation measures and BMPs would help reduce the extent of cumulative impacts. In addition, ITAM projects would continue to repair and provide vegetative cover to disturbed areas, reducing the percentage of impact.

### 5.2.2.1 Level 1 Analysis

USAG Alaska determined that the No Action Alternative and Hardened Bivouac alternatives would have minor adverse impacts to vegetation and that the Donnelly Drop Zone Expansion and the DTA East Trail Network Upgrade would cause moderate impacts to vegetation (see Section 3.3.2). For the cumulative impacts analysis, USAG Alaska limited the scope to the DTA East boundaries, examining past recent and future military projects within Table 5.0-1.

As identified through the Quick Look questions, the No Action Alternative and Hardened Bivouac alternatives would result in minor adverse vegetation impacts; therefore, no further CEA analysis is required. CEA Level 2, Analysis and Discussion, was necessary to determine cumulative impacts on vegetation regarding the Donnelly Drop Zone Expansion and the proposed DTA East Trail Network Upgrade.

<b>Vegetation Quick Look Table</b>	
<u>No</u> <sup>1</sup>	Would the Proposed Action result in a significant loss to vegetation?
<u>No</u> <b>NA</b> <b>HB-1</b> <b>HB-2</b>  <u>Yes</u> <b>DZ</b> <b>TE</b>	<p>Would the Proposed Action result in a conversion of vegetation communities?</p> <p><i>The proposed Donnelly Drop Zone Expansion would result in the conversion of 2,040 acres of forest and scrub-shrub communities into early successional communities and meadows. Occasional removal of saplings would occur to prevent woody vegetation from re-establishing itself.</i></p> <p><i>The proposed DTA East Trail Network Upgrade would result in the conversion of up to 2,260 acres of natural vegetation communities into low lying grassy shoulders which would be periodically maintained (mowed).</i></p>
<u>Yes</u> <sup>1</sup>	Is the proposed site effectively managed as part of an installation ITAM program?
<u>No</u> <sup>1</sup>	<p>Does the Proposed Action increase the level of intensity of military activity at DTA?</p> <p><i>The proposed enhancements, while contributing to creating a more comprehensive training facility, are not anticipated to increase levels of military activity at DTA. Current and project levels of military activity analyzed in the NEPA documents referenced in Section 1.6 are not anticipated to change. The proposed Donnelly Drop Zone Expansion would allow more Soldiers to enter the expanded drop zone area at one time, by allowing a single pass to deploy all paratroopers as opposed to several passes. However, this periodic change of training formation would not increase overall intensity of use.</i></p>
<u>No</u> <sup>1</sup>	Is the site characterized by poor vegetative cover or high erosion?
<u>No</u>	Are there any threatened or endangered species?
<u>No</u>	Are there any sensitive plant communities or plant species of concern in the area?

<b>Vegetation Quick Look Table</b>	
<p><u>No</u> NA HB-1 HB-2</p>	<p><i>Is additional cumulative effects analysis needed?</i> <i>CEA Level: (1) Quick Look</i></p>
<p><u>Yes</u> DZ TE</p>	<p><i>CEA Level: (2) Analysis and Discussion</i></p>

Table Key: NA: No Action Alternative; DZ: Donnelly Drop Zone Expansion; TE: DTA East Trail Network Upgrade; HB-1: Hardened Bivouac Alternative 1 – Buffalo Bivouac; HB-2: Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

### 5.2.2.2 Vegetation Level 2 Analysis

The additional analysis to assess the potential cumulative impact on vegetation included a review of the projects described in Table 5.0-1. Past and recent military construction projects resulting in the development of DTA East (including training ranges, the CRTC Test Track Facility, trails, and related infrastructure) have caused the loss of 4,660 acres of vegetation, or approximately 4 percent of the original 104,600 acres of vegetative cover within DTA East. More recently, the development of the BAX/CACTF facilities has resulted in an additional vegetation loss of 4,600 acres, or approximately 5 percent of the remaining 99,940 acres of vegetative cover at DTA East. The combined loss of vegetative cover from past and recent military activities represents 9,260 acres, or approximately 9 percent of the original 104,600 acres of vegetative cover within DTA East. Future foreseeable military activities, including continued Stryker and Airborne Brigade training at DTA East use are not anticipated to cause significant loss of vegetation. However, future ITAM activities would continue to restore disturbed areas.

#### Donnelly Drop Zone Expansion

Cumulative impacts to vegetation would result from expansion of the Donnelly Drop Zone. Approximately 2,040 acres of forest and scrub-shrub communities would be converted into early successional communities and meadows. Future maintenance activities to provide a clear drop zone surface would prevent woody vegetation from re-establishing itself to be a dominant feature in the community. Occasional removal of saplings would occur to prevent woody vegetation from re-establishing itself. No areas of vegetation cover would be permanently lost and the total amount of vegetation communities converted would be approximately 2 percent. No foreseeable future projects would result in significant amounts of vegetation conversion or losses, therefore, this conversion would cause minor adverse cumulative impacts. **DTA East Trail Network Upgrade**

Cumulative impacts to vegetation would result from expansion (widening) of the existing trail network. Up to 2,260 acres of natural vegetation communities would be converted into low lying grassy shoulders which would be periodically maintained. Future shoulder maintenance activities would prevent woody vegetation from re-establishing itself. In addition up to 1,930 acres of vegetation would be primarily lost due to trailbed widening. As areas of vegetation cover would be permanently lost, and the total amount of vegetation communities converted would be approximately 2 percent. No foreseeable future projects would result in significant amounts of vegetation conversion or losses, therefore this conversion and loss would cause minor adverse cumulative impacts.

### 5.2.3 Wildlife & Fisheries

A severe cumulative impact to wildlife and fisheries would result if loss of habitat within DTA East exceeds 25 percent of the original habitat within DTA East. As presented both in the Level 1 and Level 2 analysis in the following sections, overall cumulative impacts to habitat due to implementation of the Proposed Action would be minor to moderate. Total cumulative loss of habitat within DTA East from the Proposed Actions and past, current and foreseeable future activities would constitute up to 11 percent of original habitat. The Proposed Actions would contribute up to 2 percent of this total overall 11 percent habitat loss. Mitigation measures and BMPs would help reduce the extent of cumulative impacts.

#### 5.2.3.1 Level 1 Analysis

USAG Alaska determined that the No Action Alternative, and the three Proposed Actions (Donnelly Drop Zone Expansion, DTA East Trail Network Upgrade, and Hardened Bivouac) would cause minor adverse impacts to wildlife and fisheries populations (see Section 3.4.2). The proposed projects are not concentrated within preferred habitat for priority species identified in Section 3.4. In addition, the projects would not create any long term effects on species ranges and movement depicted in Figure 7. For the cumulative impacts analysis, USAG Alaska limited the scope to the DTA East boundaries, examining past, recent present, and future military projects within Table 5.0-1.

As identified through the Quick Look questions, the No Action Alternative and Donnelly Drop Zone Proposed Action would result in minor adverse habitat impacts; therefore, no further CEA analysis is required for these two alternatives. CEA Level 2, Analysis and Discussion, was necessary to determine cumulative impacts on wildlife and fisheries regarding the DTA East Trail Network Upgrade and the Hardened Bivouac alternatives.

<b>Wildlife and Fisheries Quick Look Table</b>	
<u>No</u> <sup>1</sup>	Would the alternatives result in a significant impact to wildlife or fisheries?
<u>No</u> <b>NA</b> <b>DZ</b>	Does the Proposed Action involve development of facilities or maneuver areas which would cause a loss of available habitat?
<u>Yes</u> <b>TE</b> <b>HB-1</b> <b>HB-2</b>	<i>The proposed Mary and Sue Lakes Bivouac would involve construction in an area currently not designated for any type of military use. The 172-acre footprint would constitute less than 1 percent of the available habitat at DTA East.</i>
<u>Yes</u> <sup>1</sup>	Is the proposed site effectively managed as part of an installation ITAM program?
<u>No</u> <sup>1</sup>	Does the Proposed Action increase the level of intensity of military activity at DTA? <i>The proposed enhancements, while contributing to creating a more comprehensive training facility, are not anticipated to increase levels of military activity at DTA. Current and project levels of military activity analyzed in the NEPA documents referenced in Section 1.6 are not anticipated to change. The proposed Donnelly Drop Zone Expansion would allow more Soldiers to enter the expanded drop zone area at one time, by allowing a single pass to deploy all paratroopers as opposed to several passes. However, this periodic change of training formation would not increase overall intensity of use.</i>
<u>No</u> <sup>1</sup>	Is the area characterized by sensitive habitat?
<u>No</u> <b>HB-1</b>	Are there special interest management areas in the vicinity?
<u>Yes</u>	<i>Calving migration routes are located within areas of the proposed Donnelly Drop Zone Expansion,</i>

<b>Wildlife and Fisheries Quick Look Table</b>	
<b>NA</b> <b>DZ</b> <b>TE</b> <b>HB-1</b>	<i>DTA East Trail Network Upgrade, and Mary and Sue Lakes Bivouac site, however, the proposed projects are not anticipated to create any long-term effects to these areas or to species.</i>
<u>No</u> <b>NA</b> <b>DZ</b>  <u>Yes</u> <b>TE</b> <b>HB-1</b> <b>HB-2</b>	<p><i>Is additional cumulative effects analysis needed?</i></p> <p><i>CEA Level: (1) Quick Look</i></p> <p><i>CEA Level: (2) Analysis and Discussion</i></p>

Table Key: **NA:** No Action Alternative; **DZ:** Donnelly Drop Zone Expansion; **TE:** DTA East Trail Network Upgrade; **HB-1:** Hardened Bivouac Alternative 1 – Buffalo Bivouac; **HB-2:** Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

### 5.2.3.2 Wildlife and Fisheries Level 2 Analysis

The additional analysis to assess the potential cumulative impact on wildlife and fisheries included a review of the projects described in Table 5.0-1. Past and recent military construction projects resulting in the development of DTA East (including training ranges, the CRTC Test Track Facility, trails, and related infrastructure) have caused the loss of 4,660 acres of wildlife habitat, or approximately 4 percent of the original 104,600 acres of available habitat within DTA East. More recently, the development of the BAX/CACTF facilities has resulted in an additional habitat loss of 4,600 acres, or approximately 5 percent of the remaining 99,940 acres of available habitat. The combined loss of habitat from past and recent military activities represents 9,260 acres, or approximately 9 percent of the original 104,600 acres of available habitat within DTA East. Future foreseeable military activities, including continued Stryker and Airborne Brigade training at DTA East use are not anticipated to cause significant loss of additional wildlife habitat. In addition, future ITAM activities, and well as natural resource actions identified as part of the INRMP, would continue to monitor training impacts at DTA East and restore areas, improving wildlife and fisheries habitat.

#### DTA East Trail Network Upgrade

Cumulative impacts to habitat would occur as a result of trailbed widening and the loss of up to 1,930 acres of available habitat. This total would contribute up to an additional 2 percent to the existing 9 percent habitat historically lost at DTA East. Cumulative impacts could be reduced as the impacts analysis for this proposed enhancement considers a worse-case scenario which involves trail widening upgrades to all 136 miles for accommodating 2-way Stryker movement. BMPs and mitigation measures could reduce the amount of cumulative impacts to available habitat within DTA East.

#### Hardened Bivouac – Alternative 1 Buffalo Bivouac

Cumulative impacts to habitat from developed (impervious surface) areas for the proposed Buffalo Bivouac would be up to 8 acres. This total represents less than 1 percent of the 95,400 acres of available habitat on DTA East. This proposed enhancement would not cause any noticeable cumulative impact to wildlife and fisheries.

**Bivouac – Alternative 2 – Mary and Sue Lakes Bivouac**

Cumulative impacts would be similar as those discussed under the Buffalo Bivouac Alternative.

**5.2.4 Wetlands**

A severe cumulative impact to wetlands would result if wetland loss within DTA East exceeds 10 percent of the original wetland acreage within DTA East. As presented both in the Level 1 and Level 2 analysis in the following sections, overall cumulative wetlands loss due to implementation of the Proposed Actions would be moderate, not exceeding the 10 percent threshold. Total cumulative loss of wetlands within DTA East from the Proposed Action and past, current and foreseeable future activities would constitute up to 7 percent of the original estimated 22,700 acres of DTA East. The Proposed Actions would contribute up to 5 percent of this total overall 7 percent wetland loss. The potential 5 percent cumulative increase of wetland loss due to implementation of the Proposed Actions would likely be reduced as wetlands within the proposed DTA East trail upgrades could be either avoided through shifts in alignment or reduced through narrowing of trail widths. In addition, it is possible the USACE will require compensatory mitigation of wetland loss which would further reduce cumulative wetland impact.

**5.2.4.1 Level 1 Analysis**

USAG Alaska determined that the No Action Alternative would have minor adverse impacts, the Hardened Bivouac alternatives would have no impacts, and the Donnelly Drop Zone Expansion and DTA East Trail Network Upgrade would have minor adverse impacts to wetlands (see Section 3.6.2). For the cumulative impacts analysis, USAG Alaska limited the scope to the DTA East boundaries, examining past recent and future military projects within Table 5.1-1.

As identified through the Quick Look questions, the No Action Alternative and Hardened Bivouac alternatives would result in minor adverse cumulative wetland impacts; therefore, no further CEA analysis is required. CEA Level 2, Analysis and Discussion was necessary to determine cumulative impacts on wetlands regarding the Donnelly Drop Zone Expansion and the proposed DTA East Trail Network Upgrade.

<b>Wetlands Quick Look Table</b>	
<u>No</u> <sup>1</sup>	Would the Proposed Action result in a significant loss of wetlands?
<u>No</u> <b>NA</b> <b>HB-1</b> <b>HB-2</b> <b>TE</b>	Would the Proposed Action result in a conversion of wetland communities?
<u>Yes</u> <b>DZ</b>	<i>The proposed Donnelly Drop Zone Expansion could result in the conversion of up to 369 acres of scrub-shrub wetland communities into emergent wetlands.</i>
<u>No</u> <sup>1</sup>	Are DTA East’s wetlands subject to a significant decrease in overall size due to the Proposed Action and other military actions?
<u>No</u> <sup>1</sup>	Are there any threatened or endangered species associated with the wetlands in the vicinity of the Proposed Action?
<u>Unknown</u>	Are any wetlands in the vicinity of the Proposed Action considered to be particularly ecologically important? <i>Wetland functional assessments have not been conducted within the footprints of the proposed Donnelly Drop Zone Expansion and DTA East Trail Network Upgrade.</i>

<b>Wetlands Quick Look Table</b>	
<u>Yes</u> <sup>1</sup>	Have past actions caused negative potential impacts to wetlands resources? <i>USARAK impacts are moderate to wetlands.</i>
<u>Yes</u> <sup>1</sup>	Are future actions by non-military and other military entities expected and would they cause impacts on wetland resources? <i>Wetland impacts from non-military and other military entities would be localized and not extensive.</i>
<u>No</u> NA HB-1 HB-2	<i>Is additional cumulative effects analysis needed?</i> <b>CEA Level: (1) Quick Look</b>
<u>Yes</u> DZ TE	<b>CEA Level: (2) Analysis and Discussion</b>

Table Key: **NA**: No Action Alternative; **DZ**: Donnelly Drop Zone Expansion; **TE**: DTA East Trail Network Upgrade; **HB-1**: Hardened Bivouac Alternative 1 – Buffalo Bivouac; **HB-2**: Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

#### 5.2.4.2 Level 2 Analysis

The additional analysis to assess the potential cumulative impact on wetlands included a review of the projects described in Table 5.1-1. Past and recent military construction projects resulting in the development of DTA East (including training ranges [BAX/CACTF], trails, related infrastructure, and the CRTC Test Track Facility) has resulted in the loss and conversion of wetlands throughout DTA East. Estimated direct loss of wetlands from past and recent projects within DTA East is approximately 425 acres, or approximately 2 percent of the original estimated 22,700 acres of wetlands occurring within DTA East. In addition, past and current military training throughout DTA East and military public use of DTA East trails have caused indirect impacts to wetlands along existing trails and within training areas. Future foreseeable military activities, including Stryker and Airborne Brigade training and DTA East use would continue to cause indirect disturbance to wetlands. However, future ITAM activities would continue to restore disturbed wetland areas.

#### Donnelly Drop Zone Expansion

Cumulative impacts to wetlands would result from expansion of the Donnelly Drop Zone. The proposed Donnelly Drop Zone Expansion could result in the conversion of up to 369 acres of scrub-shrub wetland communities into emergent wetlands. Future maintenance activities to provide a clear drop zone surface would prevent woody vegetation from re-establishing itself and the conversion back to forested systems. The overall conversion would affect approximately 1 percent of available wetlands at DTA East. No acreage of wetland loss is anticipated. In addition, no foreseeable future projects would result in significant amounts of wetland loss or conversion. Indirect impacts to wetlands due to training activities and off-trail vehicle use would continue, possibly causing indirect impacts wetland functioning. However, ITAM projects would help remediate these impacts. Therefore, this conversion would cause moderate cumulative impacts.

#### DTA East Trail Network Upgrade

Cumulative impacts to wetlands would result from expansion (widening) of the existing trail network. Loss of 1,085 acres of wetlands would result from the trailbed expansion and shoulders

for the proposed DTA East Trail Network Upgrade. The total amount of wetland loss would be up to 5 percent of the existing wetlands at DTA East. No foreseeable future projects would result in significant amounts of wetland loss or conversion. Indirect impacts to wetlands due to training activities would continue potentially causing indirect impacts to wetlands. However, the trail expansion would reduce the levels of off-trail vehicle use, reducing associated off-trail wetland impacts. In addition, ITAM projects would help remediate these impacts and other impacted or degraded wetland systems. Therefore, this conversion would cause moderate cumulative impacts.

### 5.2.5 Cultural Resources

A severe cumulative impact to cultural resources would result if more than 5 percent of the total sites located within DTA East would be impacted during construction. As presented in both the Level 1 and Level 2 analysis in the following sections, overall cumulative cultural resource impacts due to implementation of the Proposed Actions would be moderate to severe (without mitigation), if they were to exceed the 5 percent threshold. However, required cultural surveys and Section 106 consultation would reduce potential impact of the Proposed Action, and cumulative impacts resulting from the Proposed Action to minor. As portions of DTA East continue to be surveyed for archaeological potential, and gaps of data will begin to be filled, over time, reducing areas of uncertainty. The closure of these gaps will allow military planners and cultural resource staff to locate projects and military training activities within DTA East to minimize future impacts to cultural resources. Mitigation measures and future surveys would likely reduce cumulative impacts to minor or moderate.

#### 5.2.5.1 Level 1 Analysis

USAG Alaska determined that the No Action Alternative, Donnelly Drop Zone Expansion and Buffalo Bivouac Alternative would have no impacts to cultural resources and the DTA East Trail Network Upgrade and Mary and Sue Lakes Bivouac Alternative could pose moderate impacts to cultural resources (see Section 3.7.2). For the cumulative impacts analysis, USAG Alaska limited the scope to the DTA East boundaries and Fort Greely, examining past recent and future military projects within Table 5.1-1.

As identified through the Quick Look questions, the No Action Alternative, Donnelly Drop Zone Expansion and the Buffalo Bivouac Alternative would result in no cumulative cultural impacts; therefore, no further CEA analysis is required. CEA Level 2, Analysis and Discussion was necessary to determine cumulative impacts on cultural resources regarding the DTA East Trail Network Upgrade and the Mary and Sue Lakes Bivouac Alternative.

<b>Cultural Resources Quick Look Table</b>	
<b>No</b> <b>NA</b> <b>DZ</b> <b>HB-1</b>	Would the Proposed Action result in a significant impact to any cultural resources?
<u>Unknown</u> <b>TE</b> <b>HB-2</b>	<i>Portions of the proposed DTA East Trail Network Upgrade and all of the Mary and Sue Lakes Bivouac Alternative are not surveyed for cultural resources. Both these proposed enhancements contain areas of high probability.</i>

<b>Cultural Resources Quick Look Table</b>	
<p><u>Yes</u> NA DZ HB-1</p> <p><u>Partially</u> TE</p> <p><u>No</u> HB-2</p>	<p>Has the area been surveyed for cultural resources? <i>Some areas were not surveyed due to lack of access to existing impact areas. Approximately half of Donnelly Drop Zone was not surveyed.</i></p>
<p><u>Some</u><sup>1</sup></p>	<p>Have sites been evaluated for National Register eligibility?</p>
<p><u>Yes</u> NA DZ TE</p> <p><u>No</u> HB-1</p> <p><u>Unknown</u> HB-2</p>	<p>Are any sites eligible for listing on the National Register? <i>Consultation is ongoing.</i></p>
<p><u>No</u><sup>1</sup></p>	<p>Are the sites contributing resources to an eligible or listed district or cultural landscape? <i>The area has not been evaluated for eligibility.</i></p>
<p><u>Yes</u><sup>1</sup></p>	<p>Are there other potential impacts to cultural resources that individually or collectively could result in significant cumulative effects? <i>Activities from other projects and activities could result in negative impacts to prehistoric sites in the area.</i></p>
<p><u>Unknown</u></p>	<p>Is the project located in or near an Alaskan Native cemetery, traditional cultural property or sacred site? <i>Consultation is ongoing.</i></p>
<p><u>Yes</u></p>	<p><i>Is additional cumulative effects analysis needed?</i></p>
<p><b>CEA Level: (2) Analysis and Discussion</b></p>	

Table Key: NA: No Action Alternative; DZ: Donnelly Drop Zone Expansion; TE: DTA East Trail Network Upgrade; HB-1: Hardened Bivouac Alternative 1 – Buffalo Bivouac; HB-2: Alternative 2 – Mary and Sue Lakes

<sup>1</sup>A breakdown of analysis for this question was not conducted, as impacts were determined to be similar among all alternatives.

### 5.2.5.2 Level 2 Analysis

The additional analysis to assess the potential cumulative impact on cultural resources included a review of the projects described in Table 5.0-1. Past and recent military construction projects resulting in the development of DTA East (including training ranges, trails, and related infrastructure) has resulted in the loss or disturbance of cultural sites throughout DTA East. In addition, past and current military training throughout DTA East, along with the overall increase in traffic, has the potential to create impacts for surface and shallow archaeological sites. Also, areas in which land clearing techniques (such as straight blading) are likely to produce erosion, the potential for sites to be impacted by exposure, and the possibility of destruction due to the elements are all concerns. However, future ITAM activities would continue to restore disturbed areas potentially offsetting these indirect impacts to cultural resources.

### **DTA East Trail Network Upgrade**

Cumulative impacts to cultural resources would result from expansion (widening) of the existing trail network. Of the portions of the existing trail network that have been surveyed, 19 archaeological sites were found; six of which are NRHP eligible, and an additional seven sites have been identified but not evaluated. The 13 sites (six eligible and seven not evaluated) represent approximately 4 percent of the 335 archaeological sites within DTA East and Fort Greely that are either eligible or not evaluated. These sites, however, would likely be avoided through trail design or mitigated through Section 106 consultation. On-going and future training would continue to pose a threat to subsurface sites. In addition, although none in the foreseeable future, DTA East range development would pose future impacts to cultural resources. As portions of DTA East continue to be surveyed for archaeological potential, and gaps of data will begin to be filled, over time, reducing areas of uncertainty. The closure of these gaps will allow military planners and cultural resource staff to locate projects and military training activities within DTA East to minimize future impacts to cultural resources.

### **Hardened Bivouac – Alternative 2 Mary and Sue Lakes**

Cumulative impacts to cultural resources could result from development of the bivouac site. The Mary and Sue Lakes region has a high probability for containing archaeological sites, however, no surveys have been conducted to date, and therefore the magnitude of impact is unknown. Due to the probability, it is likely that sites would exist and could be impacted, avoided or mitigated. On-going and future training will continue to pose a threat to subsurface sites. In addition, although none in the foreseeable future, DTA East range development would pose future impacts to cultural resources. As portions of DTA East continue to be surveyed for archaeological potential, and gaps of data will begin to be filled, over time, reducing areas of uncertainty. The closure of these gaps will allow military planners and cultural resource staff to locate projects and military training activities within DTA East to minimize future impacts to cultural resources.

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B.A. Biology  
Years Experience: 15  
EA: BAX/CACTF EIS Contribution: Wildlife and Fisheries, Wetlands, Vegetation, Soils, Public Access and Recreation, ITAM, Fire Management

Douse, Jeremy, Natural Resources Coordinator, USARAK  
M.S. Forestry  
B.S. Recreation Resource Management  
Years Experience: 8  
EA: Document Review

Gardner, Kevin, Environmental Chief, USARAK  
M.S. Science Management  
B.S. Engineering  
Years Experience: 27  
EA: Document Review

Garron, Jessica, NEPA Coordinator, USAG Alaska, CEMML  
M.S. Biology (emphasis Microbial Ecology)  
B.S. Natural Resources  
Year Experience: 11  
EA: Description of Proposed Action and Alternatives, Document Review

Larsen, Gary, Conservation Chief and ITAM Coordinator, USARAK  
M.S. Forestry  
B.S. Forestry  
Years Experience: 18  
EA: Purpose and Need, Proposed Action and Alternatives, Natural Resources

Mason, Jeff, Range and Training Land Assessment Coordinator, USARAK, CEMML  
B.S. Wildlife Management  
Years Experience: 17  
EA: Vegetation

McEnteer, Carrie, NEPA Coordinator, USARAK, CEMML  
B.S. Watershed Science  
Years Experience: 10

EA: Document Management and NEPA Coordination, Purpose and Need, Description of Proposed Action and Alternatives, Document Review

Rees, Dan, Forester, USAG Alaska, CEMML

M.S. Forestry

B.S. Biology

Years Experience: 9

EA: Description of Proposed Action and Alternatives, Fire Management, Vegetation

Robertson, Aaron C., Archaeologist, CEMML

M.A. Anthropology (emphasis Archaeology)

B.S. History

Years Experience: 14

EA: Cultural Resources

Shearer, Amanda, Native Liaison, USAG-AK, CEMML

M.A. Applied Cultural Anthropology

B.S. Sociology with Emphasis on Anthropology

Years Experience: 6

EA: Tribal Coordination/Consultation, Subsistence, Environmental Justice, Cultural Resources

Thornton, Meg, Cultural Resource Manager, USAG-AK, CEMML

M.A. Anthropology

B.A. Archaeology

Years Experience: 7

EA: Cultural Resources

#### Salcha-Delta Soil and Water Conservation District

Barnard, Colin, GIS Specialist

B.S. Natural Resource Management

Years Experience: 13

EA: Description of Proposed Action and Alternatives, Document Review, Soils, Vegetation, Wetlands, GIS support

Durham, Jeffrey, Programs Administrator a SWCD

B.A. Anthropology

Years Experience: 8

EA: Description of Proposed Action and Alternatives, Document Review, Soils, Vegetation, Wetlands

Molitor, Larry, Project Manager, USDA NRCS, Chief Inspector

Years Experience: 35

EA: Description of Proposed Action and Alternatives, Document Review, Soils, Vegetation, Wetlands

#### Potomac Hudson Engineering

Ellenson, Rich

B.A., Journalism

Years Experience: 5  
EA: Technical Editor

Griffin, Robin

M.S. Environmental Management  
B.A. English Composition  
Years Experience: 12  
EA: Socioeconomics, Environmental Justice, and Fire Management

Naumann, Robert

M.S. Environmental Science  
B.S. Natural Resources  
Years Experience: 9  
EA: Project Manager, Soils, Surface Water and Floodplains, Wetlands, Subsistence, and Public Access and Recreation

Sorenson, Liam

B.S. English  
M.S. Geographic Information Systems  
A.A. Computer Administration  
Years Experience: 4  
EA: GIS Analyst

Wade, Catherine

B.S., Environmental Science and Policy – Biodiversity and Conservation Biology  
Years Experience: 1  
EA: Vegetation, Wildlife and Fisheries

Walker, Debra A.

B.A. Biology  
Years Experience: 30  
EA: Program Manager

New South Associates

Olson, Christina

M.A. Historic Preservation  
B.A. Historic Preservation  
Years Experience: 7  
EA: Cultural Resources

Reed, Mary Beth

M.A. American Civilization  
B.A. Anthropology  
Years Experience: 23  
EA: Cultural Resources Project Manager

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Robertson, Aaron. 2005. *Archaeological Survey for: Fort Greely Gravel Borrow Pit Area, U.S. Army Space and Missile Defense Command, Fort Greely, Alaska, 2004*. Center for Environmental Management of Military Lands, Colorado State University: Fort Collins, Colorado.

Robertson, Aaron C., Proue, Molly, Shirar, Scott, and Paraso, C. Kanani. 2005. *Annual Report, Archaeological Survey, Evaluation and Mitigation: Donnelly Training Area, Fort Wainwright, Alaska 2006 (Draft)*. Center for Environmental Management of Military Lands, Colorado State University: Fort Collins, Colorado.

Robertson, Aaron C., Shirar, Scott J., Proue, Molly, Burr, Justin K., and Raymond-Yakoubian, Brenden. 2005. *Archaeological Survey: U.S. Army and Missile Defense Command, Fort Greely, Alaska 2005*. Center for Environmental Management of Military Lands, Colorado State University: Fort Collins, Colorado.

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**APPENDIX A - AGENCY COORDINATION**

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## Example Agency Scoping Letter



REPLY TO  
ATTENTION OF:

DEPARTMENT OF THE ARMY  
INSTALLATION MANAGEMENT COMMAND  
HEADQUARTERS, U.S. ARMY GARRISON ALASKA AND FORT RICHARDSON  
724 POSTAL SERVICE LOOP #6000  
FORT RICHARDSON, ALASKA 99505-6000

OCT 25 2007

Office of the Garrison Commander

SUBJECT: Environmental Assessment (EA) for Mobility and Maneuver Enhancement  
Projects at Donnelly Training Area (DTA) East, Alaska

Alaska Department of Environmental Conservation  
Division of Spill Prevention and Response  
610 University Avenue  
Fairbanks, Alaska 99709-3643

To Whom It May Concern:

The U.S. Army Garrison Alaska (USAG Alaska) is proposing three mobility and maneuver enhancements within DTA East, located near Delta Junction, Alaska, to accommodate current military vehicles and training. The Proposed Action is needed to enable the 4th Brigade Combat Team (Airborne), 25th Infantry Division (4-25th BCT) stationed at Fort Richardson, Alaska, and the 1st Stryker Brigade Combat Team, 25th Infantry Division (1-25th SBCT) stationed at Fort Wainwright, Alaska, to meet their evolving mission doctrines. USAG Alaska is preparing an EA to evaluate the potential environmental impacts of the proposed enhancements at DTA East in accordance with the National Environmental Policy Act (NEPA). The EA will address the following three proposed enhancements (refer to Figure 1 for locations):

a. Donnelly Drop Zone Expansion:

Provide a drop zone to allow for mass tactical formations (the delivery of 306 paratroopers by a formation of three C-17 aircraft side by side) which would require expansion and clearing of jump hazards (trees) within the existing Donnelly Drop Zone to create a cleared area 5,000 meters (3.1 miles) long by 2,000 meters (1.2 miles) wide (2,474 acres). Clearing methods and time frames to be considered include:

1. Alternative 1: Completely clear drop zone by April 1, 2008. To achieve the objective of clearing the drop zone by 2008, the use of mechanized straight blading vegetation removal techniques within the entire area would be required.

2. Alternative 2: Completely clear drop zone by April 1, 2009. This objective would allow for the development of a vegetation removal plan (considering vegetation clearing techniques) based on environmental constraints to foster sustainability using a phased clearing approach.

-2-

b. DTA East Trail Expansion:

Improve an existing network of trails (approximately 135 miles) that will provide a sustainable hardened all-season access corridor to connect the numerous training facilities and areas located in DTA East. Improvements would include hardening of the existing trail network up to approximately 92 feet wide (42 foot road bed with 25 foot shoulders on either side).

Establish an all-season crossing of Jarvis Creek (above river bed) at three potential existing low-water crossings to provide east-west connectivity of DTA East.

c. Establishment of a Hardened Bivouac:

Provide a hardened bivouac site (approximately 175 acres) to accommodate year-round military operations being conducted at nearby training areas within DTA East.

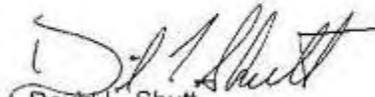
1. Alternative 1: Utilize an existing bivouac by upgrading and hardening an area near Buffalo Drop Zone (Buffalo Bivouac).

2. Alternative 2: Construct a new bivouac near Mary and Sue lakes (Mary Sue Lakes Bivouac).

This letter is being submitted to introduce this proposed project 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 the development of the EA. USAG Alaska will provide a copy of the Draft EA (anticipated December 2007) for your agency's review and comment.

The USAG Alaska point of contact for this action is Ms. Carrie McEnteer, NEPA Branch Chief at (907) 361-9507, or email [carrie.mcenteer@us.army.mil](mailto:carrie.mcenteer@us.army.mil).

Sincerely,

  
David L. Shutt  
Colonel, U.S. Army  
Commanding

Enclosure



Figure 1: Proposed Enhancement Projects at DTA East

Figure Legend

-  A Proposed Project Area for Donnelly Drop Zone Expansion
-  B Proposed Project Area for DTA East Trail Expansion
  -  Potential all-season crossing of Jarvis Creek
-  C Proposed Project Area for Establishment of a Hardened Bivouac
  - 1 – Buffalo Bivouac
  - 2 – Mary and Sue lakes Bivouac

**ADFG Scoping Comment**

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

Division of Sport Fish

SARAH PALIN, GOVERNO

1300 College Road  
Fairbanks, AK 99701  
PHONE: (907) 459-7363  
FAX: (907) 459-7347

November 26, 2007

Carrie McEnteer  
NEPA Coordinator/IPA  
U.S. Army Garrison Fort Wainwright

Dear Mrs McEnteer:

RE: Environmental Assessment for U.S. Army Garrison Alaska (USAG-AK) Donnelly Training Area (DTA) East

The Alaska Department of Fish and Game (ADF&G) has reviewed the proposal for Mobility and Maneuver Enhancement projects at Donnelly Training Area (DTA) East, southeast of Delta/Ft. Greely. We request consideration of the following comments for development of the Environmental Assessment (EA):

Proposal A. Donnelly Drop Zone (DZ) Expansion: The two proposed alternatives only address general protocol of vegetation clearing. Because such a large contiguous area is proposed to be cleared, a vegetation removal plan that would describe appropriate clearing techniques and timing (including prescribed burning and crushing) and a regeneration prescription is important, especially if the dominant soil is a shallow, easily erodible subalpine series. If restricted to these two alternatives, ADF&G recommends Alternative 2 that provides at least a minimally tempered approach. Given the following wildlife habitat and public access concerns we recommend consideration of reconstituting the Buffalo DZ as a third alternative. Much of this area has been cleared in the past and may consist of soils more conducive to regeneration of vegetation.

1. **Moose:** The Donnelly DZ expansion would occur in an area of winter moose habitat, which is the most critical seasonal habitat for moose in this area. The moose population in this area is at high density. Based on recent moose browse surveys, moose are currently using a substantial portion of their available winter forage; thus, reductions in winter forage could have a detrimental impact to the moose population.
2. **Caribou:** The expansion also includes winter habitat for the Macomb caribou herd, the most critical seasonal habitat for caribou in this area. Because the herd is increasing in size the herd will probably use this area more frequently; thus, herd productivity may be affected if habitat is eliminated by this project.

Donnelly Training Area

-2-

December 26, 2007

3. **Bison:** This area is also an important migration corridor for the Delta bison herd. The Delta bison herd migrates through this area when moving between their seasonal ranges. Their traditional migratory routes further north have been excluded by fencing around Ft. Greely; therefore, this corridor is critically important to the herd. Disturbances to bison migration may also have negative ramifications for farmers east of Delta Junction.
4. **Public Access:** This area is an important public recreation and hunting area and access is currently provided to state land in the upper Jarvis and McCumber Creek drainages. Increased restrictions to public access through this area will make public use of this area and adjacent state land more difficult.
5. **General Habitat/Environmental:** Frequent high winds in this area will result in severe soil erosion if the natural vegetation is removed. Remaining vegetation downwind may be intensely impacted – it is unknown if the aerial deposition of soil particulate will affect the usability of forage.

Proposal B. DTA East Trail Expansion:

The proposed trail expansion would occur in an area of very high moose density within important year-round moose habitat. Although the trail expansion itself will not be detrimental to the moose population, increased training and vehicular traffic in this area will result in increased disturbance to moose. These trails also provide important public access for hunting and access through the area to adjacent public land. Increased access restrictions will detrimentally impact public use of this state land. If a bridge is placed at the 12-mile Crossing Trail and public access is restricted from the bridge, this will eliminate a traditional public crossing of Jarvis Creek to access state land in the Jarvis-McCumber Creek drainage. ADF&G request's that current and future restrictions be mitigated by providing reasonable alternative access in, through, and/or around the DTA.

Proposal C. Establishment of a Hardened Bivouac Site:

There are no current wildlife concerns with either the proposed Buffalo DZ or Mary-Sue Lakes bivouac sites. However, I think expanding the Buffalo DZ will have significantly fewer wildlife impacts than the Donnelly DZ. Therefore, I recommend that the combination of the Mary-Sue Bivouac site and the Buffalo DZ be evaluated.

Please contact me if you have questions or comments.



Todd Nichols  
Habitat Biologist  
Fairbanks  
(907) 459-7363

**ADNR, Division of Forestry Scoping Comment**

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STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF FORESTRY

SARAH PALIN, Governor

P.O. BOX 1149  
DELTA JUNCTION, AK 99737  
PHONE: (907) 895-4225  
FAX: (907) 895-2125

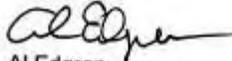
December 18, 2007

Ms. Carrie McEnteer  
Directorate of Public Works  
Attn: IMPC-FWA-PWE (MCENTEER)  
1060 Gaffney Road #4500  
Fort Wainwright, AK 99703-4500

Dear Ms. McEnteer,

The State of Alaska, Division of Forestry, Delta Junction Area Office, has reviewed the Environmental assessment (EA) for Mobility and Maneuver Enhancement Projects at Donnelly Training Area (DTA) East, Alaska. Please salvage the 6 inch and larger diameter trees for use as firewood and sawtimber from proposed clearings. The wood should be kept as free from dirt, sand and debris as practicable and made available to the public and/or local timber buyers.

Thank You,

  
Al Edgren,  
Delta Area Forester

*"Develop, Conserve, and Enhance Natural Resources for Present and Future Alaskans."*

---

**ADNR, Office of History and Archaeology Scoping Comment**

STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF PARKS AND OUTDOOR RECREATION  
OFFICE OF HISTORY AND ARCHAEOLOGY

Kevin  
Gardner  
SARAH PALIN, GOVERNOR

550 W. 7TH AVENUE, SUITE 1310  
ANCHORAGE, ALASKA 99501-3585  
PHONE: (907) 269-8721  
FAX: (907) 269-8908

December 3, 2007

File No.: 3130-1R Army

SUBJECT: Mobility and Maneuver Enhancement Project, Donnelly Training Area  
Scoping for Environmental Assessment

David L. Shutt, Colonel U. S. Army  
Installation Management Command  
Headquarters, U. S. Army Garrison Alaska  
724 Postal Service Loop # 6000  
Fort Richardson, AK 99505-6000

12-11  
Dear Colonel Shutt,

The State Historic Preservation Office received your request for comments regarding the referenced project on October 30, 2007. Although we generally do not comment on NEPA scoping documents, we have begun our review of your undertaking under Section 106 of the National Historic Preservation Act. According to our records, there are numerous historic properties within or adjacent to the proposed Donnelly Drop Zone Expansion and the DTA East Trail Expansion projects. It is likely that we will recommend an archaeological survey once we receive additional information on your project design.

You may contact Stefanie Ludwig at 269-8720 if you have any questions or if we can be of further assistance.

Sincerely,  
  
Judith E. Bittner  
State Historic Preservation Officer

JEB:sl

**ADNR, Office of History and Archaeology (SHPO) Concurrence Letter of Non-eligibility for the Donnelly Flats MIDAS Site**

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS AND OUTDOOR RECREATION

OFFICE OF HISTORY AND ARCHAEOLOGY

SARAH PALIN, GOVERNOR

550 W 7TH AVENUE, SUITE  
ANCHORAGE, ALASKA 99501  
PHONE: (907) 269-8721  
FAX: (907) 269-8908

November 8, 2007

File No.: 3130-1R Army  
3330-6N XMH-1274

Allan D. Lucht  
Director of Public Works  
U.S. Army Garrison Alaska  
724 Postal Service Loop #4500  
Fort Richardson, AK 99505-4500

Subject: Eligibility of Donnelly Flats Missile Defense Alarms System

Dear Mr. Lucht:

This office received your letter on October 22, 2007 concerning the eligibility of Donnelly Flats Missile Defense Alarm System (MIDAS) Ground Station (XMH-1274) for the National Register of Historic Places (NRHP). We reviewed this determination of eligibility pursuant to Section 106 of the National Historic Preservation Act. We concur with your finding that Donnelly Flats Missile Defense Alarm Systems Ground Station is not eligible for inclusion in the NRHP.

Please contact Doug Gasek at 269-8726 if you have any questions or need further assistance.

Sincerely,

Judith E. Bittner  
State Historic Preservation Officer

JEB:dfg

**USAG Alaska letter requesting SHPO concurrence regarding the Donnelly Drop Zone Expansion**

**Office of History and Archaeology: Cultural Resources Report Coversheet  
(Must Accompany All Compliance Reports Submitted to OHA/SHPO)**



Office of History and Archaeology  
Division of Parks & Outdoor Recreation  
Alaska Department of Natural Resources  
550 W. 7<sup>th</sup> Ave., Suite 1310  
Anchorage, AK 99501-3565

Phone: (907) 269-8721  
Fax: (907) 269-8908  
<http://www.dnr.state.ak.us/parks/oha/index.htm>

Was this survey/investigation (Check one): Negative  Positive

Negative = no cultural resource sites were discovered or reported on.  
Positive = new sites were discovered or known sites were visited and reported.

Note: Alaska Heritage Resources Survey (AHRIS) numbers are **required** for reported cultural resource sites, including buildings. (Assigning an AHRIS number is critical for record keeping and does not indicate whether the site has been evaluated for its historic significance. AHRIS numbers can be obtained by contacting Joan Dale at 907-269-8718.)

**Project/Report Information:**

- Report Title: Donnelly Drop Zone Expansion
- Report Author(s): Meg Thornton
- Report Date: December 2007
- Submitting Organization/Agency: US Army Garrison Alaska, Department of Public Works
- Project Name and Project Number: Donnelly Drop Zone Expansion
- Principal Investigator (PI) name: Meg Thornton

**Geographic Information (attach an extra sheet or cite report page numbers if necessary)**

- USGS 1:250,000 Quadrangle(s): Big Delta
- USGS 1:63,360 Mapsheet(s): Unk Alaska
- Meridian/Township / Range / Section (MTRS) location: (all affected sections)  
Format example: "F021N018E|13-14"  
\_\_\_\_\_
- Verbal description of survey area  
(for example: "123 Acme Street," "confluence of Fish and Moose creeks," "Milepost 9-16 of the Smithville Highway")  
\_\_\_\_\_

- Does this report contain boundary coordinates for the survey area? Yes  No  Page #(s) \_\_\_\_\_
- Does this report contain boundary coordinates for reported sites? Yes  No  Page #(s) \_\_\_\_\_
- Land owner(s): US Army Garrison Alaska
- Answer one: Acres Surveyed 0 Hectares Surveyed \_\_\_\_\_

**Cultural Resources Management (CRM) Information**

- List AHRIS numbers of all investigated or described sites – both within and outside the survey area (attach an extra page if necessary): XMH-01274, XMH-01072, XMH-01073 (all previously surveyed)
- Is the report part of a National Historic Preservation Act - Section 106 consultation? Yes  No
- Is the report part of an Alaska Historic Preservation Act compliance consultation? Yes  No
- Does the report's data support a submitting agency's determination of eligibility or effect? Yes  No
- Was this report submitted to fulfill State Field Archaeology Permit requirements? Yes  No   
Permit No.: \_\_\_\_\_



REPLY TO  
ATTENTION OF:

DEPARTMENT OF THE ARMY  
INSTALLATION MANAGEMENT COMMAND  
HEADQUARTERS, U.S. ARMY GARRISON ALASKA AND FORT RICHARDSON  
724 POSTAL SERVICE LOOP #4500  
FORT RICHARDSON, ALASKA 99505-4600

DEC 12 2007

Directorate of Public Works

SUBJECT: Donnelly Drop Zone Clearing Project, Donnelly Training Area, Fort Wainwright, Alaska (FWA)

Judith E. Bittner  
State Historic Preservation Officer  
Office of History and Archaeology  
550 West Seventh Avenue, Suite 1310  
Anchorage, Alaska 99501-1365

Dear Ms. Bittner:

The U.S. Army Garrison, Alaska (USAG Alaska) proposes to expand Donnelly Drop Zone (DZ) an additional 1,162 acres to a total size of 2,000 meters wide and 5,000 meters long. All work will take place within the Donnelly Training Area East (DTA), FWA (Figure 1).

A Section 106, National Historic Preservation Act (NHPA), review of the current project area was conducted in October 2006. No National Register eligible cultural resources were identified within the area of potential effect (APE) for this project. Application of the Criteria for Identification and Evaluation of Historic Properties [36 CFR 800.4(d)] indicates a finding of "No Historic Properties Affected" for the proposed project, based on the findings outlined below. USAG Alaska requests your concurrence with this finding.

#### Undertaking

USAG Alaska proposes to expand the Donnelly DZ. This expansion will increase the size to accommodate tactical requirements for mass tactical airborne insertions of the 1-25 ABCT or an airborne task force employed by a C17 tactical formation. This project will include clearing and the removal of drop hazards in Donnelly DZ. This will address safety issues and will include removal of posts and telephone poles (in coordination with Directorate of Public Works Fort Greely, Alaska), fences and scattered trees. All objects will either be completely removed or stumps will be taken down as near to the ground level as possible. Ground disturbance will take place only at discrete locations where a ground object needs to be removed. Issues other than cultural resources are being addressed in an Environmental Assessment being conducted by USAG Alaska.

### **Setting**

The DTA is located in central Alaska, north of the Alaska Range in the Tanana River Valley. The DTA lies 120 miles south of the Arctic Circle, approximately 110 miles southeast of Fairbanks near Delta Junction, Alaska, and six road miles south of the junction of the Alaska and Richardson highways. DTA consists of two large training areas, DTA West (approximately 531,000 acres) and DTA East (approximately 93,000 acres).

The DTA has the northern continental climate of the Alaskan Interior, characterized by short, moderate summers; long, cold winters, and little precipitation or humidity. Average monthly temperatures in Fairbanks range from -11.5° Fahrenheit (F) in January to 61.5°F in July, with an average annual temperature of 26.3°F. The record low temperature is -66°F, and the record high is 98°F. Average annual precipitation is 10.4 inches, most of which falls as rain during summer and early fall. Average annual snowfall is 67 inches, with a record high of 168 inches during the winter of 1970-71 (Natural Resources Branch 2001).

### **Background**

FWA training lands fall within an area occupied at the time of Euro-American contact by Lower-Middle Tanana Athabascans, including 'bands' described generally as the Salcha, Big Delta-Goodpaster, Wood River and Chena Bands (McKenna 1981: 564; Andrews 1975: 177; Mishler 1986). Traditional settlement patterns were focused on a widely mobile seasonal round, with the fall caribou hunt playing a pivotal role in subsistence preparations for the winter. Summer activities were focused at fish camps, and in berry/root collecting and sheep hunting (McKenna 1981: 565). These activities were frequently a communal focus, with several local 'bands' connected by common interest, geography and intermarriage. Despite anthropological attempts to define 'boundaries' for the peoples living in the lower Tanana River valley, natural terrain served as the only definable 'boundary' to settlement patterns (McKenna 1981).

As Euro-American traders, miners, missionaries and explorers moved into the Tanana River valley, the traditional lifestyles of local Athabaskan groups were disrupted. Access to trade goods and the development of the fur trade not only affected traditional material culture, but also began to dramatically affect Native subsistence activities and settlement patterns. Similarly, the advent of missionaries in the Interior of Alaska profoundly affected traditional social organization. The introduction of mission schools for Native children and the doctrine of new religious beliefs contributed to an erosion of traditional settlement patterns and practices (McKenna 1981).

In 1898, the discovery of gold in the Tanana uplands began a rush of Euro-American settlement to the Tanana valley. As the economic importance of the Tanana 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 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, and following the Tanana River to Fairbanks. Completion of the Alaska Railroad in 1923 was followed 20 years 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 initiation of World War II (WWII), and subsequent military build-up in Alaska. Of particular significance was the development of airfields near Delta Junction (Fort Greely), Fairbanks (Ladd Field, later FWA), and 26 miles southeast of Fairbanks (Eielson Air Force Base). These locations began as lend-lease bases and cold weather testing centers, but soon expanded with the increased need for military support during WWII and later the Cold War.

#### **Literature Review**

Archaeological research on FWA's training areas 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; Staley 1993), scientific papers (Holmes and Anderson 1986; West 1967, 1975), and the identification of at least 341 archaeological sites. Work on FWA has been largely stratified sampling in nature, resulting at times in as little as one percent of the survey universe being inventoried. This work has generally focused on known recorded sites and areas thought to be of very highest potential for containing archaeological sites. Thus, while a large number of important sites have been identified on FWA training lands, a number of important gaps exist in the cultural resource inventory.

Despite its incomplete nature, however, 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 in the definition of the Denali Complex of the American Paleoarctic Tradition (Anderson 1970; West 1967, 1981). 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 12,000 before present (BP)—are located just to the north of DTA East, in the vicinity of Shaw

-4-

Creek (Holmes 1996, 1998; Holmes et al. 1996; Yesner et al. 1999). 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 on FWA training lands, as are late prehistoric Athabascan (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).

#### Section 106 (NHPA) Inventory

During October of 2007, a USAG Alaska DTA Archaeologist reviewed the project. In the summers of 2002, 2003 and 2006, two archaeological survey crews (each comprised of four archaeologists) employed by the Center for Environmental Management of Military Lands (CEMML, Colorado State University), conducted a pedestrian survey of the proposed project area at DTA.

The project's APE encompassed an area larger than the anticipated project footprint, in order to ensure coverage of areas that may incur secondary impacts during construction or use. Parallel pedestrian transects spaced at approximate 20 meter intervals were walked systematically across the APE and surrounding area (see Figure 3). No cultural material was observed inside the APE.

#### Cultural Resources

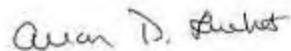
One historic site (XMH-01274) has been previously recorded within the proposed project area (Figure 2). This site was recorded during a 2005 Phase I survey (Price 2006). Two more sites (XMH-01072 and XMH-01073) are located to the east of the proposed project area.

***Sensitive cultural resource site information  
has been removed from this letter by USAG  
Alaska due to public release of the EA  
document.***

-6-

If you require additional information, please contact Aaron Robertson, USAG Alaska DTA Archaeologist, at (907) 873-4717.

Sincerely,



Allan D. Lucht  
Director, U.S. Army Garrison Alaska  
Public Works

Enclosures

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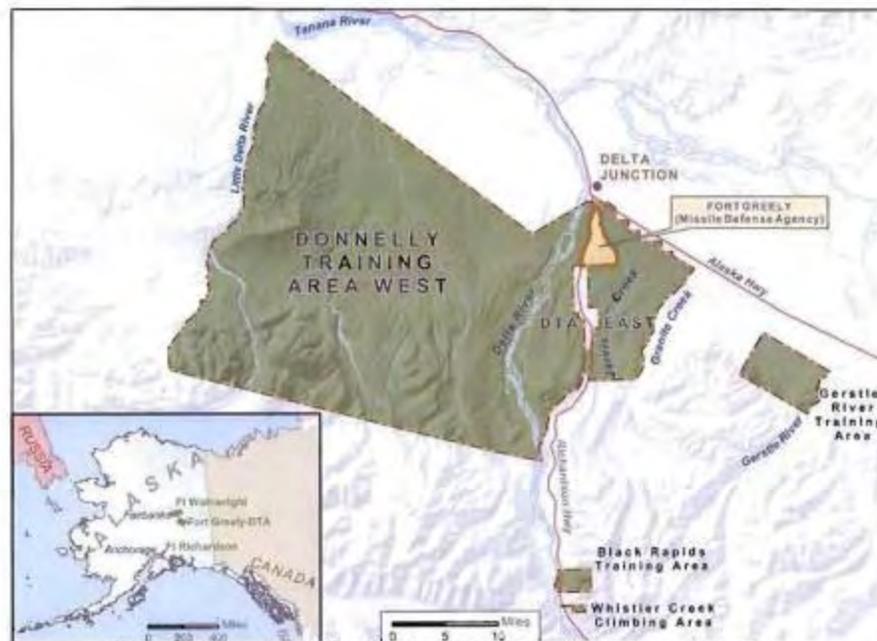


Figure 1: Location of Fort Wainwright's Donnelly Training Area East

**BLM Scoping Comment**



United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
Central Yukon Field Office  
1150 University Avenue  
Fairbanks, Alaska 99709-3844  
<http://www.blm.gov/ak>



Department of the Army  
Installation Management Command Headquarters  
U.S. Army Garrison Alaska and Fort Richardson  
Attn: Carrie McEnteer  
724 Postal Service Loop #6000  
Fort Richardson, Alaska 99505-6000

Dear Ms. McEnteer:

This is in response to your letter of October 25, 2007 requesting comments on the Environmental Assessment (EA) for Mobility and Maneuver Enhancement Projects at Donnelly Training Area (DTA) East, Alaska. I have provided our concerns and comments regarding each proposed enhancement, as well as some general comments that apply to all proposed enhancements, below. We encourage you to address these in the EA.

Proposed Enhancement A: Donnelly Drop Zone Expansion

This proposed enhancement will clear 2,474 acres in the southern Donnelly Training Area. We have three primary concerns specific to this proposal.

First, the Bureau of Land Management (BLM), in conjunction with the Army's Natural Resources Staff, has a long-established public wood cutting area designated in the area to be cleared. We have issued approximately 70 wood cutting permits per year in this area for several years. As recently as October, 2007, BLM, at the suggestion of the Army's Natural Resources staff, spent approximately ten thousand dollars to improve access to fire wood in this area. While we recognize that military use is the primary purpose of the withdrawal, we encourage you to consider the community benefit that will be lost in clearing this area, particularly given current fuel prices. We encourage you to minimize the reduction in available fire wood by 1) keeping the area to be cleared as small as practicable, 2) extending the period over which the clearing occurs for as long as possible, and 3) making as much wood as possible available to the public as the clearing is conducted.

Second, the area is well known for frequent high winds and clearing all vegetation from an area 3.1 miles by 2.1 miles is certain to create a major wind erosion hazard. While we are not in a position to determine what types of wind breaks or ground cover would be

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compatible with the purpose of the clearing, we strongly encourage you to consider all feasible mitigations for the wind erosion hazard.

Third, it is unclear from the map provided how close the clearing will come to Jarvis Creek, but maintaining the integrity of the riparian zone and avoiding the creation of erosion potential should be a primary consideration in the clearing operations.

#### Proposed Enhancement B: DTA East Trail Expansion

This proposed enhancement is to harden approximately 135 miles of existing trails to sustain all-season use, up to 92 feet wide. There is insufficient information provided to determine specific concerns with this proposed enhancement. However potential impacts that should be analyzed in the EA include:

- Introduction and spread of noxious and invasive plant species;
- Disruption of wildlife movement by such a wide road corridor;
- Erosion control, both on the road bed and in the road ditches;
- Consideration of community needs in disposing of woody debris created during right of way clearing.

This proposed enhancement also includes establishing above-river-bed all-season crossings of Jarvis Creek at three existing low-water crossings. Again, there is insufficient information to determine specific concerns. However it has been our experience that in going from low-water crossings to hardened crossings the hardened structure is often undersized for the application and that, in turn, leads to long term erosion and maintenance problems. We strongly recommend staying with the low water crossings if feasible.

#### Proposed Enhancement C: Establishment of a Hardened Bivouac

This proposed enhancement is to either upgrade the existing bivouac site at Buffalo Bivouac or establish a new site near Mary and Sue Lakes. There is not sufficient detail to identify specific concerns, however potential impacts that should be analyzed in the EA include:

- Introduction and spread of noxious and invasive plant species;
- Control of erosion due to both water and wind;
- Consideration of community needs in disposing of woody debris created during clearing

#### Concerns relative to all proposed enhancements:

All the proposed enhancements increase wildfire risk due to increased use, production of woody debris, and potential increase of grassy fuels. Thus, mitigation of fire risk should be included in all of the proposed actions.

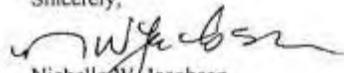
Impacts to wetlands should be acknowledged and mitigated to the extent possible.

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In addition, cumulative impacts due to continued range clearing and expansion of training activities should be adequately considered in determining the significance of environmental impacts.

If you have questions regarding these comments, please contact me at 907-474-2356 or e-mail [shelly\\_jacobson@blm.gov](mailto:shelly_jacobson@blm.gov). Thank you for the opportunity to comment on these proposals. I look forward to reviewing the actual EA.

Sincerely,



Nichelle W. Jacobson  
Manager, Central Yukon Field Office

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**CRTC Scoping Comment**



DEPARTMENT OF THE ARMY  
U.S. ARMY YUMA PROVING GROUND  
COLD REGIONS TEST CENTER  
P O BOX 666  
DELTA JUNCTION, AK 99737

CSTE-DTC-YP-CR

20 November 2007

MEMORANDUM FOR Headquarters, U.S. Army Garrison Alaska and Fort Richardson, Attn:  
NEPA Branch Chief, Carrie McEnteer, 724 Postal Service Loop #6000, Fort Richardson, Alaska  
99505-6000.

Subject: Comments on Environmental Assessment (EA) for Mobility and Maneuver  
Enhancement Projects at Donnelly Training Area (DTA) East, Alaska.

1. The Cold Regions Test Center (CRTC) has reviewed the proposed enhancement projects and  
has the following comments:

a. The Jarvis West Training Area was designated for use by CRTC as part of the  
Mobility Test Complex. CRTC has plans to construct permanent cross country trails,  
incorporating several existing trails, to the east of the Mobility Test Complex within the Jarvis  
West Training Area. The trails are modeled after the test courses located at Aberdeen and Yuma  
Proving Grounds; cold climate testing of vehicles must be performed under identical course  
conditions; therefore, the trails located within the training area must be protected from  
degradation or improvement.

b. The trail to the north of the Mobility Test Complex and south of Missile Defense  
Complex is used by CRTC as a cross country trail. Improving this trail will eliminate it as a  
cross country test course.

c. CRTC encourages USAG Alaska to pursue the projects outlined for the following  
reasons: the proposed projects will open additional test and training areas, reducing pressure on  
the Donnelly West Training Area and allowing the general public increased access to the base of  
the Granite Mountains; and hardening trails and bivouac sites will reduce potential erosion and  
damage to wetlands.

CSTE-DTC-YP-CR

Subject: Comments on Environmental Assessment (EA) for Mobility and Maneuver Enhancement Projects at Donnelly Training Area (DTA) East, Alaska.

2. POC: Mr. Michael Nuckols, Environmental and Safety Specialist,  
[Michael.Nuckols@US.Army.mil](mailto:Michael.Nuckols@US.Army.mil), (907) 873-1245.



VINCENT M. MALONE  
LTC, IN  
Commanding

**Fort Greely Scoping  
Comment**

Ili Carrie -

Thanks for the notice of the upcoming USARAK EA.

In preparing the document we just have a couple thoughts for your consideration which are below

Any questions let us know

Dan Miller  
Fort Greely Environmental  
907-873-3105

---

-----Original Message-----

From: Keglovits, Ron [mailto:Ron.Keglovits@tdytsi.com]  
Sent: Monday, October 29, 2007 12:10 PM  
To: Miller, Derek D CTR USA IMCOM  
Cc: Lovelace, Norman; Boerst, Christine Ms CIV USA IMCOM  
Subject: FW: Request for Scoping Comments on Three Military Maneuver Enhancement Projects at DTA East (UNCLASSIFIED)  
Importance: High

Dan,

Per our conversation earlier today...here's a couple of comments. One is from Norm's.

1. If the expanded training facilities and associated increase in training activities will create a need for FGA to provide infrastructure support or some sort of services (e.g. solid or haz waste disposal, spill response) to the troop units, these activities should be analyzed in the EA.

2. Recommend FGA Security Office review the proposed action since it looks like some of the proposed activities get real close to the FGA boundary. Could create a security issue for the missile field.

Ron Keglovits

Teledyne Solutions, Inc  
5000 Bradford Drive, Suite 200  
Huntsville, AL 35805-1953

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**NRCS Scoping Comment**

United States Department of Agriculture



Natural Resources Conservation Service  
590 University Avenue, Suite B  
Fairbanks, AK 99709  
907-479-3159 x 108

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November 20, 2007

To: Carrie McEnteer, NEPA Branch Chief, Fort Wainwright

From: Trudy Pink, Soil Scientist, USDA-NRCS, Fairbanks

Subject: Comments on the Environmental Assessment for Mobility and Maneuver Enhancement Projects at Donnelly Training Area East, Alaska

Dear Ms. McEnteer,

I have reviewed the scoping statement for the Donnelly Drop Zone Expansion, DTA East Trail Expansion, and the Establishment of a Hardened Bivouac Area. Below are my comments as they relate to soils.

**Donnelly Drop Zone Expansion**

**Alternative 1:** I wouldn't recommend this alternative. The proposed site is in an area that is exposed to high winds on a regular basis. The soils here have a thin layer of loess over sand and gravel. The soils are cold and droughty. The existing vegetation is there because it is what can grow in such a harsh environment. Straight blading the site would remove the organic layer and subject the area to wind erosion. Revegetation of the area would be difficult.

**Alternative 2:** A much better option considering the area.

**DTA East Trail Expansion and Establishment of Hardened Bivouac Sites:**

The soils in these proposed areas are suitable for such activities. There will be areas that have permafrost and/ or are wet. These areas will probably need more extensive maintenance, but shouldn't create any long term problems.

Helping People Help the Land  
An Equal Opportunity Provider and Employer



**USFWS Scoping Comment**

-----Original Message-----

From: Sarah\_Conn@fws.gov [mailto:Sarah\_Conn@fws.gov]

Sent: Friday, October 26, 2007 4:27 PM

To: McEnteer, Carrie L Ms CTR USA IMCOM

Subject: Re: Fw: Request for Scoping Comments on Three Military Maneuver Enhancement Projects at DTA East (UNCLASSIFIED)

Ms. McEnteer,

Thank you for your e-mail requesting information on threatened and endangered species and critical habitat pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act).

Based on the information you provided I understand you are working on a project to develop a range of improvements on the DTA East. This training area is near Delta Junction in interior Alaska and is used by a variety of military divisions for training exercises.

No threatened or endangered species occur in the area and there are no designated or proposed critical habitat units in interior Alaska. Therefore, the Service concludes the proposed project will not adversely affect listed resources. Preparation of a Biological Assessment or further consultation under the Act is not required.

Sarah

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**APPENDIX B - PUBLIC COMMENTS SCOPING REPORT**

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## 1.0 INTRODUCTION

This appendix contains the Army's responses to comments received on the Draft Environmental Assessment (EA) and Finding of No Significant Impact (FNSI) for Donnelly Training Area (DTA) East Mobility and Maneuver Enhancement, which was released in January 2008. During the public comment process for the Draft EA, comments were solicited from state and federal agencies, Alaska Native tribes, special interest groups, and the public. All consultations and comments received were carefully considered and aided the Army in identifying key issues leading to the completion of the Final EA and FNSI. The U.S. Army Garrison Alaska (USAG Alaska) engaged in informal consultations with the following agencies to discuss environmental and cultural issues relevant to the Proposed Action: Alaska Department of Environmental Conservation (ADEC); Alaska Department of Fish and Game (ADFG); Alaska Department of Natural Resources (ADNR), Office of Habitat Management and Permitting; ADNR Office of History and Archaeology (OHA); Bureau of Land Management (BLM); Alaska Fire Service; City of Delta Junction; Cold Regions Test Center (CRTC); Division of Forestry, Delta Area Office; Fort Greely; U.S. Air Force; U.S. Army Corps of Engineers (USACE), Regulatory Branch; U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS); and the U.S. Fish and Wildlife Service (USFWS). Consultation was also conducted with six Alaska Native tribal governments representing the following villages: Dot Lake, Healy Lake, Eagle, Northway, Tanacross and Tetlin. USAG Alaska appreciates all public, tribal and agency interest and participation associated with the Proposed Action.

A summary of the Draft EA public comment process is presented in Section 2. An overview of government-to-government coordination is presented in Section 3. Responses to comment letters and electronic mail received from federal, state, and local agencies, Alaska tribal entities, special interest groups, and the public are found in Section 4.0, as well as responses to comments made at the public meeting.

## 2.0 SUMMARY OF THE PUBLIC COMMENT PROCESS

A Notice of Availability (NOA) for the Draft EA and FNSI was published in the *Fairbanks Daily News-Miner* and the *Delta Wind* (Table C-1). The NOA included information on the public comment period, the January 23, 2008 Public Meeting, and the availability of the Draft EA for review online at <http://www.usarak.army.mil/conservation/>. It also included the location of hardcopies for review at the Noel Wein Library in Fairbanks and the Community Library in Delta Junction.

**Table C-1. Dates and Publications for Advertisements**

<b>Newspaper</b>	<b>Dates of Publication</b>
<i>Fairbanks Daily News-Miner</i>	January 14, 20, 22, 23 and February 1, 2008
<i>Delta Wind</i>	January 31 and February 7, 2008*

\*Note: Due to an internal error within the Delta Wind, the planned publication dates of January 17 and 24, 2008 were omitted.

The 30-day period for public comment on the Draft EA and FNSI began on January 14, 2008 and ended on February 14, 2008. USAG Alaska held a public meeting regarding the Draft EA and FNSI at the Delta Junction Community Center in Delta Junction, Alaska on January 23, 2008. A presentation by USAG Alaska was given at 6:30 p.m. Verbal comments were

recorded during the public meeting by a court reporter. No additional comments were received via e-mail, fax, telephone, or mail during the public comment period.

In all, 3 respondents provided comments during the public meeting (see Table C-2 and Section 4.0). Of the 3 respondents, 2 were from state agencies, 1 was received from the public.

**Table C-2. Number of Written Comments Received During the Draft EA Comment Period**

Respondent	Number of Respondents
Government Agencies	2
Interest Groups	0
General Public	1
Tribes	0
<b>Total</b>	<b>3</b>

All transcripts were analyzed for their content and the different perspectives they offered. Where comments presented new information or ideas that warranted changes, the text of the EA and FNSI were revised accordingly in preparation of the Final EA. Reference to the revision, if applicable, can be found in the response to comments in Section 4. Some comments did not require a modification of the EA and FNSI because they were considered expressions of opinion. However they were noted and will be considered in the context of the Army’s overall analysis of comments and EA alternatives and will be included in the Administrative Record.

### 3.0 GOVERNMENT-TO-GOVERNMENT CONSULTATION

Executive Order (EO) 13175, *Consultation and Coordination with Indian Tribal Governments*, directs federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies and projects. The Department of Defense (DoD) American Indian/Alaskan Native Policy: Alaska Implementation Guidance requires DoD components to “consult of a Government-to-Government basis with tribes, concerning DoD activities which may have the potential to affect tribal rights and resources, on or off Indian Land, and interests in Indian Land.” In accordance with EOs and policies, the USAG Alaska provided written correspondence to six Alaska Native tribal governments representing the following villages: the Village of Dot Lake, Healy Lake Village, Eagle, Northway Village, Native Village of Tanacross and Native Village of Tetlin regarding the release of the Draft EA and comment period. To date, no response has been received from these Tribes regarding the Draft EA.

### 4.0 COMMENTS ON THE DRAFT EA AND ARMY RESPONSES

This section contains summarized responses to the comments received on the Draft EA. The Army has prepared general responses for the 5 overlying issues which cover the most common items of concern raised by the public (Table C-3). Issues are arranged alphabetically and not necessarily by order of importance.

**Table C-3. Issues Raised During the Draft EA Comment Period.**

Issue Number	Issue	Number of Comments
1.	Bridge Crossing(s) of Jarvis Creek	3
2.	Caribou Herds	1

**Table C-3. Issues Raised During the Draft EA Comment Period.**

Issue Number	Issue	Number of Comments
3.	Public Access, Subsistence and Recreation	4
4.	Richardson Highway Closures	1
5.	Vegetation Clearing	2

The following responses address specific issues raised during the public comment period. These comments have been carefully considered, and have helped USAG Alaska to identify and further evaluate potential environmental impacts and mitigation measures regarding the Proposed Action.

The USAG Alaska responses provided below contain specific information that will be helpful to the public and agencies to understand USAG Alaska's evaluation of potential environmental impacts associated with the mobility and maneuver enhancements proposed for DTA East. USAG Alaska has carefully evaluated the existing conditions at DTA East, reviewed Army policy, studied potential impacts to the human, natural, and cultural environment from the Proposed Action, and considered public comments, to arrive at the conclusion that sufficient analysis and mitigation has been incorporated into the mobility and maneuver enhancements EA (see Final FNSI). Below is a summary of comments and responses.

*Commenter 1: Ms. Margie Mullins, Delta Vanguard Community publication*

**Comment 1:** Due to the size of the EA document, it was difficult to stand in the Delta Junction Community Library and read the entire document. The document was available online, however, review is difficult for those who prefer to highlight, mark-up, and cross reference within the document. Newspapers, at the very least should be sent a hard copy so they can excerpt parts of it or review/synthesize it for a better synopsis. For the next project enough hardcopies should be made available for the newspapers and for individuals who specifically request a copy of the document.

**Response 1:** Thank you for your comment. Due to the large size of the document, USAG Alaska made the decision to provide digital copies rather than printed copies to the public in the interest of conserving paper. This policy will continue to apply to future actions as well.

**Comment 2:** Approximately 35 phone calls have been received by the Delta Vanguard Community and Public Interest News Magazine from people wanting to know if their subsistence hunting access and their recreational access is going to be blocked off by these enhancements. The Army is encouraged to place a whole new access road along the perimeter of the edge, including State lands to allow for continued public access.

**Response 2:** The areas of DTA East being considered for the proposed enhancements possess a wide range of plants, animals and fish suitable for regional subsistence and public recreational activities. Overall, the Proposed Action would have little effect on subsistence or recreational activities, and in some cases would be beneficial to public access by improving trail access conditions. The Army must manage its lands to meet the primary military mission: military readiness. Public access to recreation on Army lands in Alaska is an important part of many residents' lifestyles. In accordance with the Sikes Act, USAG Alaska works to ensure that its lands are available for public use, as much as possible, without affecting its primary military mission. Military use of DTA East is not anticipated to increase from this activity beyond the future levels of use addressed in previous NEPA documentation (see Section 1.6 of the EA); therefore, no noticeable impacts would occur to recreation from military use of the maneuver area upgrades at DTA East.

Clearing activities for the Donnelly Drop Zone Expansion, Trail Network Upgrades, and Bivouac Construction would result in a minor loss (up to 2 percent) of vegetation and habitat within DTA East (see Sections 3.3.2.2 and 3.4.2.2 of the EA). However, this loss would be negligible to the overall available lands for subsistence and recreation within DTA and the surrounding region. Clearing at Donnelly Drop Zone and the Bivouac site would reduce woodland hunting recreation. The drop zone expansion area would be converted to scrubland and grassland habitat and would be periodically subject to temporary closures during training exercises. The bivouac site would be permanently closed to public access. This reduction, however, would not affect existing recreational opportunities within DTA East. Caribou activity within the proposed expansion areas could also be impacted; however, this was also determined to be minor and temporary in nature as the primary caribou habitat would not be impacted and it is not during critical times in their annual migration and calving cycles. In addition, expansion and improvement of the existing areas would cause additional acreage of land that is restricted during military training but otherwise made available for recreation and subsistence purposes these closures would be temporary and occur only during training activities. Also, improvements to the existing trail network and repair of degraded trails would allow for additional access to areas within DTA East. The potential exists for installation of additional access gates along trail segments for public safety that would be closed during military training.

**Comment 3:** At least two bridge crossings of Jarvis Creek should be considered, one permanent and the second portable. A permanent bridge would benefit more of the public on a year-round basis to access areas when the military is not training.

**Response 3:** Thank you for your comment. Under the Proposed Action, all-season crossings of Jarvis Creek could be established at three existing low-water crossings (12-Mile Crossing, Middle Crossing, or Canister Crossing, see Figure 3 in EA). The environmental impacts associated with a permanent bridge outweighed the benefits afforded to the military for training purposes of such a bridge. The current proposal is to utilize non-permanent bridge structures, such as a Bailey Bridge, that can be installed and removed in response to military training access requirements. The actual method to be used by USARAK for an all-season crossing of Jarvis Creek would be determined based on hydrological studies in consultation with the U.S. Army Corps of Engineers. Whichever method is chosen, the bridge span would be non-permanent, but permanent abutments may be required.

*Commenter 2: Mr. Steve DuBois, Alaska Department of Fish and Game*

**Comment 4:** As more development is occurring at DTA East, it appears that there will be little to no opportunity for public access within DTA East and to State lands located to the south of DTA East, which historically has been 33-Mile Loop. During the BAX/CACTF public meetings, the Army stated public access would be maintained/provided to these lands. Is the Army considering provisions to maintain public access to these state lands?

**Response 4:** Construction and operation of the Battle Area Complex (BAX) at DTA East will impact public access to certain portions of 33-Mile Loop Road. Public access to adjacent non-military lands, such as the Granite Mountains via 33-Mile Loop Road and 12-Mile Crossing will also be impacted as a result of the BAX. However, alternate access trails to the Granite Mountains exist off of military lands. In addition, in the Record of Decision, the Army committed to placement of access gates along 12-Mile Crossing and 33-Mile Loop Road to allow for maximum continued recreational use and to maximize public safety. Gates could be located in particular areas to allow recreational use of the surrounding area while still conducting training. Please see the *Final Environmental Impact Statement for the Construction*

*and the Operation of a Battle Area Complex and a Combined Arms Collective Training Facility with U.S. Army Lands in Alaska, June 2006* for additional information. The Army is currently working on addressing access issues at DTA East.

**Comment 5:** The public has been told that when DTA East is not being used, there will be access through DTA East; but at the same time, the mission is changing so there will potentially be more and more training scheduled. An adverse cumulative effect to public access and recreation may occur with the increased development of DTA East, coupled with the Army's increased use of DTA with and the likely addition of more troops. Limited, if any, public access to State lands may be the end result.

**Response 5:** Overall, the Proposed Action would have little effect on subsistence or recreational activities, and in some cases would be beneficial to public access. The Army must manage its lands to meet the primary military mission: military readiness. Public access to recreation on Army lands in Alaska is an important part of many residents' lifestyles. In accordance with the Sikes Act, USAG Alaska works to ensure that its lands are available for public use, as much as possible, without affecting its primary military mission. Anticipated military use of DTA East is not anticipated to increase from this activity beyond the future levels of use addressed in previous NEPA documentation (see Sections 1.6 and 5.1.3 of the EA); therefore, no noticeable impacts would occur to recreation from military use of the maneuver area upgrades at DTA East. In fact, improvements to the existing trail network and repair of degraded trails would allow for additional access to areas within DTA East.

**Comment 6:** An alternative considered during the BAX/CACTF was for the Army to establish/develop a trail on the eastern boundary along Granite Creek where the public could access the lands south of DTA East from the Alaska Highway.

**Response 6:** Under the DTA East Trail Network Upgrade, USAG Alaska is proposing to improve approximately 100 miles of existing trails and firebreaks, in addition to improving 36 miles of 33-Mile Loop within DTA East. The proposed upgrades include improvement of trails within the eastern portion of DTA East (see Figure 3 in the EA). Depending upon funding, the improvements to the trails would be anticipated over a 5- to 7-year period.

**Comment 7:** One of the proposed crossings of Jarvis Creek is located at an area commonly used by the public for access. If bridges are put where public access is currently taking place and would then be closed to the public, one of the only access points from Richardson Highway would be cut off.

**Response 7:** It is likely that when non-permanent bridge structures are placed at stream crossings to support training events, they would be off-limits to the public. Bridge locations will be determined following the completion of hydrological studies in consultation with the U.S. Army Corps of Engineers. However, bridges will be placed in areas that will not inhibit existing low-water crossings of Jarvis Creek by the public; preventing potential adverse impacts to public access to adjacent state lands. The EA document has been revised to clarify that temporary bridges would be constructed in areas that would avoid existing low-water crossings currently used by the public.

*Commenter 3: Fronty Parker, Alaska Department of Fish and Game*

**Comment 8:** The southernmost proposed crossing of Jarvis Creek is traditionally a popular place where people can access across to the east and to the south (State lands). Placing a bridge structure in this location would be discouraged since this would likely restrict public crossing of Jarvis Creek at some point. Low-water crossing areas along Jarvis Creek are limited, and therefore, this location is important for public use.

**Response 8:** Thank you for your comment. Please see Response #7.

**Comment 9:** Increased caribou activity is occurring to the area south and west of the existing Donnelly Drop Zone airstrip. The area is an important winter habitat for the heard and also an area used by the public for viewing along stretches of the Richardson Highway. Clearing to the north would have less of an impact on the Caribou than clearing in the southern part.

**Response 9:** The Army is proposing to construct a drop zone that will meet the requirements for a mass tactical parachute drop delivered by a formation of three C-17 aircraft flying side-by-side in order to address a shortage of large tactical drop zones in Alaska. A mass tactical parachute drop requires an area of 1.2 miles wide by 3.2 miles long. Alternative areas were considered for clearing, but it was determined that a substantially greater amount of vegetation would need to be removed at these alternate locations as compared to the Donnelly Drop Zone area, as it is an already partially cleared drop zone and is naturally sparsely vegetated by large trees. Locating the drop zone in other potential areas would result in a conflict with existing training area use and adjacent land uses (populated areas and the Richardson Highway). Impacts to caribou and their winter habitat are expected to be minor as the scrub/shrub vegetation layer (primary caribou habitat) would not be removed as part the Proposed Action; only trees (greater than one inch caliper or five feet in height) would be removed from the Drop Zone. During training events, impacts to caribou (disturbance) could occur when the animals are present in the drop zone. However, potential disturbance would be to a few individuals rather than the population, would temporary as tactical parachute drops are short in duration, and minor. In addition, once troops have “dropped in”, they will transition to their next training exercise within other parts of DTA East or West avoiding further potential disturbance to caribou.

**Comment 10:** If clearing needs to be done to the south of the existing airstrip, the individual tree removal method or other methods which would retain ground vegetation would be the preferred clearing method.

**Response 10:** Thank you for your comment. Please see Figure 2 in the EA. The individual tree removal method will be primarily used in the southern portions of the Donnelly Drop Zone under the Proposed Action, thus preserving the lower-lying vegetation.

**Comment 11:** Would Richardson Highway be closed during jump operations?

**Response 11:** Closure of the Richardson Highway could occur during jump operations. Proper protocol, including notifications, would be followed prior to any possible closures.

**Comment 12:** Military personnel should be present that are involved in making the training decisions. As more and more military projects arise, the decision-makers attend fewer and fewer meetings.

**Response 12:** Thank you for your comment.

**APPENDIX C - FINDING OF NO PRACTICABLE ALTERNATIVE**

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## **FINAL FINDING OF NO PRACTICABLE ALTERNATIVE DONNELLY TRAINING AREA EAST MOBILITY AND MANEUVER ENHANCEMENTS, DONNELLY TRAINING AREA, AK**

Pursuant to Executive Orders 11988 (*Floodplain Management*) and 11990 (*Protection of Wetlands*), in order for the Army to construct the proposed maneuver and mobility enhancements 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 *Donnelly Training Area East Mobility and Maneuver Enhancements Environmental Assessment* and its findings with respect to the Proposed Action.

**Donnelly Drop Zone Expansion:** Construction of a 2,474-acre drop zone outside of DTA East was considered and eliminated from further consideration. Current and future military training for C-17 tactical formations and the 4<sup>th</sup> Brigade Combat Team (Airborne), 25<sup>th</sup> Infantry Division requires this size of drop zone be located near training facilities such as those present at DTA East (i.e., Battle Area Complex/Combined Arms Collective Training Facility[BAX/CACTF]). The associated costs and environmental impacts that would result to recreate such facilities elsewhere would far outweigh impacts associated within the Donnelly Drop Zone Expansion.

Various other locations for the proposed 2,474-acre drop zone within DTA East were also considered. Creation of an entirely new 2,474-acre drop zone was eliminated due to the extent of clearing that would be required, and the lack of available area that would pose less overall environmental impacts (i.e., vegetation, wildlife habitat, wetlands and cultural resources). Existing natural features of the Donnelly Drop Zone area such as flat topography and a naturally-occurring low density of trees as compared to other locations at DTA East makes this existing drop zone site a suitable location from both an operational and environmental perspective. Expansion of the Buffalo Drop Zone was also considered as it would utilize an existing drop zone. This alternative, however, was dismissed due to ground training as the area required for drop zone ground surface would pose conflict with surface danger zones of adjacent training ranges (BAX/CACTF). In addition, Jarvis Creek and high tension power lines within the area cause additional constraints as these both act as drop hazards. Due to these constraints, the required drop zone ground surface area could not be achieved at the Buffalo Drop Zone.

Other configurations for the proposed expansion of Donnelly Drop Zone itself were limited due to constraints along all sides of the existing drop zone. Jarvis and Ober creeks and additional wetland communities would prevent the expansion of the existing Donnelly Drop Zone further to the east. The installation boundary to the north and to the south acts as a constraint for northward or southward expansion. Finally, the Richardson Highway to the west prevents westward expansion as the highway would pose a safety hazard for Soldiers crossing the highway to reach ground training areas.

The Army's selection of the proposed location for the 2,474-acre drop zone was determined to have the least amount of human safety concerns, meet Army training requirements, and have the least amount of environmental impacts.

**DTA East Trail Network Upgrade:** As this Proposed Action involves upgrading the existing trail network at DTA East to accommodate sustainable Stryker and other military use, no other reasonable alternative would exist to avoid impacts to wetlands or the floodplains of Jarvis and

Ober creeks. The proposed DTA East Trail Network Upgrade would however, utilize best management practices (BMPs) and environmentally sound design principals to reduce or avoid impacts to floodplain and wetland resources. In addition, mitigation required by the Section 404 permitting process would help to mitigate for any unavoidable impacts to wetlands.

**Hardened Bivouac:** The Army was able to site both the proposed bivouac locations within areas that do not contain wetland or floodplain areas.

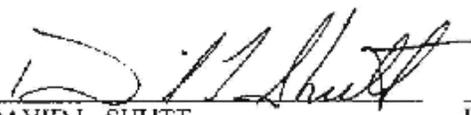
**Conclusions:** Construction of the proposed Donnelly Drop Zone Expansion and trail upgrades would require a Clean Water Act Section 404 permit. Pursuant to Executive Orders 11988 and 11990, the Army would take all practicable measures to minimize potential harm to or within the floodplain and wetlands as further described below.

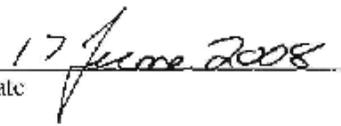
As both the Donnelly Drop Zone expansion site and the trail upgrade areas contain extensive wetlands, other than the No Action Alternative, no practicable alternative exists to entirely avoid wetlands. The amount of permanent wetland loss due to the construction of these projects would result in the loss of up to 5 percent of wetlands within DTA East. The cumulative effect of the DTA East Trail Network Upgrade would not create an obstruction to the floodplain, increase the water surface elevation of the base flood, or increase the flood heights or velocities associated with Jarvis or Ober creeks.

Impacts to wetlands could be avoided within the trail upgrade areas by widening trails in the direction opposite of wetland areas (i.e., into uplands). Mitigation measures to reduce impacts beyond what is required by the Section 404 permitting process could include restricting trail widths in locations where wetlands are present on both sides of the trail. In addition, BMPs including minimizing the extent of fill and construction equipment through site-specific design, limiting construction staging to upland and non-floodplain areas, and maintaining natural drainage patterns, would be used to minimize impacts to wetlands and floodplains.

Based on the pertinent considerations discussed herein, the Army hereby finds that there are no practicable alternatives to constructing the proposed facilities at DTA East. 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 three proposed enhancement projects.

APPROVED BY:

  
\_\_\_\_\_  
DAVID L. SHUTT  
Colonel, U.S. Army  
Commanding

  
\_\_\_\_\_  
Date

**APPENDIX D - IDENTIFIED ARCHAEOLOGICAL SITES**

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**Table D-1. Identified Archaeological Sites on Donnelly Training Area and Fort Greely**

<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>	<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>
<b>XBD-033</b>	Not Evaluated	Site	Unknown	<b>XMH-971</b>	Not Evaluated	Site	Unknown
<b>XBD-106</b>	Eligible	Site	Unknown	<b>XMH-973</b>	Not Evaluated	Site	Unknown
<b>XBD-107</b>	Not Evaluated	Site	Unknown	<b>XMH-974</b>	Not Eligible	Site	Unknown
<b>XBD-108</b>	Not Evaluated	Site	Unknown	<b>XMH-975</b>	Not Eligible	Site	Unknown
<b>XBD-109</b>	Not Evaluated	Site	Unknown	<b>XMH-976</b>	Not Eligible	Site	Unknown
<b>XBD-110</b>	Eligible	Site	Unknown	<b>XMH-977</b>	Eligible	Site	Unknown
<b>XBD-165</b>	Not Evaluated	Site	Unknown	<b>XMH-978</b>	Not Eligible	Site	Unknown
<b>XBD-166</b>	Not Evaluated	Site	Unknown	<b>XMH-979</b>	Not Evaluated	Site	Unknown
<b>XBD-167</b>	Not Evaluated	Site	Unknown	<b>XMH-980</b>	Not Evaluated	Site	Unknown
<b>XBD-183</b>	Not Evaluated	Site	Unknown	<b>XMH-982</b>	Not Eligible	Site	Unknown
<b>XBD-187</b>	Eligible	Site	Unknown	<b>XMH-983</b>	Not Evaluated	Site	Unknown
<b>XBD-188</b>	Eligible	Site	Unknown	<b>XMH-992</b>	Not Evaluated	Site	Unknown
<b>XBD-189</b>	Eligible	Site	Unknown	<b>XMH-993</b>	Not Evaluated	Site	Unknown
<b>XMH-001</b>	Not Evaluated	Site	American Paleoarctic "Denali"	<b>XMH-994</b>	Not Evaluated	Site	Unknown
<b>XMH-005</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-995</b>	Not Evaluated	Site	Unknown
<b>XMH-006</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-996</b>	Not Evaluated	Site	Unknown
<b>XMH-007</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-997</b>	Not Evaluated	Site	Unknown
<b>XMH-008</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-998</b>	Not Evaluated	Site	Unknown
<b>XMH-009</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-999</b>	Not Evaluated	Site	Unknown
<b>XMH-010</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-1051</b>	Not Evaluated	Site	Unknown
<b>XMH-011</b>	Eligible	Site	Unknown	<b>XMH-1052</b>	Not Evaluated	Site	Unknown
<b>XMH-012</b>	Eligible	Site	Unknown	<b>XMH-1053</b>	Not Evaluated	Site	Unknown
<b>XMH-016</b>	Not Evaluated	Site	Unknown	<b>XMH-1054</b>	Not Evaluated	Site	Unknown

**Table D-1. Identified Archaeological Sites on Donnelly Training Area and Fort Greely**

<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>	<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>
<b>XMH-019</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-1055</b>	Not Evaluated	Site	Unknown
<b>XMH-020</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-1056</b>	Not Evaluated	Site	Unknown
<b>XMH-023</b>	Not Eligible	Site	Unknown	<b>XMH-1057</b>	Not Evaluated	Site	Unknown
<b>XMH-061</b>	Not Evaluated	Site	Historic	<b>XMH-1058</b>	Not Evaluated	Site	Unknown
<b>XMH-226</b>	Not Evaluated	Site	Historic	<b>XMH-1059</b>	Not Eligible	Site	Unknown
<b>XMH-232</b>	Not Evaluated	Site	Unknown	<b>XMH-1060</b>	Not Evaluated	Site	Unknown
<b>XMH-233</b>	Not Evaluated	Site	Unknown	<b>XMH-1061</b>	Not Evaluated	Site	Unknown
<b>XMH-234</b>	Not Evaluated	Site	Unknown	<b>XMH-1062</b>	Not Evaluated	Site	Unknown
<b>XMH-235</b>	Not Evaluated	Site	Unknown	<b>XMH-1063</b>	Not Evaluated	Site	Unknown
<b>XMH-236</b>	Not Evaluated	Site	Unknown	<b>XMH-1064</b>	Not Evaluated	Site	Unknown
<b>XMH-237</b>	Not Evaluated	Site	Unknown	<b>XMH-1065</b>	Not Evaluated	Site	Unknown
<b>XMH-238</b>	Not Evaluated	Site	Unknown	<b>XMH-1066</b>	Not Evaluated	Site	Unknown
<b>XMH-253</b>	Not Evaluated	Site	Unknown	<b>XMH-1067</b>	Not Evaluated	Site	Unknown
<b>XMH-265</b>	Eligible	Site	Unknown	<b>XMH-1068</b>	Not Evaluated	Site	Unknown
<b>XMH-266</b>	Eligible	Site	Unknown	<b>XMH-1069</b>	Not Evaluated	Site	Unknown
<b>XMH-267</b>	Not Eligible	Site	Unknown	<b>XMH-1070</b>	Not Evaluated	Site	Unknown
<b>XMH-268</b>	Not Evaluated	Site	Unknown	<b>XMH-1071</b>	Not Evaluated	Site	Unknown
<b>XMH-269</b>	Not Evaluated	Site	Unknown	<b>XMH-1072</b>	Not Eligible	Site	Unknown
<b>XMH-270</b>	Not Evaluated	Site	Unknown	<b>XMH-1073</b>	Not Eligible	Site	Unknown
<b>XMH-272</b>	Not Evaluated	Site	Unknown	<b>XMH-1078</b>	Not Evaluated	Site	Unknown
<b>XMH-273</b>	Not Eligible	Site	Unknown	<b>XMH-1084</b>	Not Evaluated	Site	Unknown
<b>XMH-274</b>	Not Eligible	Site	Unknown	<b>XMH-1074</b>	Not Evaluated	Site	Unknown
<b>XMH-277</b>	Eligible	Site	Unknown	<b>XMH-1075</b>	Not Evaluated	Site	Unknown
<b>XMH-278</b>	Not Evaluated	Site	Unknown	<b>XMH-1076</b>	Not Evaluated	Site	Unknown
<b>XMH-279</b>	Eligible	Site	Unknown	<b>XMH-1077</b>	Not Evaluated	Site	Unknown
<b>XMH-280</b>	Eligible	Site	Multi-component	<b>XMH-1085</b>	Not Evaluated	Site	Unknown
<b>XMH-281</b>	Not Evaluated	Site	Unknown	<b>XMH-1086</b>	Not Evaluated	Site	Unknown

**Table D-1. Identified Archaeological Sites on Donnelly Training Area and Fort Greely**

<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>	<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>
<b>XMH-282</b>	Not Evaluated	Site	Unknown	<b>XMH-1087</b>	Not Evaluated	Site	Unknown
<b>XMH-283</b>	Not Evaluated	Site	Unknown	<b>XMH-1088</b>	Not Evaluated	Site	Unknown
<b>XMH-284</b>	Eligible	Site	Unknown	<b>XMH-1089</b>	Not Evaluated	Site	Unknown
<b>XMH-285</b>	Not Evaluated	Site	Unknown	<b>XMH-1090</b>	Not Evaluated	Site	Unknown
<b>XMH-286</b>	Not Evaluated	Site	Unknown	<b>XMH-1091</b>	Not Evaluated	Site	Unknown
<b>XMH-287</b>	Not Evaluated	Site	Unknown	<b>XMH-1092</b>	Eligible	Site	Unknown
<b>XMH-288</b>	Not Evaluated	Site	Unknown	<b>XMH-1093</b>	Eligible	Site	Unknown
<b>XMH-290</b>	Not Eligible	Site	Unknown	<b>XMH-1094</b>	Not Eligible	Site	Unknown
<b>XMH-291</b>	Not Eligible	Site	Unknown	<b>XMH-1095</b>	Not Evaluated	Site	Unknown
<b>XMH-292</b>	Eligible	Site	Unknown	<b>XMH-1096</b>	Not Evaluated	Site	Unknown
<b>XMH-293</b>	Not Eligible	Site	Unknown	<b>XMH-1097</b>	Not Evaluated	Site	Unknown
<b>XMH-294</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-1098</b>	Not Evaluated	Site	Unknown
<b>XMH-295</b>	Eligible	Site	American Paleoarctic "Denali"	<b>XMH-1099</b>	Not Evaluated	Site	Unknown
<b>XMH-296</b>	Not Evaluated	Site	Unknown	<b>XMH-1100</b>	Not Evaluated	Site	Unknown
<b>XMH-297</b>	Eligible	Site	Needs more analysis	<b>XMH-1101</b>	Not Eligible	Site	Unknown
<b>XMH-298</b>	Not Evaluated	Site	Unknown	<b>XMH-1102</b>	Not Eligible	Site	Unknown
<b>XMH-299</b>	Not Evaluated	Site	Unknown	<b>XMH-1103</b>	Not Eligible	Site	Unknown
<b>XMH-300</b>	Not Evaluated	Site	Unknown	<b>XMH-1104</b>	Not Evaluated	Site	Unknown
<b>XMH-301</b>	Not Evaluated	Site	Unknown	<b>XMH-1105</b>	Not Evaluated	Site	Unknown
<b>XMH-302</b>	Not Evaluated	Site	Unknown	<b>XMH-1106</b>	Not Evaluated	Site	Unknown
<b>XMH-303</b>	Not Evaluated	Site	Unknown	<b>XMH-1107</b>	Eligible	Site	Unknown
<b>XMH-304</b>	Not Evaluated	Site	Unknown	<b>XMH-1108</b>	Not Evaluated	Site	Unknown
<b>XMH-305</b>	Not Evaluated	Site	Unknown	<b>XMH-1109</b>	Eligible	Site	Unknown
<b>XMH-306</b>	Not Evaluated	Site	Unknown	<b>XMH-1110</b>	Eligible	Site	Unknown
<b>XMH-307</b>	Not Evaluated	Site	Unknown	<b>XMH-1111</b>	Not Evaluated	Site	Unknown
<b>XMH-308</b>	Not Evaluated	Site	Unknown	<b>XMH-1112</b>	Not Eligible	Site	Unknown
<b>XMH-309</b>	Not Evaluated	Site	Unknown	<b>XMH-1113</b>	Not Eligible	Site	Unknown

**Table D-1. Identified Archaeological Sites on Donnelly Training Area and Fort Greely**

<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>	<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>
<b>XMH-310</b>	Not Evaluated	Site	Unknown	<b>XMH-1114</b>	Not Evaluated	Site	Unknown
<b>XMH-311</b>	Not Evaluated	Site	Unknown	<b>XMH-1115</b>	Eligible	Site	Unknown
<b>XMH-313</b>	Not Evaluated	Site	Unknown	<b>XMH-1116</b>	Eligible	Site	Unknown
<b>XMH-314</b>	Not Eligible	Site	Unknown	<b>XMH-1118</b>	Not Evaluated	Site	Unknown
<b>XMH-315</b>	Not Eligible	Site	Unknown	<b>XMH-1119</b>	Not Evaluated	Site	Unknown
<b>XMH-316</b>	Not Eligible	Site	Unknown	<b>XMH-1120</b>	Not Evaluated	Site	Unknown
<b>XMH-317</b>	Not Evaluated	Site	Unknown	<b>XMH-1121</b>	Not Evaluated	Site	Unknown
<b>XMH-318</b>	Not Evaluated	Site	Unknown	<b>XMH-1122</b>	Not Evaluated	Site	Unknown
<b>XMH-322</b>	Not Evaluated	Site	Unknown	<b>XMH-1123</b>	Not Evaluated	Site	Unknown
<b>XMH-323</b>	Not Eligible	Site	Unknown	<b>XMH-1124</b>	Not Evaluated	Site	Unknown
<b>XMH-324</b>	Not Evaluated	Site	Unknown	<b>XMH-1125</b>	Not Evaluated	Site	Unknown
<b>XMH-325</b>	Not Eligible	Site	Unknown	<b>XMH-1126</b>	Not Evaluated	Site	Unknown
<b>XMH-365</b>	Not Evaluated	Site	Paleontological	<b>XMH-1127</b>	Not Eligible	Site	Unknown
<b>XMH-391</b>	Eligible	Site	Historic, WACS	<b>XMH-1128</b>	Not Evaluated	Site	Unknown
<b>XMH-575</b>	Eligible	Site	Historic	<b>XMH-1129</b>	Not Evaluated	Site	Unknown
<b>XMH-827</b>	Not Evaluated	Site	Unknown	<b>XMH-1130</b>	Not Evaluated	Site	Unknown
<b>XMH-828</b>	Not Evaluated	Site	Unknown	<b>XMH-1131</b>	Not Evaluated	Site	Unknown
<b>XMH-829</b>	Not Evaluated	Site	Unknown	<b>XMH-1132</b>	Not Evaluated	Site	Unknown
<b>XMH-830</b>	Not Evaluated	Site	Unknown	<b>XMH-1133</b>	Not Evaluated	Site	Unknown
<b>XMH-831</b>	Not Evaluated	Site	Unknown	<b>XMH-1134</b>	Not Evaluated	Site	Unknown
<b>XMH-832</b>	Not Evaluated	Site	Unknown	<b>XMH-1135</b>	Not Evaluated	Site	Unknown
<b>XMH-833</b>	Not Evaluated	Site	Unknown	<b>XMH-1136</b>	Not Evaluated	Site	Unknown
<b>XMH-834</b>	Not Evaluated	Site	Unknown	<b>XMH-1137</b>	Not Evaluated	Site	Unknown
<b>XMH-835</b>	Not Evaluated	Site	Unknown	<b>XMH-1138</b>	Not Evaluated	Site	Unknown
<b>XMH-836</b>	Not Evaluated	Site	Unknown	<b>XMH-1139</b>	Not Evaluated	Site	Unknown
<b>XMH-837</b>	Not Evaluated	Site	Unknown	<b>XMH-1140</b>	Not Evaluated	Site	Unknown
<b>XMH-838</b>	Not Evaluated	Site	Unknown	<b>XMH-1141</b>	Not Evaluated	Site	Unknown
<b>XMH-839</b>	Not Evaluated	Site	Unknown	<b>XMH-1142</b>	Not Evaluated	Site	Unknown

**Table D-1. Identified Archaeological Sites on Donnelly Training Area and Fort Greely**

<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>	<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>
<b>XMH-840</b>	Not Evaluated	Site	Unknown	<b>XMH-1143</b>	Not Evaluated	Site	Unknown
<b>XMH-841</b>	Not Evaluated	Site	Unknown	<b>XMH-1144</b>	Not Evaluated	Site	Unknown
<b>XMH-842</b>	Not Evaluated	Site	Unknown	<b>XMH-1145</b>	Eligible	Site	Unknown
<b>XMH-843</b>	Not Evaluated	Site	Unknown	<b>XMH-1146</b>	Eligible	Site	Unknown
<b>XMH-871</b>	Not Evaluated	Site	Unknown	<b>XMH-1147</b>	Not Evaluated	Site	Unknown
<b>XMH-873</b>	Not Eligible	Site	Unknown	<b>XMH-1148</b>	Not Evaluated	Site	Unknown
<b>XMH-874</b>	Eligible	Site	Unknown	<b>XMH-1149</b>	Not Evaluated	Site	Unknown
<b>XMH-875</b>	Not Eligible	Site	Unknown	<b>XMH-1150</b>	Not Evaluated	Site	Unknown
<b>XMH-876</b>	Not Eligible	Site	Unknown	<b>XMH-1151</b>	Not Evaluated	Site	Unknown
<b>XMH-877</b>	Not Eligible	Site	Unknown	<b>XMH-1152</b>	Not Evaluated	Site	Unknown
<b>XMH-878</b>	Eligible	Site	Unknown	<b>XMH-1153</b>	Not Evaluated	Site	Unknown
<b>XMH-880</b>	Not Eligible	Site	Unknown	<b>XMH-1154</b>	Not Evaluated	Site	Unknown
<b>XMH-881</b>	Eligible	Site	Unknown	<b>XMH-1155</b>	Not Evaluated	Site	Unknown
<b>XMH-882</b>	Eligible	Site	Unknown	<b>XMH-1156</b>	Not Evaluated	Site	Unknown
<b>XMH-883</b>	Not Eligible	Site	Unknown	<b>XMH-1157</b>	Not Evaluated	Site	Unknown
<b>XMH-884</b>	Not Eligible	Site	Unknown	<b>XMH-1158</b>	Not Evaluated	Site	Unknown
<b>XMH-886</b>	Eligible	Site	Unknown	<b>XMH-1159</b>	Not Evaluated	Site	Unknown
<b>XMH-887</b>	Eligible	Site	Unknown	<b>XMH-1160</b>	Not Eligible	Site	Unknown
<b>XMH-888</b>	Not Eligible	Site	Unknown	<b>XMH-1161</b>	Not Evaluated	Site	Unknown
<b>XMH-889</b>	Not Eligible	Site	Unknown	<b>XMH-1162</b>	Not Evaluated	Site	Unknown
<b>XMH-890</b>	Eligible	Site	Unknown	<b>XMH-1163</b>	Not Evaluated	Site	Unknown
<b>XMH-891</b>	Eligible	Site	Unknown	<b>XMH-1168</b>	Not Evaluated	Site	Unknown
<b>XMH-892</b>	Not Eligible	Site	Unknown	<b>XMH-1169</b>	Not Evaluated	Site	Unknown
<b>XMH-894</b>	Not Evaluated	Site	Unknown	<b>XMH-1170</b>	Not Evaluated	Site	Unknown
<b>XMH-895</b>	Not Evaluated	Site	Unknown	<b>XMH-1171</b>	Eligible	Site	Unknown
<b>XMH-896</b>	Not Evaluated	Site	Unknown	<b>XMH-1172</b>	Not Eligible	Site	Unknown
<b>XMH-897</b>	Not Evaluated	Site	Unknown	<b>XMH-1173</b>	Not Eligible	Site	Unknown
<b>XMH-898</b>	Not Evaluated	Site	Unknown	<b>XMH-1174</b>	Eligible	Site	Unknown

**Table D-1. Identified Archaeological Sites on Donnelly Training Area and Fort Greely**

<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>	<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>
<b>XMH-899</b>	Not Evaluated	Site	Unknown	<b>XMH-1175</b>	Not Evaluated	Site	Unknown
<b>XMH-901</b>	Not Evaluated	Site	Unknown	<b>XMH-1176</b>	Not Evaluated	Site	Unknown
<b>XMH-902</b>	Not Evaluated	Site	Unknown	<b>XMH-1177</b>	Not Evaluated	Site	Unknown
<b>XMH-903</b>	Not Evaluated	Site	Unknown	<b>XMH-1178</b>	Not Evaluated	Site	Unknown
<b>XMH-904</b>	Eligible	Site	Unknown	<b>XMH-1193</b>	Not Eligible	Site	Unknown
<b>XMH-905</b>	Not Evaluated	Site	Unknown	<b>XMH-1194</b>	Not Evaluated	Site	Unknown
<b>XMH-906</b>	Not Evaluated	Site	Unknown	<b>XMH-1195</b>	Not Evaluated	Site	Unknown
<b>XMH-907</b>	Not Evaluated	Site	Unknown	<b>XMH-1196</b>	Not Evaluated	Site	Unknown
<b>XMH-909</b>	Not Evaluated	Site	Unknown	<b>XMH-1197</b>	Not Evaluated	Site	Unknown
<b>XMH-910</b>	Not Evaluated	Site	Unknown	<b>XMH-1198</b>	Not Evaluated	Site	Unknown
<b>XMH-911</b>	Not Evaluated	Site	Unknown	<b>XMH-1199</b>	Not Evaluated	Site	Unknown
<b>XMH-912</b>	Not Eligible	Site	Unknown	<b>XMH-1200</b>	Not Evaluated	Site	Unknown
<b>XMH-913</b>	Not Evaluated	Site	Unknown	<b>XMH-1201</b>	Not Evaluated	Site	Unknown
<b>XMH-914</b>	Not Evaluated	Site	Unknown	<b>XMH-1202</b>	Not Eligible	Site	Unknown
<b>XMH-915</b>	Not Evaluated	Site	Unknown	<b>XMH-1203</b>	Not Evaluated	Site	Unknown
<b>XMH-916</b>	Not Eligible	Site	Unknown	<b>XMH-1204</b>	Not Evaluated	Site	Unknown
<b>XMH-917</b>	Not Evaluated	Site	Unknown	<b>XMH-1205</b>	Not Evaluated	Site	Unknown
<b>XMH-919</b>	Eligible	Site	Unknown	<b>XMH-1206</b>	Not Evaluated	Site	Unknown
<b>XMH-920</b>	Eligible	Site	Unknown	<b>XMH-1207</b>	Not Evaluated	Site	Unknown
<b>XMH-921</b>	Not Evaluated	Site	Unknown	<b>XMH-1208</b>	Eligible	Site	Unknown
<b>XMH-922</b>	Not Evaluated	Site	Unknown	<b>XMH-1209</b>	Not Evaluated	Site	Unknown
<b>XMH-923</b>	Not Evaluated	Site	Unknown	<b>XMH-1210</b>	Not Evaluated	Site	Unknown
<b>XMH-924</b>	Not Evaluated	Site	Unknown	<b>XMH-1211</b>	Not Evaluated	Site	Unknown
<b>XMH-925</b>	Not Evaluated	Site	Unknown	<b>XMH-1213</b>	Eligible	Site	Unknown
<b>XMH-926</b>	Not Evaluated	Site	Unknown	<b>XMH-1214</b>	Not Eligible	Site	Unknown
<b>XMH-927</b>	Not Evaluated	Site	Unknown	<b>XMH-1215</b>	Eligible	Site	Unknown
<b>XMH-928</b>	Not Evaluated	Site	Unknown	<b>XMH-1216</b>	Not Evaluated	Site	Unknown
<b>XMH-929</b>	Not Evaluated	Site	Unknown	<b>XMH-1217</b>	Not Evaluated	Site	Unknown

**Table D-1. Identified Archaeological Sites on Donnelly Training Area and Fort Greely**

<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>	<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>
<b>XMH-930</b>	Eligible	Site	Unknown	<b>XMH-1218</b>	Not Evaluated	Site	Unknown
<b>XMH-931</b>	Eligible	Site	Unknown	<b>XMH-1219</b>	Not Evaluated	Site	Unknown
<b>XMH-932</b>	Not Evaluated	Site	Unknown	<b>XMH-1220</b>	Not Evaluated	Site	Unknown
<b>XMH-933</b>	Eligible	Site	Unknown	<b>XMH-1221</b>	Not Evaluated	Site	Unknown
<b>XMH-934</b>	Not Eligible	Site	Unknown	<b>XMH-1222</b>	Not Evaluated	Site	Unknown
<b>XMH-935</b>	Not Eligible	Site	Unknown	<b>XMH-1223</b>	Not Evaluated	Site	Unknown
<b>XMH-936</b>	Not Eligible	Site	Unknown	<b>XMH-1224</b>	Not Evaluated	Site	Unknown
<b>XMH-937</b>	Not Eligible	Site	Unknown	<b>XMH-1225</b>	Not Evaluated	Site	Unknown
<b>XMH-938</b>	Not Eligible	Site	Unknown	<b>XMH-1226</b>	Not Evaluated	Site	Unknown
<b>XMH-939</b>	Eligible	Site	Unknown	<b>XMH-1227</b>	Not Evaluated	Site	Unknown
<b>XMH-940</b>	Not Eligible	Site	Unknown	<b>XMH-1228</b>	Not Evaluated	Site	Unknown
<b>XMH-941</b>	Not Eligible	Site	Unknown	<b>XMH-1229</b>	Not Evaluated	Site	Unknown
<b>XMH-942</b>	Eligible	Site	Unknown	<b>XMH-1230</b>	Not Evaluated	Site	Unknown
<b>XMH-943</b>	Not Eligible	Site	Unknown	<b>XMH-1270</b>	Not Eligible	Site	Unknown
<b>XMH-944</b>	Not Eligible	Site	Unknown	<b>XMH-1271</b>	Not Eligible	Site	Unknown
<b>XMH-945</b>	Eligible	Site	Unknown	<b>XMH-001278</b>	Not Evaluated	Site	Unknown
<b>XMH-946</b>	Eligible	Site	Unknown	<b>XMH-001279</b>	Not Evaluated	Site	Unknown
<b>XMH-947</b>	Not Eligible	Site	Unknown	<b>XMH-001280</b>	Not Evaluated	Site	Unknown
<b>XMH-948</b>	Not Eligible	Site	Unknown	<b>XMH-001281</b>	Not Evaluated	Site	Unknown
<b>XMH-949</b>	Eligible	Site	Unknown	<b>XMH-001282</b>	Not Evaluated	Site	Unknown
<b>XMH-950</b>	Not Eligible	Site	Unknown	<b>XMH-001283</b>	Not Evaluated	Site	Unknown
<b>XMH-951</b>	Not Eligible	Site	Unknown	<b>XMH-001284</b>	Not Evaluated	Site	Unknown
<b>XMH-952</b>	Not Eligible	Site	Unknown	<b>XMH-001285</b>	Not Evaluated	Site	Unknown
<b>XMH-953</b>	Eligible	Site	Unknown	<b>XMH-001286</b>	Not Evaluated	Site	Unknown
<b>XMH-954</b>	Not Eligible	Site	Unknown	<b>XMH-001287</b>	Not Evaluated	Site	Unknown
<b>XMH-955</b>	Not Evaluated	Site	Unknown	<b>XMH-001288</b>	Not Evaluated	Site	Unknown
<b>XMH-956</b>	Not Evaluated	Site	Unknown	<b>XMH-001289</b>	Not Evaluated	Site	Unknown
<b>XMH-957</b>	Not Evaluated	Site	Unknown	<b>XMH-001290</b>	Not Evaluated	Site	Unknown

**Table D-1. Identified Archaeological Sites on Donnelly Training Area and Fort Greely**

<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>	<b>SITE NO.</b>	<b>NRHP STATUS</b>	<b>RESOURCE TYPE</b>	<b>CULTURAL AFFILIATION</b>
<b>XMH-958</b>	Not Evaluated	Site	Unknown	<b>XMH-001291</b>	Not Evaluated	Site	Unknown
<b>XMH-959</b>	Not Evaluated	Site	Unknown	<b>XMH-001292</b>	Not Evaluated	Site	Unknown
<b>XMH-960</b>	Not Evaluated	Site	Unknown	<b>XMH-001293</b>	Not Evaluated	Site	Unknown
<b>XMH-961</b>	Not Eligible	Site	Unknown	<b>XMH-001294</b>	Not Evaluated	Site	Unknown
<b>XMH-962</b>	Eligible	Site	Unknown	<b>XMH-001295</b>	Not Evaluated	Site	Unknown
<b>XMH-963</b>	Not Eligible	Site	Unknown	<b>XMH-001296</b>	Not Evaluated	Site	Unknown
<b>XMH-964</b>	Not Eligible	Site	Unknown	<b>XMH-001297</b>	Not Evaluated	Site	Unknown
<b>XMH-965</b>	Not Eligible	Site	Unknown	<b>XMH-001298</b>	Not Evaluated	Site	Unknown
<b>XMH-966</b>	Not Eligible	Site	Unknown	<b>XMH-001298</b>	Not Evaluated	Site	Unknown
<b>XMH-967</b>	Not Eligible	Site	Unknown	<b>XMH-001300</b>	Not Evaluated	Site	Unknown
<b>XMH-968</b>	Not Eligible	Site	Unknown	<b>XMH-001301</b>	Not Evaluated	Site	Unknown
<b>XMH-969</b>	Not Evaluated	Site	Unknown	<b>XMH-001302</b>	Not Evaluated	Site	Unknown
<b>XMH-970</b>	Not Evaluated	Site	Unknown	<b>XMH-001303</b>	Eligible	Site	Unknown