APPENDIX

SECTION 7, ENDANGERED SPECIES ACT CONSULTATION LETTER

United States Department of the Interior
Fish and Wildlife Service
Fairbanks Fish and Wildlife Office
101 12th Ave., Box 19, Room 110
Fairbanks, Alaska 99701
August 6, 2002

Colonel David Snodgrass
Director, Public Works
600 Richardson Drive #6000
Fort Richardson, Alaska 99505-6000

Re: Restructuring 172nd Infantry Brigade's associated ranges, facilities and infrastructure

Dear Colonel Snodgrass:

This responds to your request for a list of endangered and threatened species and critical habitats pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act). This information is being provided for the proposed restructuring of the 172nd Infantry Brigade's associated ranges, facilities and infrastructure. The proposed locations for changes include Fort Wainwright, the Donnelly Training Area, and outlying areas such as Gerstle River and Black Rapids.

No listed species occur in these project areas and there is no designated or proposed critical habitat in the vicinity of the proposed projects. Therefore, the Service concludes that this project is not likely to adversely impact listed species. Preparation of a Biological Assessment or further consultation under section 7 of the Act regarding this project is not necessary.

This letter applies only to endangered and threatened species under our jurisdiction. It does not preclude the need to comply with other environmental legislation or regulations such as the Clean Water Act.

Thank you for your cooperation in meeting our joint responsibilities under the Act. If you need further assistance, please contact Jonathan Priday at (907) 456-0499.

Sincerely,

Ted Swem

Ted Swem
Branch Chief
Endangered Species

SUMMARY OF USAG-AK ARCHAEOLOGICAL SURVEY METHODS[1]

Identification Phase Pedestrian Survey Methods

Areas were surveyed using a transect interval of no greater than 20 meters. Transect intervals decreased in areas of dense vegetation to ensure a visual inspection of the entire survey area. Transect intervals also decreased in areas deemed to have a high potential for containing archaeological sites. The decision to proceed with transect intervals below 20 meters was decided in the field by the field crew leader in consultation with the Post Archaeologist.

All areas of high potential for subsurface material were systematically shovel tested. Typically, there was approximately 20 meters between tests and test intervals may have been closer, as determined by the field crew leader. An example of an area that may have been tested in 20 meter intervals is a long ridgeline or large landform that offers a number of undifferentiated high probability locations. Shorter test intervals were used to test small, isolated, high probability landforms such as isolated knolls, prominences with a view, lakeside terraces, stream mouths, or level benches adjacent to steeper slopes (this list is not complete and is meant as an example of locations that may have been tested intensively). Shovel tests were square or round and measured at least 30cm in diameter and were excavated to the maximum depth possible. All soil removed was screened through ¼ inch hardware cloth. The number of tests and approximate location of testing was recorded by crew leaders. Crew leaders used GPS, topographic maps and air photos to record field data. All spatial data is entered into GIS data files. Crewmembers recorded their activities in field notebooks.

Site Identification

High and Low Probability Locations – DTA

Surveys carried out by USAG-AK archaeologists at Donnelly Training Area East in 2002 and 2003 (Hedman et al. 2003 and Robertson et al. 2004) indicated that important environmental aspects contributing to site placement include the view shed, elevation relative to the immediately surrounding terrain and distance to water. Lake margins and the tops of small knolls and ridgelines appear to provide the highest probability locations for archaeological sites. Elevated portions of clear streams and anadromous fish streams, stream confluences and islands are also considered high probability locations. This data corresponds with results gained from previous surveys at Donnelly Training Area (Bacon and Holmes 1979), the Yukon Training Area (Holmes 1979; Higgs et al. 1999), the Fort Wainwright cantonment and the Tanana Flats Training Area (Dixon et al. 1980). In these areas, sites are concentrated in the lake margins, along clear streams, on elevated portions of stream banks, along ridgelines and atop knolls and hilltops affording campsites, game lookouts and ambush points. Other high probability locations include benches adjacent to steeper slopes and leading edges of terraces.

Low probability terrain on Fort Wainwright training lands includes flat expanses of spruce forest that lack water, wetlands and slopes greater than 40 degrees. Full coverage surveys have failed to locate any prehistoric archaeological sites in these settings.

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[1]From: Raymond-Yakoubian, J. and A. Robertson 2005, *Methodology: U.S. Army Alaska 2005 Range Developments, Section 106 Archaeological Inventory and Evaluation, Fort Richardson and Fort Wainwright.*

Site Criteria

Prehistoric Site Designation
The minimum required for designation of a prehistoric archaeological site was the presence of a single artifact on the ground surface, a single positive shovel test, or a single identifiable feature such as a house depression, cache pit, or hearth. "Sites" defined on the basis of sub-surface finds minimally included a single identifiable artifact or feature such as a flake, manuport, or hearth. Site boundaries were determined during the evaluation phase.

Once a site was identified, a USAG-AK site form was filled out, a sketch map was drawn using compass and tape, and an aluminum survey cap was installed. Survey caps were placed on a length of rebar and inserted so that approximately 5cm extends above the ground surface. Survey caps were stamped with the site's AHRS number.

Historic Site Designation
Historic archaeological sites are those sites that are greater than 50 years of age that reflect historic period activities and could not otherwise be designated as a prehistoric site.

Traditional Cultural Properties

Traditional Cultural Properties (TCPs) may be eligible for inclusion in the NRHP based on the role the property plays in a community's historically rooted beliefs, customs, and practices. A TCP must be real property, have an integral relationship to traditional cultural practices or beliefs, it must be in a condition that ensures that such relationships survive, and it must meet one of the National Register criteria of eligibility. In addition, the TCP may not fall under any of the Criteria Considerations that would may it ineligible for inclusion in the National Register of Historic Places.

Identification Phase Recording of Archaeological Sites

Site documentation during the Identification Phase included recording the site location, a site description and artifact inventory, as well as a description of the ecosystem and of any site disturbance on the Field Site Recording Form. A sketch map and photographs were made of each site and of any surface artifacts at this time. Identified sites were evaluated in greater detail during the site Evaluation Phase.

Artifact Collection

Artifact collection was limited to artifacts retrieved from shovel tests, important diagnostic artifacts found on the surface, and artifacts that were in immediate danger of destruction. All artifacts collected were recorded on a site map and were bagged and labeled in accordance with USAG-AK and University of Alaska Museum standards. Artifacts will be curated at the University of Alaska Museum, under an existing Memorandum of Understanding (MOU).

NRHP Eligibility Evaluations

Archaeological Sites
This phase of work focused on evaluating identified sites for eligibility for inclusion in the National Register of Historic Places.

As site testing is inherently destructive, the minimum amount of testing necessary was conducted to determine the aerial and sub-surface extent of the site, site integrity and the nature of the information the site may yield in order to make eligibility determinations. This testing involved shovel tests as well as test excavation units. Shovel tests followed the standard dimensions outlined previously and were excavated and recorded in a manner that allowed for determining the depth of cultural material, thickness of deposits and the location of concentrations of cultural material across the site. Evaluation Phase shovel testing was recorded on USAG-AK shovel test forms. The location of all shovel tests and site boundaries were clearly indicated on site sketch maps.

All test excavation units were 1m x 1m and were excavated in 10cm arbitrary levels unless clear stratigraphy dictated otherwise. Each level was recorded on USAG-AK excavation unit level forms. These forms, along with the USAG-AK photo log, provide for complete documentation of plan drawings, profile drawings, level photographs, soil level descriptions, artifact descriptions and feature descriptions.

Determinations of Eligibility

Typically, the most important factor in evaluating eligibility for archaeological sites is how well the site satisfies Criterion D of the National Register Criteria for Evaluation; research potential. As such, the integrity of the site is very important. Even small sites and sites lacking datable material are very important for understanding interior Alaskan prehistory, local site formation processes and site distribution. In cases where site integrity is difficult to assess, 1m x1m test units were excavated strategically across the site to determine the extent of any site disturbance and the presence, location and densities of buried cultural material. Once the cultural deposit was characterized and the integrity was assessed, a determination of whether the site contains information that can significantly contribute to important research questions was addressed. Each determination presented here was a consensus between both post archaeologists and the Cultural Resource Manager.

Results of the Evaluation Phase work at each site will be presented in a formal Determination of Eligibility report to be submitted to the Alaska State Historic Preservation Officer for review and concurrence. These reports will contain a complete description of the evaluation methodology, site characteristics, site integrity and discussion of the research potential of the site. Reports will include all pertinent maps, photos and tables.

AIR QUALITY MODELING INFORMATION

Air pollutant impacts were evaluated using EPA's SCREEN3 and VISCREEN models. SCREEN3 was used to predict pollutant concentrations associated with training activities; whereas, the VISCREEN model was used to model visibility impacts associated with proposed training.

SCREEN3 Model Data

Data	Eddy Drop Zone	Donnelly Drop Zone	North Texas Range
PM_{10} emission, g/sec	20.7	20.7	20.7
NOx emission, g/sec	3.0	3.0	3.0
CO emission rate (g/sec)	0.7	0.7	0.7
VOC emission rate (g/sec)	0.2	0.2	0.2
Maximum Length of the Study Area (m)	7,000	6,231	6,099
Minimum Length of the Study Area (m)	4,765	5,732	4,432
Urban/Rural	Rural	Rural	Rural
Source Height (m)	0.00	0.00	0.00
Receptor Height (m)	0.00	0.00	0.00

The data used to predict visibility impacts are identified below. A level 1 analysis was conducted first; this analysis indicated that visibility impacts were predicted for all three proposed sites; therefore, it was necessary to conduct a Level 2 analysis. The model input parameters identified below were used for the Level 2 analysis. The only difference between the Level 2 parameters described below and the Level 1 impacts are the wind speed and stability class used in the model runs. In a Level 1 analysis, a wind speed of 1 meter per second (m/s) and a stability class of 6 is used. The Level 2 parameters described below are the same inputs used in the visibility analysis conducted for the Army Transformation EIS with the exception of the distances to Class I areas and wind speed; these values have been updated to reflect the more discreet sighting of the BAX/CACTF. The wind speed parameter was updated to reflect the prevaling wind speeds reported for DTA, East in Chapter 3 of this EIS.

The VISCREEN model produces two output files. One file contains the raw modeling results; while, the other file provides a summary of the overall model results. The model results file provides a summary of the four lines of sight that reflect the maximum visual impacts. The file identifies lines of sight where threshold criteria have been exceeded. These criteria differ for a Level 1 and Level 2 analysis and are provided in the summary report. These thresholds reflect the conditions in which a dust plume becomes visible inside or outside of the Class I area. Exceedances are denoted by an asterisk in the summary report. Complete summary files are provided in the Appendix. The PM_{10} and NO_x emissions reported below reflect the total emission rates from fugitive emissions generated by the Stryker vehicles, emissions from the operation of the Stryker engines, and the three new stationary sources identified for DTA. Two of the three sources are associated with the BAX/CACTF; the third source is associated with the UAV facility. The portable generators troops use on the Bivouac sites are included as well.

Input Parameters Used for Visibility Impact Assessment- Level 2 Analysis

Parameter[(a)]	Eddy Drop Zone	Donnelly Drop Zone	North Texas Range
PM_{10} emission, g/sec	20.7	20.7	20.7
NO_X emission, g/sec	3.0	3.0	3.0
distance to nearest Class I boundary, km	159.6	151.7	141.2
distance to furthest Class I boundary, km	409.2	398.1	388.4
distance to observer, km	159.6	151.7	141.2
wind speed, m/sec	4	4	4
Atmospheric stability class	4 (D)	4 (D)	4 (D)
Background visual range, worst case, km	96.6	96.6	96.6
Background visual range, best case, km	264	264	264

Input Parameters Used for Prescribed Burning Visibility Impact Assessment - Level 2 Analysis

Parameter	DTA East
PM_{10} emission, g/sec	10.51
distance to nearest Class I boundary, km	150.8
distance to furthest Class I boundary, km	398.5
distance to observer, km	150.8
wind speed, m/sec	4
atmospheric stability class	4 (D)
background visual range, worst case, km	96.6
background visual range, best case, km	264

VISCREEN MODEL OUTPUTS

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                 Visual Effects Screening Analysis for
                Source: EDDY DROP ZONE MOUNTED T
                Class I Area: DENALI NP

              *** User-selected Screening Scenario Results ***
Input Emissions for

   Particulates    13.29  G  /S
   NOx (as NO2)     2.99  G  /S
   Primary NO2       .00  G  /S
   Soot              .00  G  /S
   Primary SO4       .00  G  /S

              PARTICLE CHARACTERISTICS
              Density       Diameter
              =======       ========
Primary Part.     2.5            6
Soot              2.0            1
Sulfate           1.5            4

              Transport Scenario Specifications:

    Background Ozone:                  .04 ppm
    Background Visual Range:        264.00 km
    Source-Observer Distance:       159.60 km
    Min. Source-Class I Distance:   159.60 km
    Max. Source-Class I Distance:   409.20 km
    Plume-Source-Observer Angle:     11.25 degrees
    Stability:   4
    Wind Speed:   4.00 m/s

                           R E S U L T S
Asterisks (*) indicate plume impacts that exceed screening criteria

         Maximum Visual Impacts INSIDE  Class I Area
          Screening Criteria ARE NOT Exceeded
                                      Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10. 145.  227.3    24.  2.00   .414    .05   .007
 SKY     140. 145.  227.3    24.  2.00   .060    .05  -.001
 TERRAIN  10.  84.  159.6    84.  2.00   .332    .05   .003
 TERRAIN 140.  84.  159.6    84.  2.00   .024    .05   .000


         Maximum Visual Impacts OUTSIDE Class I Area
            Screening Criteria ARE Exceeded
                                      Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.   0.    1.0   169.  3.21  6.423*   .07   .078*
 SKY     140.   0.    1.0   169.  2.15   .954    .07  -.017
```

```
 TERRAIN  10.   0.    1.0   169.  3.08  2.849    .07   .025
 TERRAIN 140.   0.    1.0   169.  2.09  1.096    .07   .018

              Visual Effects Screening Analysis for
                Source: EDDY DROP ZONE MOUNTED T
                Class I Area: DENALI NP

              *** User-selected Screening Scenario Results ***
Input Emissions for
   Particulates    13.29  G  /S
   NOx (as NO2)     2.99  G  /S
   Primary NO2       .00  G  /S
   Soot              .00  G  /S
   Primary SO4       .00  G  /S


              PARTICLE CHARACTERISTICS
              Density       Diameter
              =======       ========
Primary Part.     2.5            6
Soot              2.0            1
Sulfate           1.5            4

              Transport Scenario Specifications:

    Background Ozone:                  .04 ppm
    Background Visual Range:         96.60 km
    Source-Observer Distance:       159.60 km
    Min. Source-Class I Distance:   159.60 km
    Max. Source-Class I Distance:   409.20 km
    Plume-Source-Observer Angle:     11.25 degrees
    Stability:   4
    Wind Speed:   4.00 m/s

                            R E S U L T S
Asterisks (*) indicate plume impacts that exceed screening criteria

         Maximum Visual Impacts INSIDE  Class I Area
          Screening Criteria ARE NOT Exceeded
                                      Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.  84.  159.6    84.  2.00   .060    .05   .001
 SKY     140.  84.  159.6    84.  2.00   .012    .05  -.000
 TERRAIN  10.  84.  159.6    84.  2.00   .027    .05   .000
 TERRAIN 140.  84.  159.6    84.  2.00   .006    .05   .000


         Maximum Visual Impacts OUTSIDE Class I Area
          Screening Criteria ARE NOT Exceeded
                                      Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.  40.  131.5   129.  2.00   .064    .05   .001
 SKY     140.  40.  131.5   129.  2.00   .013    .05  -.000
```

```
 TERRAIN  10.  60.  146.0   109.  2.00   .031    .05   .000
 TERRAIN 140.  60.  146.0   109.  2.00   .007    .05   .000

              Visual Effects Screening Analysis for
                Source: DONNELY DROP ZONE MOUNTE
                Class I Area: DENALI NP

              *** User-selected Screening Scenario Results ***
Input Emissions for
   Particulates    13.29  G  /S
   NOx (as NO2)     2.99  G  /S
   Primary NO2       .00  G  /S
   Soot              .00  G  /S
   Primary SO4       .00  G  /S


              PARTICLE CHARACTERISTICS
              Density       Diameter
              =======       ========
Primary Part.     2.5            6
Soot              2.0            1
Sulfate           1.5            4

              Transport Scenario Specifications:

    Background Ozone:                  .04 ppm
    Background Visual Range:        264.00 km
    Source-Observer Distance:       151.70 km
    Min. Source-Class I Distance:   151.70 km
    Max. Source-Class I Distance:   398.10 km
    Plume-Source-Observer Angle:     11.25 degrees
    Stability:   4
    Wind Speed:   4.00 m/s

                            R E S U L T S
Asterisks (*) indicate plume impacts that exceed screening criteria

         Maximum Visual Impacts INSIDE  Class I Area
          Screening Criteria ARE NOT Exceeded
                                    Delta E       Contrast
                                  ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10. 145.  216.0    24.  2.00   .440    .05   .007
 SKY     140. 145.  216.0    24.  2.00   .064    .05  -.002
 TERRAIN  10.  84.  151.7    84.  2.00   .365    .05   .004
 TERRAIN 140.  84.  151.7    84.  2.00   .025    .05   .000


         Maximum Visual Impacts OUTSIDE Class I Area
            Screening Criteria ARE Exceeded
                                    Delta E       Contrast
                                  ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.   0.    1.0   169.  2.56  7.039*   .06   .088*
 SKY     140.   0.    1.0   169.  2.00  1.050    .06  -.019
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```
 TERRAIN  10.   0.    1.0   169.  2.45  3.203*   .06   .029
 TERRAIN 140.   0.    1.0   169.  2.00  1.204    .06   .021

              Visual Effects Screening Analysis for
                Source: DONNELLY DROP ZONE MOUNT
                Class I Area: DENALI NP

              *** User-selected Screening Scenario Results ***
Input Emissions for
   Particulates    13.29  G  /S
   NOx (as NO2)     2.99  G  /S
   Primary NO2       .00  G  /S
   Soot              .00  G  /S
   Primary SO4       .00  G  /S


              PARTICLE CHARACTERISTICS
              Density       Diameter
              =======       ========
Primary Part.     2.5            6
Soot              2.0            1
Sulfate           1.5            4

              Transport Scenario Specifications:

    Background Ozone:                  .04 ppm
    Background Visual Range:         96.60 km
    Source-Observer Distance:       151.70 km
    Min. Source-Class I Distance:   151.70 km
    Max. Source-Class I Distance:   398.10 km
    Plume-Source-Observer Angle:     11.25 degrees
    Stability:   4
    Wind Speed:   4.00 m/s

                           R E S U L T S
Asterisks (*) indicate plume impacts that exceed screening criteria

         Maximum Visual Impacts INSIDE  Class I Area
          Screening Criteria ARE NOT Exceeded
                                     Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.  84.  151.7    84.  2.00   .064    .05   .001
 SKY     140.  84.  151.7    84.  2.00   .013    .05  -.001
 TERRAIN  10.  84.  151.7    84.  2.00   .031    .05   .000
 TERRAIN 140.  84.  151.7    84.  2.00   .006    .05   .000


         Maximum Visual Impacts OUTSIDE Class I Area
          Screening Criteria ARE NOT Exceeded
                                     Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.  40.  125.0   129.  2.00   .069    .05   .001
 SKY     140.  40.  125.0   129.  2.00   .014    .05  -.001
```

```
 TERRAIN  10.   0.    1.0   169.  3.32   .076    .06   .000
 TERRAIN 140.   0.    1.0   169.  2.00   .025    .06   .000

              Visual Effects Screening Analysis for
                Source: NORTH TEXAS RANGE MOUNTE
                Class I Area: DENALI NP

              *** User-selected Screening Scenario Results ***
Input Emissions for
   Particulates    13.29  G  /S
   NOx (as NO2)     2.99  G  /S
   Primary NO2       .00  G  /S
   Soot              .00  G  /S
   Primary SO4       .00  G  /S


              PARTICLE CHARACTERISTICS
              Density       Diameter
              =======       ========
Primary Part.     2.5            6
Soot              2.0            1
Sulfate           1.5            4

              Transport Scenario Specifications:

    Background Ozone:                  .04 ppm
    Background Visual Range:        264.00 km
    Source-Observer Distance:       141.20 km
    Min. Source-Class I Distance:   141.20 km
    Max. Source-Class I Distance:   388.40 km
    Plume-Source-Observer Angle:     11.25 degrees
    Stability:   4
    Wind Speed:   4.00 m/s

                            R E S U L T S
Asterisks (*) indicate plume impacts that exceed screening criteria

         Maximum Visual Impacts INSIDE  Class I Area
          Screening Criteria ARE NOT Exceeded
                                      Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10. 150.  219.6    19.  2.00   .484    .05   .007
 SKY     140. 150.  219.6    19.  2.00   .070    .05  -.002
 TERRAIN  10.  84.  141.2    84.  2.00   .414    .05   .004
 TERRAIN 140.  84.  141.2    84.  2.00   .027    .05   .001

         Maximum Visual Impacts OUTSIDE Class I Area
            Screening Criteria ARE Exceeded
                                      Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.   0.    1.0   169.  2.43  7.939*   .05   .103*
 SKY     140.   0.    1.0   169.  2.00  1.193    .05  -.022
 TERRAIN  10.   0.    1.0   169.  2.31  3.760*   .05   .035
```

```
 TERRAIN 140.   0.    1.0   169.  2.00  1.363    .05   .024

              Visual Effects Screening Analysis for
                Source: NORTH TEXAS RANGE MOUNTE
                Class I Area: DENALI NP

            *** User-selected Screening Scenario Results ***
Input Emissions for
   Particulates    13.29  G  /S
   NOx (as NO2)     2.99  G  /S
   Primary NO2       .00  G  /S
   Soot              .00  G  /S
   Primary SO4       .00  G  /S


              PARTICLE CHARACTERISTICS
              Density       Diameter
              =======       ========
Primary Part.     2.5            6
Soot              2.0            1
Sulfate           1.5            4

              Transport Scenario Specifications:

    Background Ozone:                  .04 ppm
    Background Visual Range:         96.60 km
    Source-Observer Distance:       141.20 km
    Min. Source-Class I Distance:   141.20 km
    Max. Source-Class I Distance:   388.40 km
    Plume-Source-Observer Angle:     11.25 degrees
    Stability:   4
    Wind Speed:   4.00 m/s

                           R E S U L T S
Asterisks (*) indicate plume impacts that exceed screening criteria

         Maximum Visual Impacts INSIDE  Class I Area
          Screening Criteria ARE NOT Exceeded
                                     Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.  84.  141.2    84.  2.00   .071    .05   .001
 SKY     140.  84.  141.2    84.  2.00   .014    .05  -.001
 TERRAIN  10.  84.  141.2    84.  2.00   .039    .05   .000
 TERRAIN 140.  84.  141.2    84.  2.00   .007    .05   .000


         Maximum Visual Impacts OUTSIDE Class I Area
          Screening Criteria ARE NOT Exceeded
                                     Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.  35.  112.1   134.  2.00   .079    .05   .001
 SKY     140.  35.  112.1   134.  2.00   .015    .05  -.001
 TERRAIN  10.   0.    1.0   169.  3.15   .109    .05   .001
```

```
 TERRAIN 140.   0.    1.0   169.  2.00   .036    .05   .001

              Visual Effects Screening Analysis for
                Source: PRESCRIBED BURNING DTA E
                Class I Area: DENALI NP

              *** User-selected Screening Scenario Results ***
Input Emissions for
   Particulates    10.51  G  /S
   NOx (as NO2)      .00  G  /S
   Primary NO2       .00  G  /S
   Soot              .00  G  /S
   Primary SO4       .00  G  /S


              PARTICLE CHARACTERISTICS
              Density       Diameter
              =======       ========
Primary Part.     2.5            6
Soot              2.0            1
Sulfate           1.5            4

              Transport Scenario Specifications:

    Background Ozone:                  .04 ppm
    Background Visual Range:        264.00 km
    Source-Observer Distance:       150.80 km
    Min. Source-Class I Distance:   150.80 km
    Max. Source-Class I Distance:   398.50 km
    Plume-Source-Observer Angle:     11.25 degrees
    Stability:   4
    Wind Speed:   4.00 m/s

                            R E S U L T S
Asterisks (*) indicate plume impacts that exceed screening criteria

         Maximum Visual Impacts INSIDE  Class I Area
          Screening Criteria ARE NOT Exceeded
                                    Delta E       Contrast
                                  ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10. 145.  214.8    24.  2.00   .351    .05   .006
 SKY     140. 145.  214.8    24.  2.00   .051    .05  -.001
 TERRAIN  10.  84.  150.8    84.  2.00   .293    .05   .003
 TERRAIN 140.  84.  150.8    84.  2.00   .020    .05   .000


         Maximum Visual Impacts OUTSIDE Class I Area
            Screening Criteria ARE Exceeded
                                    Delta E       Contrast
                                  ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.   0.    1.0   169.  2.55  5.823*   .06   .073*
 SKY     140.   0.    1.0   169.  2.00   .843    .06  -.015
 TERRAIN  10.   0.    1.0   169.  2.44  2.679*   .06   .024
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 TERRAIN 140.   0.    1.0   169.  2.00   .967    .06   .016

              Visual Effects Screening Analysis for
                Source: PRESCRIBED BURNING DTA E
                Class I Area: DENALI NP

              *** User-selected Screening Scenario Results ***
Input Emissions for
   Particulates    10.51  G  /S
   NOx (as NO2)      .00  G  /S
   Primary NO2       .00  G  /S
   Soot              .00  G  /S
   Primary SO4       .00  G  /S


              PARTICLE CHARACTERISTICS
              Density       Diameter
              =======       ========
Primary Part.     2.5            6
Soot              2.0            1
Sulfate           1.5            4

              Transport Scenario Specifications:

    Background Ozone:                  .04 ppm
    Background Visual Range:         96.60 km
    Source-Observer Distance:       150.80 km
    Min. Source-Class I Distance:   150.80 km
    Max. Source-Class I Distance:   398.50 km
    Plume-Source-Observer Angle:     11.25 degrees
    Stability:   4
    Wind Speed:   4.00 m/s

                           R E S U L T S
Asterisks (*) indicate plume impacts that exceed screening criteria

         Maximum Visual Impacts INSIDE  Class I Area
          Screening Criteria ARE NOT Exceeded
                                     Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.  84.  150.8    84.  2.00   .051    .05   .001
 SKY     140.  84.  150.8    84.  2.00   .010    .05  -.000
 TERRAIN  10.  84.  150.8    84.  2.00   .025    .05   .000
 TERRAIN 140.  84.  150.8    84.  2.00   .005    .05   .000

         Maximum Visual Impacts OUTSIDE Class I Area
          Screening Criteria ARE NOT Exceeded
                                     Delta E       Contrast
                                   ===========   ============
Backgrnd Theta Azi Distance Alpha Crit  Plume   Crit  Plume
======== ===== === ======== ===== ====  =====   ====  =====
 SKY      10.  35.  119.7   134.  2.00   .055    .05   .001
 SKY     140.  35.  119.7   134.  2.00   .011    .05  -.000
 TERRAIN  10.   0.    1.0   169.  3.31   .063    .06   .000
 TERRAIN 140.   0.    1.0   169.  2.00   .021    .06   .000
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Mitigation Analysis for Proposed Construction and Operation of a BAX and CACTF with Army Lands in Alaska

This analysis discusses existing and potential mitigation measures identified within the Supplemental Draft EIS (DEIS) to lessen foreseeable adverse impact as a result of the proposed action. This analysis states how the mitigation would serve to eliminate or lessen the foreseen impact and offers an assessment of the potential success of the mitigation.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
Soil Resources	All sites	Compliance with training exercise regulations, as stipulated by USARAK Range Reg, 350-2.	E	Foxholes, trench systems, tank traps, hull down positions, explosive excavations, etc. must be refilled and leveled before redeployment. Where excavation is required, the organic layer would be removed first and stockpiled so it can be spread over disturbed sites after back filling is complete. Units and range control would ensure that no digging takes place in wetlands without a permit.	Refilling of excavations would restore the local conditions, and would prevent erosion of stockpiled soil. Conserving the organic layer would ensure revegetation and restore ground insulation.	Standard military practice effectively used at all Army installations.
Soil Resources	All sites		E	Environmental Pre-approval Overlays would be used to clarify where mechanical digging and earth moving is approved and restricted for each training area. A separate overlay exists for summer and winter.	Use of the Environmental Pre-approval Overlays prevents damage to certain sensitive areas, including wetlands and open water. The overall adverse impact would be reduced by focusing digging activities to those areas where impacts to soils, permafrost, and wetlands would be less adverse or no impact at all.	In place for 5 years at USARAK with evidence of successful compliance. Would continue to be successful only if restrictions are followed by Range Control and using units.
Soil Resources	All sites		E	A minimum of 6 inches of snow must remain on the ground when plowing trails, bivouacs, tactical operation centers, etc. The blade must be kept elevated to avoid tearing up the vegetative mat or soil beneath the snow pack.	By keeping the blade elevated and ensuring adequate snow pack, damage to the underlying vegetative mat or soil would be avoided.	Proven standard operating procedure.
Soil Resources	All sites		E	Vehicles would remain on marked trails and designated routes except when directed otherwise during tactical deployment. Vehicles would drive on established roads during administrative time. During breakup (usually 1 April through 15 May), all vehicles are restricted to established roads and dry trails. During summer months (usually May through September), cross-country movement is permitted in all areas except designated creek bottoms, lakes, streams, and open, flowing water as shown on the Environmental Pre-	Surface disturbance and subsequent erosion and potential permafrost damage would be avoided by restricting vehicle traffic to established hardened roads during break-up. Off-road vehicle travel during the summer months when saturated soil conditions exist in wet areas (creek bottoms, streams, etc.) causes the most damage to these areas because the soil strength cannot hold up to heavy wheeled traffic, rutting and other disturbance results. By limiting	Proven standard practice and regulatory requirement.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				approval Overlay. No tracked or wheeled maneuvering is permitted within a 50-meter buffer around all streams, lakes, and any open, flowing water during the summer unless crossing at a 90-degree angle to the stream. Fish spawning streams would not be crossed during summer. Vehicular stream crossing is allowed in winter months (usually October through March) at permitted ice bridge sites and other areas if there is no flowing water. Tactical turns, such as missile avoidance or neutral steer turns, would be avoided unless absolutely necessary. Vehicles would not drive directly up steep hills. Movement into off-limits areas is strictly prohibited. Personnel found in violation are subject to disciplinary action.	travel in these saturated areas to winter when the ground is frozen, rutting and other adverse disturbance is lessened or eliminated.	
Soil Resources	All sites		E	Units are required to police all training areas before, during, and after use. All cartridges, tubes, containers, packing material, and all other material introduced into the environment in conjunction with maneuver activities would be removed to the maximum practical extent. Remove all barbed, communications, concertina, and trip wire and properly dispose of it per post procedures. Wire left behind can injure wildlife and recreational users of the land. Under no circumstances would units bury or burn waste. All vehicles are required to have a supply of plastic garbage bags for trash collection.	Removal of trash would prevent contamination of training lands.	Successful if regulation is followed by using units and enforced by Range Control.
Soil Resources	All sites		E	Alaska State law requires that all spills be reported and cleaned up. A spill can be as little as one drop of POL if it hits the ground. Failure to report a spill would result in punishment of the individual(s) responsible. POL distribution points and refueling operations shall be set up and operated per USARAK Regulation 200-4. Drip pans must be used at all dispensing points. Each unit shall have a spill kit available that consists of at least a shovel, absorbent material (dry sweep), plastic bags, and drip pans. Immediately report POL spills to the fire department and range control. Know the size, location, and type of POL spill. Take	Following established POL handling, cleanup, and disposal techniques would lessen if not eliminate adverse impacts to soils and permafrost during fueling operations. Improper handling of POL products constitutes gross negligence, punishable by fine or imprisonment.	The possibility of punishment under law would also lessen the potential for careless handling of POL during training events.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				immediate action to control, contain, and clean up the spill per the Installation Spill Contingency Plan. Failure to immediately report spills may result in prosecution. All hazardous wastes and materials would be handled per the USARAK hazardous waste and materials management plan for each post. All disposal actions would be coordinated with the DPW, Environmental Department. Always turn in unused or waste oil and fog oil (see USARAK Regulation 200 4) for recycling along with empty drums and other hazardous wastes, such as old batteries, solvent, and paints.		
Soil Resources	All sites		E	Units can activate a standing contract for portable latrines through the Directorate of Contracting. Use the permanent latrines for human waste, when available. Where permanent latrines are not available, unit commanders must provide ample portable latrines. Unit commanders are personally responsible to prevent contamination of water resources. Cat holes are for emergencies only and permissible for groups of five or less.	An established procedure for dealing with human waste would lessen the adverse impact to soils and permafrost. The ability to use contractors for waste disposal is an option, but contractor's trucks would not have the same mobility in range areas that unit vehicles do, and contractors may have difficulty responding to changing tactical situations	Standard is proven effective.
Soil Resources	All sites		E	Procedures to reduce maneuver damage include the following: Avoid making tactical turns such as missile avoidance or neutral steer turns, unless necessary. These types of turns would rip up all the vegetation and it would take the terrain several years to recover. Avoid digging or damaging wetlands or any wet areas. Avoid damage to trees. Drive on established roads during administrative time. Although it may take longer than moving cross-country, the expense incurred in repairing maneuver damage is very high. Units causing ruts must fill them in as soon as possible. Stay away from the edges of roads. Do not drive directly up steep hills. Do required training with a concern for conservation and future use of range areas. Units would report maneuver damage to range control. Range control would determine the	Neutral turns would rip up all the vegetation and it would take the terrain several years to recover. By avoiding these types of turns, surface damage would be reduced. Using established roads would save travel time and reduce expense to repair surface damage. Driving on the edges of roads would cause the edges to break and crumble and can cause the road to wash out from rain and result in erosion problems. Preventing these actions would reduce the adverse impact to soils.	Effective by holding the units monetarily accountable for intentional maneuver damage, the goal is to force the unit to decide if the action would create unnecessary damage before harm is actually done.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				cause of the maneuver damage. If the damage was caused as a result of unavoidable scenario-driven maneuvers, the units would not be assessed for maneuver-damage repair. However, if range control determines that the damage was unnecessary and negligent, the DPW, Environmental Resources Division would conduct a damage assessment and offending units may be charged for maneuver-damage repair. The DPW, Environmental Resources Division would provide technical guidance on cleaning up hazardous materials and the ITAM office would provide guidance on rehabilitation of damaged lands.		
Soil Resources	All sites		E	The range facility manager and ITAM staff would assist trainers at any stage of planning with advice on the possible impact of exercise scenarios. Large exercises (battalion to brigade size) must have at a minimum, one environmental or ITAM staff person attached to each tactical operation center or battalion support area in the field. This resource is at no cost to the unit and would function solely as the environmental intelligence to the commander. The ITAM coordinator should be contacted as soon as possible in the planning process so that appropriate number of personnel would be available to the commander. Ground-disturbing activities, such as bulldozer work where soil and vegetation is displaced, disturbance of vegetation in wetlands, construction of new trails, and the opening of new borrow areas, etc., would be coordinated with the ITAM office before taking any action. Activities that would have an impact on waterways or result in discharge of material into waterways would be coordinated with the ITAM office and the range-facility manager before taking any action.	Use of the ITAM staff would provide trainers with knowledge of early-on protection of known sensitive areas and reducing possible maneuver damage.	Effective, as long as ITAM staff are consulted prior to activities being conducted.
Soil Resources	All sites	Application of the ITAM program.	E	Inventory and monitor, repair, maintain, and enhance training lands as described in the INRMP and TREIS.	The ITAM program essentially acts as an ongoing mitigation program for Army training and testing activities. It is the Army's formal strategy for focusing on sustained use of training and testing lands, and it provides the Army with the	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
					sound planning and execution mandatory to protect Army land as an essential asset for training.	be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Soil Resources	All sites	Use of RTLA program.	E	Inventory land conditions, monitor vegetation trends, repair damaged areas, and minimize future damage.	Seeks to maintain a balance between the use of training lands to maximize military preparedness and the conservation of biologically diverse and functioning ecosystems. Also provides data needed to evaluate the capability of training lands to meet multiple use demands on a sustainable basis.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Soil Resources	All sites	Use of LRAM program.	E	Inventory land conditions, monitor vegetation trends, repair damaged areas, and minimize future damage.	Cites protocols for reducing long-term impacts of training and testing by combining preventive and corrective land reclamation, reshaping, rehabilitation, repair, and maintenance practices. It involves repair of damaged lands and use of land construction technology to avoid future damage to training lands. LRAM uses technologies such as revegetation and erosion control techniques to maintain soils and vegetation required for accomplishment of the military mission. These efforts are specifically designed to maintain quality military training lands and to minimize long-term costs associated with land rehabilitation or additional land purchase.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Soil Resources	All sites	Implementation of programs to track munitions usage.	E	Use Range Facility Maintenance Support System to input BAX/CACTF range use data - number of training days; use of close air support; specific hours range was in use; munitions used; number of troops and vehicles	Identifies high use times and locations to keep track of areas receiving high munitions use. Areas may then be tested for soil and/or water quality.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Soil Resources	All sites	Use of Range Facility Maintenance Support System.	E	Input BAX/CACTF range use data - number of training days; use of close air support; specific hours range was in use; munitions used; number of troops and vehicles. It is an automated range and training area	It enables the system to calculate the impact, in MIMs, of scheduled activities on training lands using the ATTACC methodology. The ITAM staff can use RFMSS data to predict training impacts	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				management system, which provides centralized scheduling of training assets, predict training impacts on training land, and provides detailed reports. Identifies high use times and locations.	on training lands.	environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Soil Resources	All sites	Implementation of soil and water monitoring program.	E	Monitor surface water quality, groundwater quality, and soil contaminates to evaluate presence of contaminates from impact areas. Monitor annually at creeks and rivers where it enters and leaves installation boundaries. Soil sampling would occur here also and at edges of impact areas.	Important for measuring ecosystem health. Help formulate options for managing those species dependent upon high water quality. Also important to surrounding human population. Ongoing monitoring can identify potential problems early on.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Soil Resources	All sites	Adjustment of site layouts to relocate proposed structures away from areas having higher permafrost potential.	P	Use permafrost survey data in design of range facility. Site buildings and roads away from ice-rich permafrost areas.	Locating buildings away from ice-rich permafrost areas would prevent ice-rich permafrost from being disturbed, which would eliminate possible thawing and settling, subsidence, and ponding.	Effective; offers avoidance of impact.
Soil Resources	All sites	Additional drilling at sites to confirm initial interpretations, prior to final design and construction.	P	Locate permafrost areas. Identify areas that are ice-rich or have ice wedges. This data can be used during range design and siting.	Provides range designers with the information to avoid ice-rich permafrost areas. Avoiding these areas would reduce impacts to surface soils and lessen potential future building and road maintenance.	Effective; offers avoidance of impact.
Soil Resources	All sites	Prevention of off-road travel in high permafrost areas during summer months when ground is thawed.	P	Identify ice-rich permafrost areas on existing Environmental Pre-approval Overlays as part of the "Red" category during summer months, which restricts travel in these areas to only foot maneuvers. Overlays are used by Range Control when scheduling use of the BAX/CACTF.	Prevents off-road vehicle traffic in ice-rich permafrost areas, thus preventing surface damage, thawing, subsidence, and ponding.	Effective; established practice for over 5 years on USARAK lands; minimal permafrost damage since implemented; Overlays are a part of Range Regulation 350-2.
Soil Resources	All sites	Utilize BMPs.	P	Avoid construction in permafrost whenever possible.	No construction in a permafrost area would totally eliminate possible adverse impacts from construction.	Effective; avoidance eliminates impact.
Soil Resources	All sites		P	Avoid areas with ice wedges or ice-rich permafrost.	Avoidance eliminates adverse impact.	Effective; avoidance eliminates impact.
Soil Resources	All sites		P	Select frozen soils that allow for easier, more uniform thawing and settling for construction.	By selecting certain frozen soils types that exhibit easier, more uniform thawing and settling for construction, severe adverse impacts, such as subsidence and ponding would not occur. The overall impacts to soils and permafrost would be lessened.	Effective; certain soil types have proved to support construction; industry practice

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
Soil Resources	All sites		P	Minimize the construction footprint when working in permafrost areas.	By initially minimizing the construction footprint in permafrost areas, most adverse impacts to permafrost and soils can be avoided.	Effective; avoidance eliminates impact.
Soil Resources	All sites		P	Consider how melting ice wedges would affect local drainage.	Adverse effects to local drainage can be avoided.	Effective; avoidance eliminates impact.
Soil Resources	All sites		P	Provide vegetative cover as soon as possible following disturbance.	Insulation from direct sunlight and warmer temperatures slows or prevents thawing of permafrost, subsidence, and pond formation.	Shown to be successful as it is a standard industry practice in Alaska.
Soil Resources	Alt 2	Incorporate existing cleared areas into design of facilities Incorporate existing cleared areas into design of facilities Incorporate existing cleared areas into design of facilities Incorporate existing cleared areas into design of facilities.	P	Use the 245 acres of currently cleared area within the BAX and CACTF footprint during design and placement of the range.	Underlying permafrost of existing cleared areas has usually thawed or the distance between the permafrost and the surface has increased. This creates a situation where construction can be performed with a lower possibility of permafrost disturbance (and subsequent subsidence and ponding). In addition, by utilizing existing cleared areas, the amount of new surface disturbance is reduced.	Effective; reduces overall surface disturbance total and impact to local environment.
Soil Resources	Alt 3		P	Use the 100 acres of currently cleared area within the BAX and CACTF footprint during design and placement of the range.	Underlying permafrost of existing cleared areas has usually thawed or the distance between the permafrost and the surface has increased. This creates a situation where construction can be performed with a lower possibility of permafrost disturbance (and subsequent subsidence and ponding). In addition, by utilizing existing cleared areas, the amount of new surface disturbance is reduced.	Effective; reduces overall surface disturbance total and impact to local environment.
Soil Resources	Alt 4		P	Use the 65 acres of currently cleared area within the BAX and CACTF footprint during design and placement of the range.	Underlying permafrost of existing cleared areas has usually thawed or the distance between the permafrost and the surface has increased. This creates a situation where construction can be performed with a lower possibility of permafrost disturbance (and subsequent subsidence and ponding). In addition, by utilizing existing cleared areas, the amount of new surface disturbance is reduced.	Effective; reduces overall surface disturbance total and impact to local environment.
Soil Resources	Alt 5		P	Use the 135 acres of currently cleared area within the BAX and CACTF footprint during design and placement of the range.	Underlying permafrost of existing cleared areas has usually thawed or the distance between the permafrost and the	Effective; reduces overall surface disturbance total and impact to local environment.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
					surface has increased. This creates a situation where construction can be performed with a lower possibility of permafrost disturbance (and subsequent subsidence and ponding). In addition, by utilizing existing cleared areas, the amount of new surface disturbance is reduced.	
Surface Water	All Sites	Compliance with training exercise regulations, as stipulated by USARAK Range Reg, 350-2.	E	Foxholes, trench systems, tank traps, hull down positions, explosive excavations, etc., must be refilled and leveled before redeployment. Where excavation is required, the organic layer would be removed first and stockpiled so it can be spread over disturbed sites after back filling is complete. Units and range control would ensure that no digging takes place in wetlands without a permit.	Refilling of excavations would restore the local conditions and would prevent erosion of stockpiled soil. Conserving the organic layer would ensure infiltration and reduce overland flow and the potential for flooding.	Effective; standard military practice used at all Army installations.
Surface Water	All Sites		E	Environmental Pre-approval Overlays would be used to clarify where mechanical digging and earth moving is approved and restricted for each training area. A separate overlay exists for summer and winter.	Use of the Environmental Pre-approval Overlays prevents damage to certain sensitive areas, including wetlands and open water. The overall adverse impact would be reduced by focusing digging activities to those areas where impacts to soils, permafrost, and wetlands would be less adverse or no impact at all.	Effective; in place for 5 years at USARAK with evidence of successful compliance. Would continue to be successful only if restrictions are followed by Range Control and using units.
Surface Water	All Sites		E	Vehicles would remain on marked trails and designated routes except when directed otherwise during tactical deployment. Vehicles would drive on established roads during administrative time. During breakup (usually 1 April through 15 May), all vehicles are restricted to established roads and dry trails. During summer months (usually May through September), cross-country movement is permitted in all areas except designated creek bottoms, lakes, streams, and open, flowing water as shown on the Environmental Pre-approval Overlay. No tracked or wheeled maneuvering is permitted within a 50-meter buffer around all streams, lakes, and any open, flowing water during the summer unless crossing at a 90-degree angle to the stream. Fish spawning streams would not be crossed during summer. Vehicular stream crossing is allowed in winter months (usually October through March) at permitted ice bridge sites	Surface disturbance, and subsequent erosion and potential permafrost damage would be avoided by restricting vehicle traffic to established hardened roads during break-up. Off-road vehicle travel during the summer months, when saturated soil conditions exist in wet areas (creek bottoms, streams, etc.), causes the most damage to these areas because the soil strength cannot hold up to heavy wheeled traffic and rutting and other disturbance results. By limiting travel in these saturated areas to winter when the ground is frozen, rutting and other adverse disturbance is lessened or eliminated.	Effective; proven standard practice and regulatory requirement.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				and other areas if there is no flowing water. Tactical turns, such as missile avoidance or neutral steer turns, would be avoided unless absolutely necessary. Vehicles would not drive directly up steep hills. Movement into off-limits areas is strictly prohibited. Personnel found in violation are subject to disciplinary action.		
Surface Water	All Sites		E	Units are required to police all training areas before, during, and after use. All cartridges, tubes, containers, packing material, and all other material introduced into the environment in conjunction with maneuver activities would be removed to the maximum practical extent. Remove all barbed, communications, concertina, and trip wire and properly dispose of it per post procedures. Wire left behind can injure wildlife and recreational users of the land. Under no circumstances would units bury or burn waste. All vehicles are required to have a supply of plastic garbage bags for trash collection.	Removal of trash would prevent contamination of training lands and surrounding surface water.	Effective; if regulation is followed by using units and enforced by Range Control.
Surface Water	All Sites		E	Alaska State law requires that **ALL** spills be reported and cleaned up. A spill can be as little as one drop of POL if it hits the ground. Failure to report a spill would result in punishment of the individual(s) responsible. POL distribution points and refueling operations shall be set up and operated per USARAK Regulation 200-4. Drip pans must be used at all dispensing points. Each unit shall have a spill kit available that consists of at least a shovel, absorbent material (dry sweep), plastic bags, and drip pans. Immediately report POL spills to the fire department and range control. Know the size, location, and type of POL spill. Take immediate action to control, contain, and clean up the spill per the Installation Spill Contingency Plan. Failure to immediately report spills may result in prosecution. All hazardous wastes and materials would be handled per the USARAK hazardous waste and materials management plan for each post. All disposal actions would be coordinated with the DPW, Environmental Department. Always	Following established POL handling, cleanup, and disposal techniques would lessen if not eliminate adverse impacts to surface water during fueling operations. Improper handling of POL products constitutes gross negligence, punishable by fine or imprisonment.	The possibility of punishment under law would also lessen the potential for careless handling of POL during training events.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				turn in unused or waste oil and fog oil (see USARAK Regulation 200-4) for recycling along with empty drums and other hazardous wastes, such as old batteries, solvent, and paints.		
Surface Water	All Sites		E	Units can activate a standing contract for portable latrines through the Directorate of Contracting. Use the permanent latrines for human waste, when available. Where permanent latrines are not available, unit commanders must provide ample portable latrines. Unit commanders are personally responsible to prevent contamination of water resources. Cat holes are for emergencies only and permissible for groups of five or less.	An established procedure for dealing with human waste would lessen the adverse impact to surface water. The ability to use contractors for waste disposal is an option, but contractor's trucks would not have the same mobility in range areas that unit vehicles do, and contractors may have difficulty responding to changing tactical situations.	Effective; proven standard.
Surface Water	All Sites		E	Procedures to reduce maneuver damage include the following: • Avoid making tactical turns such as missile avoidance or neutral steer turns, unless necessary. These types of turns would rip up all the vegetation and it would take the terrain several years to recover; avoid digging or damaging wetlands or any wet areas; • Avoid damage to trees; • Drive on established roads during administrative time. Although it may take longer than moving cross-country, the expense incurred in repairing maneuver damage is very high. Units causing ruts must fill them in as soon as possible; • Stay away from the edges of roads. • Do not drive directly up steep hills; • Do required training with a concern for conservation and future use of range areas; • Units would report maneuver damage to range control. Range control would determine the cause of the maneuver damage. If the damage was caused as a result of unavoidable scenario-driven maneuvers, the units would not be assessed for maneuver-damage repair. However, if range control determines that the damage was unnecessary and negligent, the DPW, Environmental	Neutral turns would rip up all the vegetation and it would take the terrain several years to recover. By avoiding these types of turns, surface damage would be reduced. Using established roads would save travel time and reduce expense to repair surface damage. In addition, it would prevent additional compaction of soil, preventing decreased infiltration of overland flow and flooding. Driving on the edges of roads would cause the edges to break and crumble and can cause the road to wash out from rain and result in erosion problems and potentially degrade water quality. Preventing these actions would reduce the adverse impact to surface water.	Effective; by holding the units monetarily accountable for intentional maneuver damage, the goal is to force the unit to decide if the action would create unnecessary damage before harm is actually done.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				Resources Division would conduct a damage assessment and offending units may be charged for maneuver-damage repair. The DPW, Environmental Resources Division would provide technical guidance on cleaning up hazardous materials and the ITAM office would provide guidance on rehabilitation of damaged lands.		
Surface Water	All Sites		E	The range-facility manager and ITAM staff would assist trainers at any stage of planning with advice on the possible impact of exercise scenarios. Large exercises (battalion to brigade size) must have at a minimum, one environmental or ITAM staff person attached to each tactical operation center or battalion support area in the field. This resource is at no cost to the unit and would function solely as the environmental intelligence to the commander. The ITAM coordinator should be contacted as soon as possible in the planning process so that appropriate number of personnel would be available to the commander. Ground-disturbing activities, such as bulldozer work where soil and vegetation is displaced, disturbance of vegetation in wetlands, construction of new trails, and the opening of new borrow areas, etc., would be coordinated with the ITAM office before taking any action. Activities that would have an impact on waterways or result in discharge of material into waterways would be coordinated with the ITAM office and the range-facility manager before taking any action.	Use of the ITAM staff would allow trainers to early-on provide for protection of known sensitive areas and reduce possible maneuver damage and resulting impact to surface water resources.	Effective, as long as ITAM staff are consulted prior to activities being conducted.
Surface Water	All Sites	Application of the ITAM program.	E	Inventory and monitor, repair, maintain, and enhance training lands. INRMP; TREIS	The ITAM program essentially acts as an ongoing mitigation program for Army training and testing activities. It is the Army's formal strategy for focusing on sustained use of training and testing lands, and it provides the Army with the sound planning and execution mandatory to protect Army land as an essential asset for training.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Surface Water	All Sites	Use of RTLA	E	Inventory land conditions, monitor vegetation	Seeks to maintain a balance between the	These measures are supportive

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		program.		trends, repair damaged areas, and minimize future damage.	use of training lands to maximize military preparedness and the conservation of biologically diverse and functioning ecosystems. Also provides data needed to evaluate the capability of training lands to meet multiple use demands on a sustainable basis.	of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Surface Water	All Sites	Use of LRAM program.	E	Inventory land conditions, monitor vegetation trends, repair damaged areas, and minimize future damage.	Cites protocols for reducing long-term impacts of training and testing by combining preventive and corrective land reclamation, reshaping, rehabilitation, repair, and maintenance practices. It involves repair of damaged lands and use of land construction technology to avoid future damage to training lands. LRAM uses technologies such as revegetation and erosion control techniques to maintain soils and vegetation required for accomplishment of the military mission. These efforts are specifically designed to maintain quality military training lands and to minimize long-term costs associated with land rehabilitation or additional land purchase.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Surface Water	All Sites	Implementation of programs to track munitions usage.	E	Monitor surface water quality, groundwater quality and soil contaminates to evaluate presence of contaminates from impact areas. Annually at creeks and rivers where it enters and leaves installation boundaries. Soil sampling would occur here also and at edges of impact areas.	Important for measuring ecosystem health. Help formulate options for managing those species dependent upon high water quality. Also important to surrounding human population. Ongoing monitoring can identify potential problems early on.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Surface Water	All Sites	Use of Range Facility Maintenance Support System.	E	Input BAX/CACTF range use data - number of training days; use of close air support; specific hours range was in use; munitions used; number of troops and vehicles. It is an automated range and training area management system, which provides centralized scheduling of training assets, predict training impacts on training land, and provides detailed reports. Identifies high use times and locations.	It enables the system to calculate the impact, in MIMs, of scheduled activities on training lands, using the ATTACC methodology. The ITAM staff can use RFMSS data to predict training impacts on training lands.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
Surface Water	All Sites	Implementation of soil and water monitoring program.	E	Monitor surface water quality, groundwater quality, and soil contaminates to evaluate presence of contaminates from impact areas. Monitor annually at creeks and rivers where it enters and leaves installation boundaries. Soil sampling would occur here also and at edges of impact areas.	Important for measuring ecosystem health. Help formulate options for managing those species dependent upon high water quality. Also important to surrounding human population. Ongoing monitoring can identify potential problems early on.	These measures are supportive of (and consistent with) the military objective of natural, realistic training areas that reflect the undisturbed environment (soils) that would be encountered in conflicts. The long-term effects of soils impacts would be reduced due to these objectives.
Surface Water	All Sites	Comply with conditions of Conditional Fog Oil Permit from ADEC.	E	See below for description of specific conditions.	These conditions reduce or eliminate exposure of nearby populations, human, wildlife, and plant, to fog oil during training events. By lessening or eliminating the chance for exposure, it eliminates the potential for adverse impact.	Effective if all conditions of the permit are adhered to by the using units. The potential for punishment under law if the permit conditions are not followed would also lessen the potential for careless handling of fog oil smoke during training events.
Surface Water	All Sites	Regulations for use of smoke grenades and smoke pots.	E	Computations to consider temperature gradients and the direction and speed of the wind.	Smoke must not leave the installation boundary. In order for units to comply with this requirement, current temperature and wind direction and speed is required to determine if suitable conditions exist for smoke training. By limiting smoke training to times that lessen the chance for smoke to leave the installation, then adverse impacts to the surrounding community and environment would be avoided. This eliminates units from just going out to the field and conducting smoke training without consideration of existing meteroglical conditions.	Effective if units adhere to restrictions.
Surface Water	All Sites		E	Test grenades to be used before smoke pots are employed.	Test grenades would release a smaller amount of smoke for units to predict movement of smoke, and help to determine if conditions are appropriate (ensures that smoke would not leave the installation) for release of a larger plume of smoke.	Effective.
Surface Water	All Sites		E	Complete dissipation of all smoke before leaving the reservation boundary.	Ensures that surrounding community and environment would not be adversely impacted.	Effective if climatic conditions allow.
Surface Water	All Sites		E	Under marginal conditions, employ an NBC-qualified officer to evaluate all factors and	This individual would provide expert opinion on the production and travel of	Effective if expect is given adequate time and information

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				recommend the type and uses of smoke.	smoke plumes. This additional consultation would help to determine if smoke training should occur under marginal conditions. Their opinion would reduce the chance of conducting smoke training during times when adverse impacts would result.	to provide an evaluation.
Surface Water	All Sites	Regulations and permit conditions for use of fog oil.	E	All requests for smoke generation to be reviewed (and commented on) by the 172nd Infantry Brigade, Chemical Platoon before submission to Range Control.	The Chemical Platoon is the expert on use of fog oil smoke at USARAK and provides oversight to other units less familiar with use of fog oil smoke. This expert oversight would lessen adverse impact by providing early review of fog oil smoke training requests and to discourage use of fog oil smoke when all requirements cannot be met.	This method would be successful as long as a Chemical Platoon is stationed at USARAK, and this requirement is made part of their assigned duty.
Surface Water	All Sites		E	Units to record amount of fog oil and diesel fuel-arctic used when smoke is produced, the rate of movement of the fogger, global positioning system data for locations of foggers, temperature, and wind speed and direction; and to provide the information to Range Control.	This information would help to build a meteorological and fog movement data set that would help to further refine the behavior of fog oil smoke during certain meteorological conditions. Future management actions would be adapted in response to the data set to further reduce adverse impacts. A record of amount of fog oil and diesel fuel-arctic used is required to ensure compliance with ADEC permit.	Adaptive management schemes are successful only if maintained over time.
Surface Water	All Sites		E	Smoke generation not permitted within 300 meters of a water body (i.e. lakes, rivers, or streams); within 1,000 meters of the post border, urban area, and cantonment area; within 500 meters of the Richardson Highway; or within 100 meters of the Alaska Railroad tracks.	These restrictions are assigned to prevent deposition of fog oil into sensitive habitats (lakes, rivers, streams) and to prevent risk to human populations (on-post residents and nearby residents). In addition, by limiting the use near the Richardson Highway and the Alaska Railroad, potential safety risks are reduced.	This method would be successful if abrupt meteorological changes do not occur during training. Changes in the weather are uncontrollable, but by limiting training during stable atmospheric conditions, the possibility of abrupt weather changes are reduced.
Surface Water	All Sites		E	Spill-prevention measures to be taken to prevent spills while using and refueling smoke generators. Spill-response equipment to contain and cleanup any spills that occur must be available in the field. All spills are to be immediately reported to Range Control.	Spill-prevention measures include use of drip pans... (See AR 200-4). These methods prevent spills from occurring. Spill kits are required to be carried in the field by all units. These kits help to isolate any potential spills and contain necessary equipment to clean up the spills immediately. By reporting the spill to Range Control, Range Control can	Effective; an established protocol; proven industry standard

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
					notify the Fire Department (trained experts to handle fuel spills would be dispatched to assist).	
Surface Water	All Sites		E	Use of the smoke generators to be annotated on all range requests that include smoke generation. Range managers are required to capture utilization data in the Range Facility Maintenance Support System.	By requiring units to inform Range Control prior to fog oil smoke use, better oversight during the training operation can be provided. This oversight would help to lessen any adverse impacts. Recording of this information in Range Facility Maintenance Support System would help to maintain a data set to be used for adaptive management.	This method would be successful only if using units follow range regulations and report their use prior to training.
Surface Water	All Sites		E	Units to give no less than 12 working days prior notice when requesting smoke operations.	This advanced notice would ensure that the Chemical Platoon has time to review the fog oil training plan, ensure that Range Control can "deconflict" this smoke training with any other training that may be occurring, and ensures that the units plan is sound and all regulations are adhered to.	This method would be successful only if the units submit their plan early for review.
Surface Water	All Sites		E	Units to consult fog-oil smoke maps when requesting such training. These maps would show the environmental/geographical restrictions and are available at Range Control.	These overlays would provide an easy way for units to determine where fog oil training is allowed and not allowed. By identifying off-limits (sensitive) areas, disturbance to surface water would be prevented.	Overlays have proven to work in preventing adverse impacts.
Surface Water	Alts 2 and 3	Ranges would be designed to ensure they would not impede floodwaters.	P	Installation of adequate-sized culverts, maintenance of existing waterways, avoidance of floodplains.	Would prevent ponding of water. Would eliminate potential downstream adverse impact.	Effective, but unpredictable rainfall and snowmelt events are always possible. But, the range was designed using the largest possible rainfall and snowfall event, so damage and loss of training days would be at a minimum.
Surface Water	Alts 2 and 3	Mitigate adverse impacts to floodplains.	P	Comply with Executive Order 11988, *Protection of Floodplains.* Requires evaluation of the potential effects of any actions a federal agency may take in a floodplain, ensures that planning programs and budget request reflect consideration of flood hazards and floodplain management, and prescribes procedures to implement the policies and requirements of EO 11988.	Avoiding to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplain development wherever there is a practicable alternative.	As long as the Executive Order is complied with.
Surface Water	All Sites	Range facility drainage would be designed to	P	Range drainage design would include internal storm water runoff from rainfall event. The range drainage design would also account for	By designing the range to accommodate these large rainfall and snowmelt runoff events, damage to range infrastructure	Effective, but unpredictable rainfall and snowmelt events are always possible. The range

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		accommodate general local snowmelt runoff each spring and rainfall events throughout the year.		local yearly snowmelt runoff.	would be avoided, and minimal training days would be lost due to flooding.	would be designed using the largest possible rainfall and snowfall event, so damage and loss of training days would be at a minimum.
Surface Water	All Sites	Ranges would be sited to avoid construction footprints within lakes and ponds.	P	Range buildings, roads, trails, firing points, targets, and instruments would not be placed with 50 feet of lakes and ponds.	By avoiding lakes and ponds during design and construction, adverse impacts to sensitive surface water habitat, emergent and semi-emergent wetlands, and aquatic species can be avoided.	Effective by keeping range activity at a distance from these areas, disturbance would be avoided.
Surface Water	All Sites	Maneuver would be prevented near lakes and ponds.	P	Off-road vehicle maneuver would not be allowed within 50 feet of lakes and ponds. These areas would be identified on existing Environmental Pre-approval Overlays as part of the "Red" category during summer months, which restricts travel in these areas to only foot maneuvers. Overlays are used by Range Control when scheduling use of the BAX/CACTF.	By avoiding lakes and ponds during maneuver, adverse impacts to sensitive surface water habitat, emergent and semi-emergent wetlands, and aquatic species can be avoided.	Effective; established practice for over 5 years on USARAK lands; less than 10 acres of damage total since implemented; Overlays are a part of Range Regulation 350-2
Surface Water	All Sites	Direct fire would be prevented into lakes and ponds.	P	Firing of munitions would not be allowed into lakes and ponds by situating firing points and targets away from open water, except where impact areas already exist.	By eliminating open water as a possible area for munitions to land and accumulate, any adverse impacts would be eliminated.	Effective; by avoidance of targets near open water bodies.
Surface Water	Alt 2	Eddy would be closely monitored to detect and correct future changes in drainage patterns.	P	Determination where floodwaters occur within the range footprint in relation to location, timing, and size. Range design may be modified to increase culvert size.	By specifically studying how flood water affects the range infrastructure, costly repairs may be avoided in the future by adapting range design to allow water to flow through unimpeded. Changes to range design to accommodate floodwaters may be required to ensure downstream conveyance of water is not disrupted. In other words, it would ensure change in downstream flow would not occur.	This method would only be successful if other range design factors do not preclude the ability to modify the design following construction.
Surface Water	Alt 2	Vegetation within high water channels would remain (except in very localized areas) to prevent any alteration of flow through the area.	P	High water channels would be identified prior to construction, and vegetation within these channels would be prevented from being cleared. Some vegetation in localized areas may be cleared to maintain a line of sight between a firing point and a target.	By maintaining existing vegetation within flood channels, the rate of flow of water using these channels would remain the same. If these channels are cleared of vegetation, the water would no longer be slowed down and its rate of flow would speed up, potentially arriving downstream in Delta Junction in a shorter amount of time. By maintaining the vegetation, the flood waters arrival time in Delta Junction would not change	This method would be successful if only a minimal amount of localized clearing is done.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
					from existing and historical timeframes.	
Surface Water	Alt 3	Donnelly would be closely monitored to detect and correct future changes in drainage patterns.	P	Determination if flooding occurs within the range footprint in relation to location, timing, and size. Range design may be modified to increase culvert size or install bridging.	By specifically studying how flood water affects the range infrastructure, costly repairs may be avoided in the future by adapting range design to allow water to flow through unimpeded. Changes to range design to accommodate floodwaters may be required to ensure downstream conveyance of water is not disrupted. In other words, it would ensure change in downstream flow would not occur.	This method would only be successful if other range design factors do not preclude the ability to modify the design following construction.
Surface Water	Alt 3	Vegetation within high water channels would remain (except in very localized areas) to prevent any alteration of flow through the area.	P	High water channels would be identified prior to construction, and vegetation within these channels would be prevented from being cleared. Some vegetation in localized areas may be cleared to maintain a line of sight between a firing point and a target.	By maintaining existing vegetation within flood channels, the rate of flow of water using these channels would remain the same. If these channels are cleared of vegetation, the water would no longer be slowed down and its rate of flow would speed up, potentially arriving downstream in Delta Junction in a shorter amount of time. By maintaining the vegetation, the flood waters arrival time in Delta Junction would not change from existing and historical timeframes.	This method would be successful if only a minimal amount of localized clearing is done.
Surface Water	Alt 5	North Texas Range/Eddy Drop Zone Combination would be closely monitored to detect and correct future changes in drainage patterns.	P	Determination if flooding occurs within the range footprint in relation to location, timing, and size. Range design may be modified to increase culvert size.	By specifically studying how flood water affects the range infrastructure, costly repairs may be avoided in the future by adapting range design to allow water to flow through unimpeded. Changes to range design to accommodate floodwaters may be required to ensure downstream conveyance of water is not disrupted. In other words, to ensure change in downstream flow would not occur.	This method would only be successful if other range design factors do not preclude the ability to modify the design following construction.
Surface Water	Alt 5	Vegetation within high water channels would remain (except in very localized areas) to prevent any alteration of flow through the area.	P	High water channels would be identified prior to construction, and vegetation within these channels would be prevented from being cleared. Some vegetation in localized areas may be cleared to maintain a line of sight between a firing point and a target.	By maintaining existing vegetation within flood channels, the rate of flow of water using these channels would remain the same. If these channels are cleared of vegetation, the water would no longer be slowed down and its rate of flow would speed up, potentially arriving downstream in Delta Junction in a shorter amount of time. By maintaining the vegetation, the flood waters arrival time in Delta Junction would not change	This method would be successful if only a minimal amount of localized clearing is done.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
					from existing and historical timeframes.	
Fire Management	All Sites	Use of the Fire Weather Index (FWI) (which is part of Canadian Forest Fire Danger Rating System (CCDFRS)), in cooperation with AFS	E	The fire index, as determined by the USARAK Fire Department, is based on the CFFDRS, which is the fire danger rating system used by BLM, Alaska Fire Service (AFS) and the State of Alaska, Division of Forestry. USARAK uses the FWI as an indicator of fire intensity and spread potential. The FWI tracks the effects of weather on forest fuels, producing an estimate of potential fire danger and fire behavior in an area. The Fire Index Rating (as determined by the USARAK Fire Chief based on the FWI) is disseminated to each Range Control Office daily, is applicable to that particular area, and is valid for 24 hours. This information is provided by a series of remote sensors located at Allen Army Airfield and provides timely, accurate information regarding the FWI conditions. The sensors are part of the statewide fire weather system and are maintained by AFS and State of Alaska, Division of Forestry. The Range Control Office is responsible for obtaining the daily fire index rating and disseminating that information to units using the range.	This rating provides general daily information about potential fire behavior at selected sites. Rating drives type of training that can be conducted. Prevents use of highly flammable munitions when fire danger is high or extreme.	Effective if restrictions are adhered to by using units during training.
Fire Management	All Sites	Strict adherence and compliance with existing fire risk index range regulations and restrictions (USARAK Range Regulation 350-2) to prevent wildland fires.	E	Low Fire Risk Index - No restrictions;	n/a	Effective if restrictions are adhered to by using units during training.
Fire Management	All Sites		E	Moderate Fire Risk Index - Use of blank and ball ammunition allowed. Use of pyrotechnics (including smoke, trip flares, or tracers) prohibited unless used in container that completely contains all burning elements of the device.	Prevents use of highly flammable munitions when fire danger is high or extreme.	Effective if restrictions are adhered to by using units during training.
Fire Management	All Sites		E	High Fire Risk Index - Use of blank and ball ammunition allowed. Use of pyrotechnics is prohibited. Ground units carry fire-fighting equipment.	Prevents use of highly flammable munitions when fire danger is high or extreme.	Effective if restrictions are adhered to by using units during training.
Fire Management	All Sites		E	Extreme Fire Risk Index - Use of blank and ball ammunition allowed. Use of pyrotechnics is prohibited. Ground units carry fire-fighting equipment.	Prevents use of highly flammable munitions when fire danger is high or extreme.	Effective if restrictions are adhered to by using units during training.
Fire Management	All Sites	Monitoring of fire weather indices and prohibition of pyrotechnics use	E	Range Control would not allow units to use pyrotechnics during training exercises at the BAX and CACTF when indices are high to extreme.	Less risk of quick fire ignition and spread.	Effective; limits training during riskiest times of year.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		during training exercises when indices are high to extreme.				
Fire Management	All Sites	Continued update and implementation of fire management plans prepared by USARAK and the AFS at DTA.	E	Fire management plans are updated on a 5-year basis, or until conditions warrant.	The plans assess current fire hazards and list recommendations to reduce them.	Effective by identifying risks and planning procedures to reduce those risks, lessens the probability of fire.
Fire Management	All Sites	Continued removal of hazardous fuels around observation point sites, range targets and structures.	E	USARAK would maintain hazardous fuels around these features by hand thinning, prescribed burning, and hydroaxing.	Reduction in hazardous fuels around areas primarily used during military training using flammable munitions lessens the risk for fire starts.	Effective; as the amount of flammable material in an area where live munitions are used is reduced, so is the likelihood for fire starts.
Fire Management	All Sites	Conduct prescribed burning to remove light, flashy fuels (vegetation) where grass is the primary fuel type.	E	USARAK would conduct burning every one to three years depending on fuel load and conditions. Specifically continue prescribed fire at Texas Range, approximately 2,000 to 5,000 acres, every one to three years.	Reduction in hazardous fuels around areas primarily used during military training using flammable munitions lessens the risk for fire starts.	Effective; as the amount of flammable material in an area where live munitions are used is reduced, so is the likelihood for fire starts.
Fire Management	Alt 4	Conduct prescribed burning to remove light, flashy fuels (vegetation) where grass is the primary fuel type.	E	USARAK would continue prescribed fire at Texas Range, approximately 2,000 to 5,000 acres, every one to three years.	Reduction in hazardous fuels around areas primarily used during military training using flammable munitions lessens the risk for fire starts.	Effective; as the amount of flammable material in an area where live munitions are used is reduced, so is the likelihood for fire starts.
Fire Management	All Sites	Continued review of access to firing ranges.	E	AFS would be made aware of any new range complexes to become familiar with access roads. Also, any changes to the road system near active ranges would be shared with AFS.	Easy access to range complexes would allow for quick and effective response by initial attack forces in the event of a wildland fire.	Effective; the earlier initial attack forces respond to a wildland fire, the better the chance for suppression.
Fire Management	All Sites	Compliance with detailed pre-attack (operational response) plan including the initial DTA fire response plan.	E	This plan would be developed prior to any live-fire training exercises. This is coordinated with AFS and includes an Initial Attack Response Team, pre-positioned in the Delta Junction area during periods of moderate and above fire risk index rating.	A pre-positioned Initial Attack Response Team in the Delta Junction Area would allow for quick and effective response by initial attack forces in the event of a wildland fire.	Effective; the earlier initial attack forces respond to a wildland fire, the better the chance for suppression.
Fire Management	All Sites	Compliance with detailed pre-attack (operational response) plan, including the emergency egress routes for residents	E	This plan would be developed prior to any live-fire training exercises. This is coordinated with AFS and includes the development of egress routes for Delta Junction residents living adjacent to military boundaries.	Pre-identified emergency egress routes for Delta Junction residents would speed up any required evacuations in the area in the event of a catastrophic wildland fire.	Effective; follows established evacuation protocol throughout state of Alaska.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		of Delta Junction.				
Fire Management	All Sites	Continued use of fire-fighting materials and equipment by all units on ranges or training areas during high and extreme fire risk index rating periods.	E	These fire-fighting tools would include (but are not limited to) pulaskis, beaters, portable water extinguishers, and an adequate water supply for immediate response. Units would be trained to immediately suppress small range fires (up to 100 square feet) that might occur in the training areas.	Immediate suppression using on-hand materials would eliminate risk of wildland fire spread.	Effective; Soldiers would be the closest personnel to the area where fire could potentially start.
Fire Management	All Sites	Continue to grant modifications to training restrictions only if the exercise is required for deployment preparation.	E	Deployment preparation must be in response to an actual conflict, not normal training. The approval would be based on Command decision.	The frequency of training during high and extreme fire danger rating days would be kept at a minimum, thus eliminating the possibility of wild fire starts.	Moderately effective; as training for real-world conflicts and actual wartime deployment continues, the number of modifications to training restrictions would be expected to increase, thus increasing the potential for fire starts.
Fire Management	All Sites	Locate range operational areas within hardwood forests (i.e., not in black spruce).	P	Vegetation type would be considered during any new range development and siting considerations.	Minimize the probability of wildland fire ignition, as hardwood forests are less flammable.	Moderately effective only if this is considered during the design and siting process for new ranges.
Fire Management	All Sites	Creation of defensible space around existing and new structures including targets.	P	This would be accomplished by clearing flammable fuels around new structures and facilities.	Reduction in hazardous fuels around areas primarily used during military training using flammable munitions lessens the risk for fire starts.	Effective; as the amount of flammable material in an area where live munitions are used is reduced, so is the likelihood for fire starts.
Fire Management	All Sites	Stationing of a USARAK wildland fire crew at FWA depending upon type of range use, fire weather index rating, and available personnel.	P	The crew would accompany troops that train at DTA during high and extreme fire danger, and would provide immediate wildland fire suppression. During times of a low fire risk index rating, the fire crew would conduct needed hazard fuel reduction projects (mow and “burn out” grass patches around targets to prevent fire, remove dead trees, and thin live trees to reduce the fuels within the range footprints) near military structures and on ranges.	A pre-positioned Initial Attack Response Team in the Delta Junction Area would allow for quick and effective response by initial attack forces in the event of a wildland fire.	Effective; the earlier initial attack forces respond to a wildland fire, the better the chance for suppression.
Fire Management	All Sites	Notify public about range use, duration of exercise/range closure, any use of close air support, and any anticipated use of military vehicle	P	At least two weeks prior to a major training exercise, a public notice would be posted throughout the Delta Junction community and published in the local newspaper.	It would provide advanced notice about the extent of training to residents.	Effective only if residents read the local newspaper and notices posted throughout town.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		convoys on local roadways.				
Fire Management	All Sites	Obtain the most accurate fire weather indices for the proposed ranges.	P	Placement of fire weather stations at proposed BAX and CACTF sites to obtain current, site-specific weather data. An on-site weather station would be purchased and maintained by USARAK. AFS would advise on placement (usually in an area with representative vegetation for the site) and initial setup.	Current, site-specific weather data would be used for the computation of the fire weather index, which is used to assign a Fire Index Danger Rating. Certain training activities are limited at certain Fire Index Danger Ratings. When the danger rating is high or extreme certain training activities that could potentially start fires are limited.	Effective, if the weather stations are accurate, kept operational, and if the site specific data are used to compute the daily Fire Danger Rating Index and if the restrictions associated with the particular danger rating are adhered to.
Fire Management	Alt 4	Reduce the threat of wildfires and increase military training opportunities.	P	Development of a fuels management plan for Bolio Lake Training Area.	Reduction in hazardous fuels around areas primarily used during military training using flammable munitions lessens the risk for fire starts.	Effective; as the amount of flammable material in an area where live munitions are used is reduced, so is the likelihood for fire starts.
Noise	All Sites	Continued public notification of nighttime firing.	E	Public notification of firing between the times of 10 pm and 6 am is required. A notice would be posted throughout the Delta Junction community and published in the local newspaper.	Notification of nighttime firing should provide the public with advanced warning of abnormal noise and eliminate the possibility of complaints.	Effective only if residents read the local newspaper and notices posted throughout town and if USARAK adheres to the published firing times. The public may still be annoyed by noise, regardless of advance warning.
Noise	All Sites	Collect comments or complaints regarding noise.	P	Provide a 24-hour feedback line similar to the existing Air Force program.	Members of the public would be provided with an easy means of registering complaints about noise with the Army using a 24-hour comment line. The Army could use the comments to modify certain training actions that may cause increase annoyance to surrounding residents.	Effective only if residents use the feedback line to register complaints and USARAK takes the comments into consideration to potentially modify current training activities and when planning future training events.
Human Health and Safety	All Sites	Limit access to contaminated sites and clean up contaminated sites on USARAK lands.	E	Maintenance of current institutional control policy and an active restoration program at USARAK.	These policies reduce health and safety risks from exposure to contaminated areas.	Effective; standard industry practices are utilized to minimize harm.
Human Health and Safety	All Sites	Continue compliance with Alaska state law (18 AAC 75.300-.380).	E	Requires responsible parties to notify the Alaska Department of Environmental Consideration when an oil or hazardous substance discharge or release to the environment occurs and requires site characterization and cleanup (18 AAC 75.325-.380)	This notification prevents discharges and spills from going unreported and ensures timely and adequate cleanup.	Effective if ADEC is notified in a timely manner and clean up actions are completed.
Human Health and Safety	All Sites	Continued management of	E	The INRMPs list specific actions designed to alleviate human health and safety risks.	The more people know about USARAK's unique resources, the more	Effective if public takes advantage of educational

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		environmental programs listed in current INRMPs and continued provision of environmental awareness training to troops and civilians.		Education, awareness, and public outreach program uses surveys, briefings, public meetings, interpretive panels, newspapers, pamphlets, posters, recreational user education, youth education, and professional communications and training.	responsibly they would act towards them.	opportunities.
Human Health and Safety	All Sites	Continued provision of environmental awareness training to troops and civilians.	E	The INRMPs list specific actions designed to alleviate human health and safety risks. Education, awareness, and public outreach program uses surveys, briefings, public meetings, interpretive panels, newspapers, pamphlets, posters, recreational user education, youth education, and professional communications and training.	The more people know about USARAK's unique resources, the more responsibly they would act towards them.	Effective if public takes advantage of educational opportunities.
Human Health and Safety	All Sites	Continued compliance with USARAK Regulation 55-2, *Transportation Operations and Planning in Alaska*.	E	Requires splitting of convoys into smaller vehicle groups and staggering of departure times on state highways.	This method would ease traffic congestion problems on highways and potentially reduce the number of potential vehicle accidents due to congestion problems associated with military convoys.	Effective; it would reduce highway congestion.
Human Health and Safety	All Sites	Continue to minimize the risk of area contamination from inadvertent petrochemical release.	E	Use portable containment systems for use at in-field refueling points frequented by military fuel tanker vehicles.	These containment systems would be capable of containing potential fuel releases from fuel tanker vehicles, preventing contamination to the surrounding area in the event of a spill.	Effective as long as the containment system's capacity is larger than the said fuel tanker vehicle.
Human Health and Safety	All Sites	Continue convoy permitting processes.	E	A permit must be obtained from the Alaska Department of Transportation and Public Facilities prior to convoy actions.	The permit would stipulate certain requirements that convoys must adhere to. The requirements are in the best interests of the state and fellow highway motorists.	Effective if the permit requirements prevent possible adverse travel conditions as a result of convoys on state roadways.
Human Health and Safety	All Sites	Consideration of alternate travel routes and methods for military convoys.	E	If available, USARAK would consider line haul, airlift, and rail transport of military convoys.	These alternative transportation methods would avoid traffic risks and impacts.	Only if alternate methods are used.
Human Health and Safety	All Sites	Expansion of public notification of imminent convoy activity.	E	Public notification of convoys would occur. A notice would be posted throughout the Delta Junction community and published in the local newspaper. Included would be specific days of convoy activity on nearby roadways.	This would allow the public to avoid highway travel concurrent with military convoys.	Effective only if residents read the local newspaper and notices posted throughout town and if USARAK adheres to the published convoy times. The public may still be annoyed by convoy traffic, regardless of advance warning.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
Wildlife	All Sites	Continued implementation of INRMPs.	E	INRMPs contain specific actions to inventory (e.g., bison and caribou), maintain (e.g., bison food plots), and improve wildlife habitat (e.g., grouse cuttings).	Maintains healthy wildlife populations.	Proven method.
Wildlife	All Sites		E	USARAK funds ADF&G to conduct bison, caribou, and moose surveys.	Annual funding ensures that data gathering continues overtime. This data is used to develop and implement adaptive management strategies that minimize disturbance to priority wildlife. This allows natural resources and range managers to coordinate training schedules to minimize impacts on wildlife populations.	This method remains successful if funding is provided to ADF&G.
Wildlife	All Sites		E	USARAK maintains bison food plots at DTA, near North Texas Range. Bison food plots are an integral part of the ADFG Delta Bison Management Plan.	Food plots help to keep bison from depredation of adjacent private agricultural fields.	These plots would remain effective if they are not converted to permanent training facilities. However, these plots are always open to temporary Soldier training. In addition, on-going maintenance of these areas (re-seeding) is required for success.
Wildlife	All Sites	Continued monitoring of effects of military training on select wildlife species (especially herd animals and waterfowl) during critical seasons, such as breeding, rearing of young, and migration.	E	Bison aerial surveys are used to locate bison during various important life stages. Surveys have been conducted during calving (June) since 2003, and monthly surveys are beginning in 2005. Surveys would be used as a means to keep up with migration pattern changes.	This knowledge would be used to develop and implement management strategies that minimize disturbance to priority wildlife. This would allow natural resources and range managers to coordinate training schedules to minimize impacts on wildlife populations.	Existing knowledge is adequate. However, aerial surveys must continue to scientifically/historically validate assumptions.
Wildlife	All Sites		E	Caribou aerial surveys are used to locate caribou, establish migration patterns, and keep up with changes in migrations.	This knowledge would be used to develop and implement management strategies that minimize disturbance to priority wildlife. This would allow natural resources and range managers to coordinate training schedules to minimize impacts on wildlife populations.	Existing knowledge is adequate. However, aerial surveys must continue to scientifically/historically validate assumptions.
Wildlife	All Sites		E	Swan aerial surveys are used to locate nests and nesting habitat.	This knowledge would be used to develop and implement management strategies that minimize disturbance to priority wildlife. This would allow natural resources and range managers to coordinate training schedules to minimize impacts on wildlife populations.	Existing knowledge is adequate. However, aerial surveys must continue to scientifically/historically validate assumptions.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
Wildlife	All Sites		E	Incidental observations of other animals are made during surveys for other animals, and their location, number, and any other pertinent information is recorded.	This knowledge would be used to develop and implement management strategies that minimize disturbance to priority wildlife. This would allow natural resources and range managers to coordinate training schedules to minimize impacts on wildlife populations.	Existing knowledge is adequate. However, surveys must continue to scientifically/historically validate assumptions.
Wildlife	All Sites		E	Small mammal surveys are used to establish a baseline population estimate.	This knowledge would be used to develop and implement management strategies that minimize disturbance to priority wildlife. This would allow natural resources and range managers to coordinate training schedules to minimize impacts on wildlife populations.	Existing knowledge is adequate. However, surveys must continue to scientifically/historically validate assumptions.
Wildlife	All Sites		E	Breeding Bird Surveys?	This knowledge would be used to develop and implement management strategies that minimize disturbance to priority wildlife. This would allow natural resources and range managers to coordinate training schedules to minimize impacts on wildlife populations.	Existing knowledge is adequate. However, surveys must continue to scientifically/historically validate assumptions.
Wildlife	All Sites	Full implementation of USARAK natural resources conservation programs and ecosystem management.	E	The Ecosystem Management Program would be used to evaluate the impacts of training on habitats of priority wildlife species. The data provide information on direct long-term and short-term impacts to the selected wildlife species, as well as insights into indirect impacts. Habitats are determined using vegetation associations, aerial photography and survey, and ground-truthing.	This would improve management of wildlife resources and their habitats by allowing natural resource and range managers to coordinate training schedules and locations based on priority wildlife species. Sustainment of priority wildlife habitat would lessen adverse impacts to priority wildlife species.	Effective only if USARAK takes the results into consideration to potentially modify current training activities and when planning future training events.
Wildlife	Alt 4 or 5		E	Use ecosystem management strategies to assist ADF&G in keeping bison on DTA and away from surrounding agricultural fields. Replace and maintain 50 acres of bison food plots on DTA East.	By creating attractive habitat for bison on less desirable areas for training at DTA, bison would tend to spend more time on East DTA before they move north to surrounding agricultural fields.	Completely preventing bison from traveling off DTA onto private land is not possible. However, the longer the bison spend on DTA lands, the less time the bison spend on private land consuming crops. However, increased presence of bison at DTA could create potential conflicts between bison and military training.
Wildlife	All Sites	Continued development and	E	This program emphasizes conservation of wildlife and natural resources, as well as	This would enhance the conservation of wildlife resources on USARAK lands. In	Effective; standard education methods used.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		implementation of an information and education program for Army and civilian personnel using USARAK lands.		reduction of wildlife disturbance and negative wildlife-human interactions (e.g., bear or moose attacks) during training and recreational pursuits. Program implemented through newcomers briefings, displays and brochures at ADF&G, kiosks, and presentations for local interest groups.	addition, it educates Soldiers on the proper procedures when encountering wildlife in the field during training exercises. By following the proper procedures when encountering wildlife, minimal adverse impacts to wildlife would occur.	
Wildlife	All Sites	Continued compliance with USARAK Range Regulation, 350-2 (July 2004).	E	This regulation requires Soldiers that discover wildlife on training ranges or in training areas while conducting live-fire exercises to immediately cease firing and report the location and number of animals to the Range Control Office.	By ceasing firing when wildlife is present on the ranges, it eliminates direct adverse impacts to wildlife within the area.	This method would be successful if, during training exercises, training ceases once animals are detected.
Wildlife	All Sites		E	Prohibits harassment of wildlife.	Soldiers must adhere to this regulation as part of their inherent safety duties and responsibilities. This regulation would eliminate adverse impacts to wildlife.	This method would be successful if, during training exercises, training ceases once animals are detected.
Wildlife	All Sites		E	Prohibits Soldiers to knowingly shoot or fire at wildlife and offenders and subject to prosecution under state of Alaska law.	Soldiers must adhere to this regulation as part of their inherent safety duties and responsibilities. This regulation would eliminate adverse impacts to wildlife.	This method would be successful if, during training exercises, training ceases once animals are detected.
Wildlife	Alt 4 or 5	Continued implementation of INRMPs.	P	USARAK is proposing to construct additional bison food plots south of the Texas Range Complex, west of the Delta River, or in other places where they would not be typically impacted by training activities. ADF&G biologists would be consulted for their location.	Food plots help to keep bison from depredation on adjacent private agricultural fields.	These plots would remain effective if they are not converted to permanent training facilities. However, these plots are always open to temporary Soldier training. In addition, on-going maintenance of these areas (re-seeding) is required for success.
Fisheries	All Sites	Continued implementation of INRMPs.	E	These contain specific actions to inventory, maintain, and improve fisheries resources. Maintain access to stocked lakes.	Keeping access open to stocked lakes would ensure continued fish stocking by ADF&G. Would prevent native fisheries from being over-fished.	If alternative access can be developed or existing access is maintained.
Fisheries	All Sites	Continued development and implementation of an information and education program for personnel using USARAK lands.	E	This program emphasizes conservation of fisheries and natural resources. Program implemented through newcomers briefings, displays and brochures at ADF&G, kiosks, and presentations for local interest groups.	This would enhance the conservation of wildlife resources on USARAK lands. In addition, it educates Soldiers on the proper procedures when encountering wildlife in the field during training exercises. By following the proper procedures when encountering wildlife, minimal adverse impacts to wildlife would occur.	Effective; standard education methods used.
Cultural Resources	All Sites	Development and implementation of the Historic	E	The HPC is a mandatory set of standard operating procedures that USARAK must follow in its management of cultural resources.	The HPC ensures that USARAK properly identifies impacts to cultural resources and follows appropriate	The HPC is still in development and has not yet been implemented. Once

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		Properties Component (HPC) of the Integrated Cultural Resources Management Plan, to comply with Army Alternate Procedures to 36 CFR Part 800.			mitigation measures to lessen or eliminate adverse effects.	implemented, the document should ensure USARAK compliance with cultural resources regulations.
Cultural Resources	All Sites	Continued development and implementation of an information and education program for personnel using USARAK lands. This would enhance the conservation of cultural resources on USARAK lands.	E	Personnel education may take the form of videos, pamphlets, presentations or other methods of communicating the value of the cultural resources on USARAK lands and information regarding the laws and regulations that protect such resources. The proper treatment of cultural resources would be a part of the program.	Helps eliminate intentional or unintentional damage to cultural resources by educating land users of the proper protocols to follow when encountering such resources on USARAK lands.	Effective; if the message is repeated and comes from a variety of sources.
Cultural Resources	All Sites	Continued evaluation of eligibility for inclusion in the National Register of Historic Places (NRHP) of cultural resources potentially impacted by placing ranges in use.	E	Archaeological testing at potentially eligible sites would provide the data for USARAK to determine if sites are eligible for listing in the NRHP.	Sites that are determined eligible would have the appropriate mitigation measures applied to them after consultation with the State Historic Preservation Office, Tribes, and interested parties.	Effective; if appropriate mitigation measures are applied, cultural resource management goals should be met.
Cultural Resources	All Sites	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.	E	Consultations with Tribes, including traditional knowledge holders, specifically to identify Traditional Cultural Properties on Army managed lands that may be impacted by proposed projects.	Identification of TCP's would allow for consultation with affected Tribes to determine the most appropriate mitigation measures.	Effective if tribes are consulted early in the planning process.
Cultural Resources	All Sites	Continued consultations with Alaska Native tribes on cultural resource management issues.	E	Government-to-government consultations identify cultural resource issues important to Tribes.	Identification of issues of concern to Tribes would be followed by consultation regarding appropriate mitigation measures.	Effective if appropriate mitigation measures are applied, cultural resource management goals should be met.
Cultural Resources	All Sites	Avoidance of cultural resources during maneuver, where practicable,	P	Production of maps to be used by troops during training exercises. Implementation would involve troop education to ensure avoidance of areas defined as sensitive on	Avoidance of sensitive areas would prevent damage to sites determined eligible for the National Register of Historic Places.	Effective if map data is applied in the field, sensitive cultural resources would be avoided.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		using "sensitivity maps" derived from on-the-ground surveys.		maps.		
Cultural Resources	All Sites	Avoidance of cultural resources eligible for listing in the NRHP by adjusting range design and location.	P	Readjustment of range design and/or location based on field surveys and subsequent determinations of eligibility, to avoid sites determined eligible for the NRHP.	Avoidance of cultural resources would prevent damage to sites determined eligible for the NRHP.	Effective; if sites are avoided there would be no adverse effects.
Cultural Resources	All Sites	Adjustment of training operations, if archaeological sites are discovered after placing the range in operation, until sites are evaluated for eligibility for inclusion in the NRHP. If eligible, appropriate mitigation would be conducted.	P	Suspension of activities around cultural resources located during training activities. Field testing to gather data to determine if the site is eligible for the NRHP. If eligible, consultation with SHPO, tribes, and interested parties to determine appropriate mitigation measures.	Sites would be avoided to prevent further damage while determination of eligibility analyses are ongoing. If eligible, appropriate mitigation measures would be determined through consultation.	Effective if sites are initially avoided after discovery and appropriate mitigation measures are then applied.
Cultural Resources	All Sites	Retrieval of information from archaeological sites through complete data recovery from sites determined eligible for inclusion in the NRHP and impacted by range placement and use, per consultation with the Advisory Council on Historic Preservation, Alaska Native tribes, Alaska State Historic Preservation Officer, and other interested parties.	P	Sites that would be destroyed by range placement or use may undergo complete data recovery to obtain all data possible at this time, through available methods. No portions of the site would be left unmitigated and the site area could then be used for range placement or use. The research design and excavation methods would be approved in consultation with the State Historic Preservation Officer, tribes, and interested parties.	Maximum data recovery and subsequent analysis resulting in a published report would add to our knowledge of the prehistory of the region and to our general understanding of prehistory. A negative of this method is that, after complete data recovery the site it would no longer be available for study through different methods that may become available in the future.	Effective if data recovery and analysis are completed.
Cultural Resources	All Sites	Retrieval of information from archaeological sites	P	Sites that would be impacted by range placement or use may undergo partial data recovery to obtain as much data as possible at	Partial data recovery and subsequent analysis resulting in a published report would add to our knowledge of the	Effective if data recovery and analysis are completed in conjunction with approved

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		through partial data recovery from sites determined eligible for inclusion in the NRHP and impacted by p range placement and use, in conjunction with protection of the remainder of the site, per consultation with the Advisory Council on Historic Preservation, Alaska Native tribes, Alaska State Historic Preservation Officer, and other interested parties.		this time, through available methods, from a portion of a site. The unmitigated portions of the site would then be protected from further damage through barriers, fences, capping or other protective measures. The research design, excavation methods, and protective measures would be approved in consultation with the State Historic Preservation Officer, tribes, and interested parties.	prehistory of the region and to our general understanding of prehistory. Additionally, protecting a portion of the site would allow for any advances in archaeological science to be applied to the site at a later date.	protective measures for the remaining portion of the site.
Cultural Resources	All Sites	Retrieval of information from archaeological sites through complete data recovery from a sample of the sites determined eligible for inclusion in the NRHP and impacted by range placement and use, per consultation with the Advisory Council on Historic Preservation, Alaska Native tribes, Alaska State Historic Preservation Officer, and other interested parties.	P	This measure should only be considered for projects involving a large number of eligible sites that require mitigation measures. Only a portion of the universe of eligible sites would undergo full data recovery, the remainder would be protected from further damage through barriers, fences, capping or other protective measures. The research design, excavation methods, and protective measures would be approved in consultation with the State Historic Preservation Officer, tribes, and interested parties.	Full data recovery from a portion of the eligible sites requiring mitigation would allow refinement of future research designs for the unexcavated sites, as well as sites in the surrounding area that may require mitigation at a future date. Protection of sites not mitigated allow for the advancement of archaeological science that may have benefits for future research designs and data recovery efforts.	Effective if data recovery and analysis are completed in conjunction with approved protective measures for the remaining sample of sites.
Cultural Resources	All Sites	Off-site mitigation. Full data recovery from an eligible site, other than the site to be destroyed.	P	This measure should only be considered when there is no alternative other than excavation of the site to be destroyed and safety hazards or vital mission time requirements are an issue. This measure would involve excavation of a site of similar size and character as the one to be destroyed and would allow for a more	Full data recovery from a site comparable to the one to be destroyed would allow for the collection of data that would otherwise not be possible if no mitigation was completed. A negative of this method is that, after full data recovery the site would no longer be	Effective if the site to be mitigated through full data recovery, in replacement of the one to be destroyed, is strictly comparable in size and character and if data recovery and analysis are completed.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				controlled excavation that would not be impacted by the safety concerns or mission requirements causing the initial destruction. The research design and excavation methods would be approved in consultation with the State Historic Preservation Officer, tribes, and interested parties.	available for study through different methods that may become available in the future.	
Cultural Resources	All Sites	Capping of a site to be impacted by range use.	P	This measure would involve placing a protective layer of geotextile over the site, followed by sterile soils and seeding for revegetation. This measure is not applicable to sites with a surface component of artifacts or features. Capped sites may not be overlain by buildings or roads. For ranges, this type of mitigation may only be appropriate in cases where a site may be impacted by fired rounds (that could be intercepted by the protective layer of vegetation and sterile soils) or impacted by foot traffic.	This method would protect the capped site from damage by fired rounds or foot traffic and preserve it for future study.	Effective if the depth of capping material is appropriate to the type of activity the site is being protected from and if the cap is monitored on a regular basis to ensure it does not deteriorate.
Cultural Resources	All Sites	Curation of archaeological material recovered per Memorandum of Agreement between USARAK and the University of Alaska Museum.	P	Preparation of recovered materials to the standards of the University of Alaska Museum and the relinquishment of custody to the museum for curation. Ownership of materials would remain with USARAK, and curation fees would be the responsibility of USARAK.	Proper curation of archaeological materials ensures their availability for study by other scientists and extends their life by preventing damage and decay that may occur if not housed properly.	Effective if completed in conjunction with data analysis and publication.
Cultural Resources	All Sites	Development of public education material(s) to provide information to the public on the archaeological information retrieved from excavations of eligible sites.	P	Public interpretation can not be used as a sole mitigation measure, but must be used in combination with another of the proposed measures. For example, excavation of a sample of a National Register eligible site followed by public education materials detailing the results of the analyses, etc.	This measure would provide information about archaeological data recovery to the public which is a vital part of recognizing the importance of cultural resources and promoting their protection.	Effective, but only if used in conjunction with another mitigation measure and if the product is something that is accessible and useful to the public.
Air Quality	All Sites	Collect additional data to determine short-term and long-term impacts of fugitive dust generation through refined modeling analysis.	P	Further mitigation measures would be developed and implemented if impacts are identified. Investigate the need for dust control plans to minimize fugitive dust generation.	Lead to development of dust control plans which would minimize fugitive dust generation.	An effective standard industry practice.
Air Quality	All Sites	Establish a particulate matter	P	The sampling protocol should include a method for distinguishing between wildland	Provide a measure of the extent of dust control methods and corrections could be	An effective standard industry practice.

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		sampling network and initiate sampling to determine the contribution the proposed action would have on visibility over time.		and prescribed fire impacts and fugitive dust from training.	made, such as more stringent actions being taken.	
Air Quality	All Sites	Establish and implement a dust control plan to reduce visibility impacts from fugitive dust.	P	The plan may include biological or mechanical methods for dust control.	Implement dust control measures to minimize fugitive emissions.	An effective standard industry practice.
Groundwater	All Sites	Continued monitoring of groundwater resources currently within the USARAK monitoring program.	E	This would provide an updated baseline for analysis of groundwater changes or impacts.	Quicker, more accurate response to changes/impacts to groundwater.	Effective; provides timely information against which to measure any perceived change.
Groundwater	All Sites	Continued implementation of INRMPs, including institutional controls and training programs for troops.	E	Reduce or eliminate the risk of inadvertent petrochemical releases that could affect groundwater (USARAK 2002b,c).	The INRMPs contain specific actions to maintain and improve groundwater resources.	Proven methods, industry standards.
Groundwater	All Sites	Expand monitoring to include groundwater resources on USARAK properties that are not currently being monitored.	E	Priority monitoring would be conducted on those groundwater resources for which no current or historic data exists to expand the qualitative and quantitative baselines for groundwater.	Quicker, more accurate response to changes/impacts to groundwater.	Effective; provides timely information against which to measure any perceived change.
Groundwater	All Sites	Comply with current resource management practices and mitigation measures.	P	See above	Sufficient to mitigate any additional impact to groundwater resources resulting from the construction and operation of the BAX and CACTF within DTA East.	See above.
Groundwater	All Sites	Obtain appropriation of groundwater prior to installing water system wells.	P	Would be done in compliance with all state of Alaska requirements	Maintain appropriate ground water appropriations as determined by the regulating agency.	Effective regulatory requirement.
Wetlands	All Sites	Continued classification of wetlands as “high-function” or “low-function,” and	E	For management purposes and for planning military training activities and managing wetlands. Allows certain military activity to occur in specified wetland areas. Overlays are used to inform Soldiers on where these areas	Prevents training/maneuver from occurring within high-function wetlands. Requires monitoring of annual wetland damage and restoration of disturbed areas. Reduces amount of incidental	Effective; protects sensitive wetland and riparian areas while still allow Soldiers to train in lower functioning wetlands. Permit has built-in

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
		continued use of the environmental limitations overlays.		are.	wetland damage.	monitoring and restoration requirements.
Wetlands	All Sites	Continue production of planning-level surveys, wetlands management and re-vegetation plans.	E	Conduct monitoring through exiting RTLA program within maneuver areas at USARAK.	Contributes to qualitative assessment of training land health and helps with management goals (maintain proper wetland functions).	Allows for multiple sustained use.
Wetlands	All Sites	Continued implementation of INRMPs with specific actions for management of wetlands.	E	Implement objectives for wetlands management within INRMP which include maintenance and enhance the health, productivity and biological diversity of wetlands, comply with all applicable laws and regulations, promote early coordination between Army directorates to minimize adverse impacts to wetlands.	Ensures a conservation driven management style while still allowing for military training.	Allows for multiple sustained uses.
Wetlands	All Sites	Continued acquisition of Clean Water Act Section 404 permits.	E	Apply for legally required permits, when necessary. Avoidance of wetland areas is first option.	Allows regulator to determine if project has adverse impacts to resource.	Effective, USARAK is required to apply for a permit for work within a wetland.
Wetlands	All Sites	Continued damage control measures.	E	Implement ITAM Program and Plan	Reduce, control and repair environmental damage	Proven methods, industry standards.
Wetlands	All Sites	Continued implementation of recreational vehicle use policies.	E	Places the same limitations on recreational access that already apply to military vehicles.	Limits travel to established roads during break up, lessening risk of vehicle getting stuck and subsequent wetland damage.	Somewhat. May be difficult to enforce on a daily basis.
Wetlands	All Sites	Siting of facilities, targetry, access and firing roads/trails to avoid construction damage to wetlands.	P	Cooperation and communication with range designers, construction contractors, and Army environmental staff.	Construction would remove the least amount of vegetation possible, to avoid melting permafrost.	Effective; by avoiding disturbance to sensitive areas, adverse impacts would be lessened.
Wetlands	All Sites	Use of silt fences and other construction techniques.	P	See ITAM Management Plan that contains established, agency-approved construction techniques.	Prevent siltation during construction and deposition within nearby waterways and wetlands.	Industry standard. Used at previous construction sites with positive results.
Wetlands	All Sites	Utilization of detailed wetland delineation to finalize designs of the proposed BAX and CACTF facility.	P	Locations of targets, trails, buildings and other construction elements can be cited using wetland delineation data to avoid or minimize contact with wetlands.	Avoid or minimize contact with wetlands.	Effective; by avoiding disturbance to sensitive areas, adverse impacts would be lessened.
Wetlands	All Sites	Submission of appropriate Clean Water Act Section 404 permit application that	P	Mitigation measures to prevent/lessen adverse impact to wetlands would be identified in the Section 404 permit and implemented by USARAK.	Contact with certain wetland types would be avoided or minimized. Restoration techniques would be established. Long term monitoring would be developed.	Effective; USARAK, the permit applicant would be required by law to implement measures and could be subject to fines if not upheld.

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		delineates exact amount of wetland to be filled prior to construction if avoidance is not possible.				
Wetlands	All Sites	Renewal of existing five-year Clean Water Act Section 404 permit to conduct military training in wetlands.	P	Allows certain military activity to occur in specified wetland areas. Overlays are used to inform Soldiers on where these areas are.	Prevents training/maneuver from occurring within high-function wetlands. Requires monitoring of annual wetland damage and restoration of disturbed areas. Reduces amount of incidental wetland damage.	Effective, protects sensitive wetland and riparian areas while still allowing Soldiers to train in lower functioning wetlands. Permit has built-in monitoring and restoration requirements.
Vegetation	All Sites	Continued inventory of forest resources.	E	Includes timber management, timber stand improvement, military training support, salvage cuts, forest pest protection, timber sales and forest fuels information.	Aids ecosystem management program, supports military training, improves timber, prevents pest infestation, and provides information of forest fuels.	Allows for multiple sustained use.
Vegetation	All Sites	Continued use of environmental limitations overlays.	E	Indicates areas where maneuver training is and is not allowed. Overlays are used to inform Soldiers on where these areas are.	Prevents training/maneuver from occurring within high-function wetlands. Requires monitoring of annual wetland damage and restoration of disturbed areas. Reduces amount of incidental wetland damage.	Effective; protects sensitive wetland and riparian areas while still allowing Soldiers to train in lower functioning wetlands. Permit has built-in monitoring and restoration requirements.
Vegetation	All Sites	Continued implementation of INRMPs.	E	Specific actions for management of vegetation.	Ensures a conservation driven management style while still allowing for military training.	Effective, allows for multiple sustained use.
Vegetation	All Sites	Continued implementation of LCTA and LRAM programs.	E	Minimize and rehabilitate vegetation damage and gather long-term monitoring data.	Prevent siltation during construction and deposition within nearby waterways and wetlands.	Effective industry standard. Used at previous construction sites with positive results. Provides timely information against which to measure any perceived change.
Vegetation	All Sites	Continued implementation of a recreational vehicle use policy at USARAK.	E	ORRV use is allowed on maintained roadways and trails in designated areas. USARAK Regulation 190-13, *Military Police – Enforcement of Hunting, Trapping and Fishing on Army Lands in Alaska* describes the restrictions for DTA. ORRV use also varies seasonally. General guidelines state that, during break-up (time of year when the ground begins to thaw, usually in April or May), all areas are closed to off-road vehicle use. Restriction dates during this time are determined by the USARAK Environmental Resources Department and are recorded on the	Prevents trespass and damage to off-limits areas.	Only if users comply with existing rules and regulations.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
				USARTRAK system. ORRVs are prohibited from designated ranges and training areas, and users must check with USARTRAK to determine which areas are open for off-road vehicle use.		
Vegetation	All Sites	Conduct detailed studies to assess impacts of recreational vehicles to vegetation.	E	This would provide information to develop policies to ensure conservation and sustainability of vegetation resources.	Help to determine if certain areas are receiving a greater amount of damage, and any reclamation and preventative measures could be designed and implemented to lessen or eliminate the impact.	Effective; by avoiding disturbance to sensitive or over utilized areas, adverse impacts would be lessened.
Vegetation	All Sites	Maintenance of vegetative ground cover at the BAX and CACTF to provide training realism.	P	Removal of vegetation only necessary to construct roads, trails, targetry. Work with range designers and planners to identify areas requiring vegetation maintenance.	Vegetative cover protects soil resources and prevents erosion and protects water quality.	Proven method.
Vegetation	All Sites	Re-seeding of areas directly affected by construction with native grass.	P	Work with range designers and planners to identify areas requiring vegetation maintenance.	Vegetative cover protects soil resources and prevents erosion, which could degrade water quality. Use of native grass reduces introduction of invasive species.	Proven method.
Vegetation	All Sites	Re-vegetation of any areas that are not recovering naturally through the LRAM program.	P	Work with range designers and planners to identify areas requiring vegetation maintenance.	Vegetative cover protects soil resources and prevents erosion, which could degrade water quality.	Proven method.
Vegetation	All Sites	Retain as much existing vegetation as possible to provide cover, concealment and realism. Vegetation buffers would remain within floodplain areas, or other specifically designated areas.	P	Removal of vegetation only necessary to construct roads, trails, targetry. Work with range designers and planners to identify areas requiring vegetation maintenance and vegetation preservation. Also work with Alaska state regulators to determine acceptable riparian buffer zone width along river channels and lakes and ponds.	Vegetative cover protects soil resources and prevents erosion, which could degrade water quality.	Proven method.
T&E Species/Species of Concern	All Sites	Continued extraction of information regarding threatened or endangered species from other ongoing surveys.	E	Survey for threatened and endangered species if new species are listed or there is reason to believe already listed species might be on USARAK lands. Use existing programs such as RTLA.	Species and habitat would be protected.	Proven method.
T&E Species/Species	All Sites	Development of management	E	Conserve habitat for rare, uncommon, and priority species through the ecosystem	Species and habitat would be protected.	Proven method.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
of Concern		guidelines, with the USFWS and the ADF&G, to address threatened or endangered species, if found on USARAK lands.		management actions listed under fish and wildlife management. Comply with USFWS protocols.		
Subsistence	All Sites	Continued compliance with regulations listed under the ANILCA.	E	Work with relevant federal and state officials to protect local subsistence populations through priority for harvest when resources are reduced.	Coordination would protect the viability of subsistence in the area.	Proven method.
Subsistence	All Sites	Continued implementation of the INRMPs, with specific actions for the management of wildlife, fisheries, vegetation, and habitat.	E	The Ecosystem Management Program would be used to evaluate the impacts of training on habitats of priority wildlife species. The data provide information on direct long-term and short-term impacts to the selected wildlife species, as well as insights into indirect impacts. Habitats are determined using vegetation associations, aerial photography and survey, and ground-truthing.	This would improve management of wildlife resources and their habitats by allowing natural resource and range managers to coordinate training schedules and locations based on priority wildlife species. Sustainment of priority wildlife habitat would lessen adverse impacts to priority wildlife species.	Effective only if USARAK takes the results into consideration to potentially modify current training activities and when planning future training events.
Subsistence	All Sites	Continued establishment of government-to-government relationships with Alaska Native tribes.	E	Alaska Native tribes whose interests may be significantly affected by USARAK activities would be consulted with.	This would ensure efficient and effective communication between both leadership and staff members of tribal governments and USARAK.	Continued communication ensures issues of concern are being recognized.
Subsistence	All Sites	Identify and evaluate Traditional Cultural Properties that may be present on military managed lands in the interior of Alaska.	E	Continue consultations with Alaska Native tribes to identify TCP locations on Army lands.	Identification of TCPs on Army lands would prevent future impacts to areas.	Combine information with existing training restrictions within sensitive areas.
Subsistence	All Sites	Make USARAK long-term training and convoy schedules available to the public.	P	Public notification of convoys would occur. A notice would be posted throughout the Delta Junction community and published in the local newspaper. Included would be specific days of convoy activity on nearby roadways. Long-term training schedules could be made available through the USARTRAK system or a USARAK website.	This would allow regional residents to better plan subsistence activities within DTA East and to avoid highway travel concurrent with military convoys.	Only if residents read the local newspaper and notices posted throughout town and if USARAK adheres to the published convoy times. The public may still be annoyed by convoy traffic, regardless of advance warning.
Public Access and Recreation	All Sites	Continued implementation of recreational vehicle use policies, per the most recent INRMPs	E	ORRV use is allowed on maintained roadways and trails in designated areas. USARAK Regulation 190-13, *Military Police – Enforcement of Hunting, Trapping and Fishing on Army Lands in Alaska* describes the	Prevents trespass and damage to off-limits areas.	Only if users comply with existing rules and regulations.

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		(USARAK 2002b,c).		restrictions for DTA. ORRVs are allowed at DTA for hunting, trapping, fishing, and other recreational purposes, provided that they are in compliance with all state and Federal laws and applicable Army regulations.		
Public Access and Recreation	All Sites	Continued implementation of the USARTRAK automated check-in phone system.	E	Users call the USARTRAK automated check-in phone system to ensure that lands are available for recreational use. This information is also available through both the Range Control Office and Environmental Resources Department.	This would provide information regarding daily closures, and should greatly simplify the public access process.	Expanding knowledge with general public would reduce deliberate access violations.
Public Access and Recreation	All Sites	Continued streamlining of public access to USARAK lands.	E	Use of a consistent method for access at all military lands (the recreation access permit).	Should greatly simplify the public access process for the public.	Proven method.
Public Access and Recreation	All Sites		E	Maintenance of the extended two-year renewal duration on the FWA and DTA RAPs.	A two-year permit duration would simplify public access to USARAK lands.	Proven method.
Public Access and Recreation	All Sites		E	Building of kiosks at all primary entrances to recreational areas on USARAK lands and provision of visitor maps and information.	Information kiosks can assist users to quickly identify areas designated for recreational use, as well as the times and locations of military activities. Kiosks would convey recreational access rules and regulations, information on recreational opportunities, and other important information. These information points can be used to inform the public about the use and location of the BAX and CACTF range complex.	Expanding knowledge with general public would reduce deliberate access violations.
Public Access and Recreation	All Sites	Provide educational opportunities on USARAK lands.	E	Continued or increased hunter safety education courses with ADF&G.	Hunter safety courses and educational opportunities would allow USARAK to better and more safely manage its lands for a wide range of public uses.	Proven method.
Public Access and Recreation	All Sites	Monitoring of recreational usage of each training area.	E	Surveys and site visits using Natural Resources staff and through data collect by the USARTRAK phone system.	This would inform USARAK and ADF&G regarding use patterns, which should improve management for public access and recreation.	Identify heavy use areas and prioritize areas for obtaining funding for repair.
Public Access and Recreation	All Sites	Monitoring of recreational impacts on stocked lakes.	E	Surveys and site visits using Natural Resources staff and RTLA program.	Allow USARAK and ADF&G to better manage the stocked lakes program on Army lands.	Identify heavy use areas and prioritize areas for obtaining funding for repair.
Public Access and Recreation	All Sites	Upgrading of access and recreational opportunities when needed.	E	Potential by-pass roads near Meadows and Windy Ridge roads or improvement to Fleet Street to provide alternative access routes.	Allow USARAK and ADF&G to better manage the stocked lakes program on Army lands.	Access still depends on overall number of training days. If higher, less access to military lands is available.
Public Access and Recreation	All Sites	Enforce state and Federal game laws, and military rules and restrictions.	E	Full funding of conservation officers at USARAK.	Enforcement efforts are needed to prevent premeditated and deliberate trespass.	Needs to be combined with other informative methods to reduce trespass.

Resource	Location	Mitigation Measure	Existing (E) or Proposed (P)	Description of Method	How would method lessen or eliminate adverse impact?	Effectiveness Assessment
Public Access and Recreation	All Sites	Make USARAK long-term training and convoy schedules available to the public.	P	Public notification of convoys would occur. A notice would be posted throughout the Delta Junction community and published in the local newspaper. Included would be specific days of convoy activity on nearby roadways. Long-term training schedules could be made available through the USARTRAK system or a USARAK website.	This would allow regional residents to better plan public access and recreation activities within DTA East and to avoid highway travel concurrent with military convoys.	Only if residents read the local newspaper and notices posted throughout town and if USARAK adheres to the published convoy times. The public may still be annoyed by convoy traffic, regardless of advance warning.
Environmental Justice	All Sites	Provide up-to-date information to members of local communities that may be affected by activities on USARAK lands.	E	Maintenance of a USARAK website	The public is kept informed about USARAK policies and activities, allowing for identification and communication of pertinent concerns.	Continued communication ensures issues of concern are being recognized.
Environmental Justice	All Sites	Ensure that members of local communities, who may not have access to the Internet, are kept informed about USARAK policies and activities.	E	Continued publication and distribution of Environmental Resources Newsletter and Environmental Restoration Newsletter.	The public is kept informed about USARAK policies and activities, allowing for identification and communication of pertinent concerns.	Continued communication ensures issues of concern are being recognized.
Environmental Justice	All Sites	Continue with Restoration Advisory Boards as appropriate.	E	Attend and present information at yearly Restoration Advisory Boards. Also, obtain issues of concern from attendees.	Restoration Advisory Boards provide an established, effective strategy for communication between affected local communities and USARAK.	Continued communication ensures issues of concern are being recognized.
Environmental Justice	All Sites	Ensured existence of full-time Native Tribal coordination within USARAK.	E	Employ a Native Liaison at USAG-AK.	A Native Liaison serves as a reliable, consistent source of information on issues of concern for both tribes and USARAK staff.	Continued communication ensures issues of concern are being recognized.
Environmental Justice	All Sites	Distribute information to many of the minority and low-income communities within USARAK's area of influence.	E	Publication and distribution of a newsletter geared toward Alaska Native tribes and organizations.	This would ensure efficient and effective communication between both leadership and staff members of tribal governments and USARAK.	Continued communication ensures issues of concern are being recognized.
Environmental Justice	All Sites	Continued establishment of government-to-government relationships with Alaska Native tribes	E	Alaska Native tribes whose interests may be significantly affected by USARAK activities would be consulted with.	This would ensure efficient and effective communication between both leadership and staff members of tribal governments and USARAK.	Continued communication ensures issues of concern are being recognized.
Infrastructure	All Sites	Continued	E	Involves maintenance projects on all firing	Repair and re-vegetation improves the	Proven method to support

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		implementation of Range Development Plan.		ranges, such as target repair and replacement, target mechanism maintenance and repair, and maintenance of range buildings.	condition of the land and the land condition measurement. Reduces impacts on sensitive habitats.	military mission and promote stewardship of the environment.
Infrastructure	All Sites	Continued implementation of the ITAM Work Plan.	E	The ITAM Work Plan includes projects to repair and re-vegetate maneuver land. The ITAM work plan includes projects that help to match training requirements with range capabilities. Environmental awareness projects educate Soldiers, also minimizing unnecessary damage. The ITAM Work Plan also includes projects to assess land conditions through extensive monitoring.	Repair and re-vegetation improves the condition of the land and the land condition measurement. Reduces impacts on sensitive habitats.	Proven method to support military mission and promote stewardship of the environment.
Infrastructure	All Sites	Continued implementation of the INRMPs.	E	The INRMPs contain projects designed to promote and enhance environmental stewardship and mitigate impacts from military training. Erosion control projects reduce the impacts from erosion. Soil and water quality monitoring protocols detect the migration of contamination from impact areas at DTA.	Provides a 5-year plan for the care and wise use of Army lands. Guides natural resources management over a much longer time to protect biological diversity and facilities sound decisions regarding the use of renewable natural resources to support both the military mission and the needs of the region.	Proven method to support military mission and promote stewardship of the environment.
Infrastructure	All Sites	Continued environmental, conservation, and cultural resources management programs.	E	Programs are implemented under tasks listed in the INRMP and ICRMP. Identifies requirements for all species and users of the environment. Structured for direct support of the military mission to include stewardship of natural and cultural resources, compliance, quality of life, and military training support. Every single task within INRMP and ICRMP is focused to add to the accomplishment of one of more of these goals.	Ensures long-term natural resource productivity so the Army can achieve its mission.	Proven method to support military mission and promote stewardship of the environment.

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