FINAL
HISTORICAL RECORDS REVIEW
BIAK TRAINING CENTER, OREGON
MILITARY MUNITIONS RESPONSE PROGRAM

OCTOBER 2008

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FINAL
HISTORICAL RECORDS REVIEW
BIAK TRAINING CENTER, OREGON

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 INTRODUCTION</td>
<td>1-1</td>
</tr>
<tr>
<td>1.1 PURPOSE AND SCOPE</td>
<td>1-2</td>
</tr>
<tr>
<td>1.2 PROJECT Drivers</td>
<td>1-2</td>
</tr>
<tr>
<td>1.3 BACKGROUND</td>
<td>1-3</td>
</tr>
<tr>
<td>1.3.1 Inventory</td>
<td>1-4</td>
</tr>
<tr>
<td>1.3.2 Site Inspection</td>
<td>1-5</td>
</tr>
<tr>
<td>1.4 REPORT ORGANIZATION</td>
<td>1-5</td>
</tr>
<tr>
<td>2.0 PRELIMINARY ASSESSMENT FINDINGS</td>
<td>2-1</td>
</tr>
<tr>
<td>2.1 INSTALLATION DESCRIPTION</td>
<td>2-1</td>
</tr>
<tr>
<td>2.2 MMRP SITE DESCRIPTIONS</td>
<td>2-3</td>
</tr>
<tr>
<td>2.2.1 Transferred Range 1 MRS (BTC-001-R-01)</td>
<td>2-5</td>
</tr>
<tr>
<td>2.2.2 Transferred Range 2 MRS (BTC-002-R-01)</td>
<td>2-5</td>
</tr>
<tr>
<td>2.2.3 Updates</td>
<td>2-5</td>
</tr>
<tr>
<td>3.0 DATA COLLECTION AND DOCUMENT REVIEW PROCESS</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1 DATA COLLECTION METHODS</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1.1 National Archives and Records Administration</td>
<td>3-1</td>
</tr>
<tr>
<td>3.1.1.1 Archival Records</td>
<td>3-2</td>
</tr>
<tr>
<td>3.1.1.2 Maps/Drawings</td>
<td>3-4</td>
</tr>
<tr>
<td>3.1.1.3 Photographs/Aerial Photographs</td>
<td>3-4</td>
</tr>
<tr>
<td>3.1.2 Web Search</td>
<td>3-5</td>
</tr>
<tr>
<td>3.1.3 Installation Site Visits</td>
<td>3-5</td>
</tr>
<tr>
<td>3.1.4 Personal Interviews</td>
<td>3-6</td>
</tr>
<tr>
<td>3.1.5 Phase 3 Army Range Inventory Results</td>
<td>3-7</td>
</tr>
<tr>
<td>3.1.6 Summary of Previous Investigations</td>
<td>3-8</td>
</tr>
<tr>
<td>4.0 HISTORICAL RECORDS REVIEW FINDINGS</td>
<td>4-1</td>
</tr>
<tr>
<td>4.1 MUNITIONS RESPONSE SITE DESCRIPTIONS</td>
<td>4-1</td>
</tr>
<tr>
<td>4.1.1 Transferred Range 1 MRS (BTC-001-R-01)</td>
<td>4-1</td>
</tr>
<tr>
<td>4.1.2 Additional Ranges Identified During HRR</td>
<td>4-11</td>
</tr>
<tr>
<td>4.1.2.1 Area A MRS (AEDB-R# TBD)</td>
<td>4-11</td>
</tr>
<tr>
<td>4.2 POTENTIAL MEC AND MC</td>
<td>4-13</td>
</tr>
<tr>
<td>5.0 CONCEPTUAL SITE MODEL</td>
<td>5-1</td>
</tr>
<tr>
<td>5.1 INSTALLATION PHYSICAL PROFILE</td>
<td>5-1</td>
</tr>
<tr>
<td>5.1.1 Area and Layout</td>
<td>5-1</td>
</tr>
<tr>
<td>5.1.2 Climate</td>
<td>5-2</td>
</tr>
<tr>
<td>5.1.3 Geology</td>
<td>5-2</td>
</tr>
<tr>
<td>5.1.4 Topography</td>
<td>5-3</td>
</tr>
</tbody>
</table>
5.1.5 Soil ........................................................................................................................... 5-3
5.1.6 Hydrogeology .......................................................................................................... 5-3
5.1.7 Hydrology ............................................................................................................... 5-5
5.1.8 Vegetation ................................................................................................................ 5-5
5.2 INSTALLATION LAND USE AND EXPOSURE PROFILE ........................................ 5-6
  5.2.1 Current Use ............................................................................................................. 5-6
  5.2.2 Potential Future Land Use ...................................................................................... 5-6
  5.2.3 Zoning/Land Use Restrictions ............................................................................... 5-6
  5.2.4 Current Human Receptors .................................................................................... 5-6
  5.2.5 Potential Future Human Receptors ...................................................................... 5-6
  5.2.6 Beneficial Resources ........................................................................................... 5-7
  5.2.7 Ecological Profile .................................................................................................. 5-7
  5.2.8 Demographic ........................................................................................................ 5-8
5.3 TRANSFERRED RANGE 1 MRS (BTC-001-R-01) ...................................................... 5-8
  5.3.1 Structures .............................................................................................................. 5-8
  5.3.2 Utilities ................................................................................................................... 5-8
  5.3.3 Boundaries ............................................................................................................ 5-8
  5.3.4 Security ................................................................................................................ 5-9
  5.3.5 Land Use and Exposure Profile .......................................................................... 5-9
    5.3.5.1 Current Land Use/Activities ............................................................................ 5-9
    5.3.5.2 Current Human Receptors .............................................................................. 5-9
    5.3.5.3 Potential Future Land Use .............................................................................. 5-9
    5.3.5.4 Potential Future Human Receptors ............................................................... 5-9
    5.3.5.5 Ecological Receptors ..................................................................................... 5-9
    5.3.5.6 Munitions Release Profile ............................................................................. 5-10
    5.3.5.7 Maximum Probable Penetration Depth ......................................................... 5-10
    5.3.5.8 Associated Munitions Constituents .............................................................. 5-10
    5.3.5.9 Transport Mechanisms/ Migration Routes ................................................... 5-10
  5.3.6 Pathway Analysis ................................................................................................. 5-11
6.0 CONCLUSIONS .......................................................................................................... 6-1
7.0 REFERENCES ............................................................................................................. 7-1

LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2-1  Time Line of Significant Events</td>
<td>2-3</td>
</tr>
<tr>
<td>Table 2-2  AEDB-R Site Identification</td>
<td>2-3</td>
</tr>
<tr>
<td>Table 3-1  Summary of Documents and Relevant Information</td>
<td>3-10</td>
</tr>
<tr>
<td>Table 4-1  Summary of Potential MEC and MC</td>
<td>4-15</td>
</tr>
<tr>
<td>Table 5-1  Summary of Potential Munitions at the BTC</td>
<td>5-10</td>
</tr>
<tr>
<td>Table 6-1  Summary of HRR Findings</td>
<td>6-2</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 2-1</td>
<td>Biak Training Center Vicinity Map</td>
</tr>
<tr>
<td>Figure 2-2</td>
<td>Biak Training Center CTT Inventory Properties</td>
</tr>
<tr>
<td>Figure 4-1</td>
<td>Transferred Range 1 CTT Inventory Boundary</td>
</tr>
<tr>
<td>Figure 4-2</td>
<td>1966 – 1971 SLUP and CTT Inventory Boundary</td>
</tr>
<tr>
<td>Figure 4-3</td>
<td>1978 – 1983 SLUP and CTT Inventory Boundary</td>
</tr>
<tr>
<td>Figure 4-4</td>
<td>1989 – 1992 SLUP and CTT Inventory Boundary</td>
</tr>
<tr>
<td>Figure 4-5</td>
<td>1995 – 1998 SLUP and CTT Inventory Boundary</td>
</tr>
<tr>
<td>Figure 4-6</td>
<td>2001 – 2004 SLUP and CTT Inventory Boundary</td>
</tr>
<tr>
<td>Figure 4-7</td>
<td>2004 – 2007 SLUP and CTT Inventory Boundary</td>
</tr>
<tr>
<td>Figure 4-8</td>
<td>Modified Transferred Range 1 MRS Boundary</td>
</tr>
<tr>
<td>Figure 4-9</td>
<td>Summary of HRR Findings</td>
</tr>
<tr>
<td>Figure 5-1</td>
<td>Biak Training Center Surface Elevation Map</td>
</tr>
<tr>
<td>Figure 5-2</td>
<td>Transferred Range 1 MRS MEC Pathway Analysis</td>
</tr>
<tr>
<td>Figure 5-3</td>
<td>Transferred Range 1 MRS MC Pathway Analysis</td>
</tr>
<tr>
<td>Figure 6-1</td>
<td>Biak Training Center MRS Boundary</td>
</tr>
</tbody>
</table>

APPENDICES

- Appendix A Archives Searched/Data Resources
- Appendix B Archive Documents
- Appendix C Interview Records
- Appendix D Munitions Technical Data Sheets
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# LIST OF ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC</td>
<td>Army Environmental Center</td>
</tr>
<tr>
<td>A/I</td>
<td>Active and Inactive</td>
</tr>
<tr>
<td>ARID</td>
<td>Army Range Inventory Database</td>
</tr>
<tr>
<td>ARS</td>
<td>Advance Range Survey</td>
</tr>
<tr>
<td>ASR</td>
<td>Archives Search Report</td>
</tr>
<tr>
<td>BLM</td>
<td>Bureau of Land Management</td>
</tr>
<tr>
<td>BRAC</td>
<td>Base Realignment and Closure</td>
</tr>
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<td>BTC</td>
<td>Biak Training Center</td>
</tr>
<tr>
<td>CA</td>
<td>Corrective Action</td>
</tr>
<tr>
<td>CERCLA</td>
<td>Comprehensive Environmental Response, Compensation, and Liability Act</td>
</tr>
<tr>
<td>COUTES</td>
<td>Central Oregon Unit Training and Equipment Site</td>
</tr>
<tr>
<td>CSM</td>
<td>Conceptual Site Model</td>
</tr>
<tr>
<td>CTC</td>
<td>Cost to Complete</td>
</tr>
<tr>
<td>CTT</td>
<td>Closed, Transferring, and Transferred</td>
</tr>
<tr>
<td>DERP</td>
<td>Defense Environmental Restoration Program</td>
</tr>
<tr>
<td>DMM</td>
<td>Discarded Military Munitions</td>
</tr>
<tr>
<td>DOA</td>
<td>Department of the Army</td>
</tr>
<tr>
<td>DoD</td>
<td>Department of Defense</td>
</tr>
<tr>
<td>EOD</td>
<td>Explosives Ordnance Disposal</td>
</tr>
<tr>
<td>e2M</td>
<td>Engineering-Environmental Management, Inc.</td>
</tr>
<tr>
<td>FUDS</td>
<td>Formerly Used Defense Sites</td>
</tr>
<tr>
<td>FY</td>
<td>Fiscal Year</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information Systems</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>HRR</td>
<td>Historic Records Review</td>
</tr>
<tr>
<td>ICRMP</td>
<td>Integrated Cultural Resources Management Plan</td>
</tr>
<tr>
<td>INRMP</td>
<td>Integrated Natural Resources Management Plan</td>
</tr>
<tr>
<td>ITRC</td>
<td>Interstate Technology and Regulatory Council</td>
</tr>
<tr>
<td>MACOM</td>
<td>Major Command</td>
</tr>
<tr>
<td>MC</td>
<td>Munitions Constituents</td>
</tr>
<tr>
<td>MEC</td>
<td>Munitions and Explosives of Concern</td>
</tr>
<tr>
<td>MMRP</td>
<td>Military Munitions Response Program</td>
</tr>
<tr>
<td>MRS</td>
<td>Munitions Response Site</td>
</tr>
<tr>
<td>MRSPP</td>
<td>Munitions Response Site Prioritization Protocol</td>
</tr>
<tr>
<td>NARA</td>
<td>National Archives Records Administration</td>
</tr>
<tr>
<td>NRCS</td>
<td>Natural Resources Conservation Service</td>
</tr>
<tr>
<td>ORARNG</td>
<td>Oregon Army National Guard</td>
</tr>
<tr>
<td>PA</td>
<td>Preliminary Assessment</td>
</tr>
<tr>
<td>RAC</td>
<td>Risk Assessment Code</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>RG</td>
<td>Record Group</td>
</tr>
<tr>
<td>RI/FS</td>
<td>Remedial Investigation/Feasibility Study</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act</td>
</tr>
<tr>
<td>SI</td>
<td>Site Inspection</td>
</tr>
</tbody>
</table>
LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

TPP Technical Project Planning

U.S. United States

USACE United States Army Corps of Engineers

USACHPPM U.S. Army Center for Health Promotion and Preventive Medicine


UXO Unexploded Ordnance
GLOSSARY OF TERMS

Closed Range – A military range that has been taken out of service as a range and that either has been put to new uses that are incompatible with range activities or is not considered by the military to be a potential range area. A closed range is still under the control of a Department of Defense (DoD) component.

Defense Site – All locations that are or were owned by, leased to, or otherwise possessed or used by the DoD. The term does not include any operational range, operating storage or manufacturing facility, or facility that is used or was permitted for the treatment or disposal of military munitions.

Discarded Military Munitions (DMM) – Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. The term does not include unexploded ordnance, military munitions that are being held for future use or planned disposal, or military munitions that have been properly disposed of consistent with applicable environmental laws and regulations.

Explosive Ordnance Disposal (EOD) – The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded explosive ordnance. It may also include explosive ordnance that has become hazardous by damage or deterioration.

Explosives Safety – A condition where operational capability and readiness, personnel, property, and the environment are protected from the unacceptable effects of an ammunition or explosives mishap.

Formerly Used Defense Site (FUDS) – A DoD program that focuses on compliance and cleanup efforts at sites that were formerly used by the DoD. A FUDS property is eligible for the Military Munitions Response Program if the release occurred prior to October 17, 1986; the property was transferred from DoD control prior to October 17, 1986; and the property or project meets other FUDS eligibility criteria.

Military Munitions – All ammunition products and components produced for or used by the armed forces for national defense and security, including ammunition products or components under the control of the Department of Defense, the U.S. Coast Guard, the U.S. Department of Energy, and the National Guard. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries, including bulk explosives, and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components of the above. The term does not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components, other than non-nuclear components of nuclear devices that are managed under the nuclear weapons program of the Department of Energy after all required sanitization operations under the Atomic Energy Act of 1954 have been completed.
Munitions and Explosives of Concern (MEC) – This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, means unexploded ordnance, DMM, or munitions constituents (e.g., Trinitrotoluene {TNT}, Cyclotrimethylene-trinitramine {RDX}) present in high enough concentrations to pose an explosive hazard.

Munitions Constituents (MC) – Any materials originating from unexploded ordnance, DMM, or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions.

Operational Range – A range that is under the jurisdiction, custody, or control of the Secretary of Defense and that is used for range activities; or although not currently being used for range activities, that is still considered by the Secretary to be a range and has not been put to a new use that is incompatible with range activities (10 U.S.C. 101(e)(3)(A) and (B)). Also includes "military range," "active range," and "inactive range" as those terms are defined in 40 CFR §266.201.

Other than Operational Range (OTO) – Includes all property that is under jurisdiction, custody, or control of the Secretary of Defense that is not defined as an Operational Range Area.

Range – A designated land or water area set aside, managed, and used for range activities of the DoD. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pits, impact areas, electronic scoring sites, buffer zones with restricted access and exclusionary areas, and airspace areas designated for military use in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration.

Transferred Range – A range that is no longer under military control and had been leased by the DoD, transferred, or returned from the DoD to another entity, including federal entities. This includes a military range that is no longer under military control, but that was used under the terms of an executive order, special-use permit or authorization, right-of-way, public land order, or other instrument issued by the federal land manager. Additionally, property that was previously used by the military as a range, but did not have a formal use agreement, also qualifies as a transferred range.

Transferring Range – A range that is proposed to be leased, transferred, or returned from the DoD to another entity, including federal entities. This includes a military range that was under the terms of a withdrawal, executive order, special-use permit or authorization, right-of-way, public land order, or other instrument issued by the federal land manager or property owner. An active range will not be considered a transferring range until the transfer is imminent (generally defined as the transfer date is within 12 months and a receiving entity has been notified).

Unexploded Ordnance (UXO) – Military munitions that have been primed, fused, armed, or otherwise prepared for action; have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and remain unexploded either by malfunction, design, or any other cause.
1.0 INTRODUCTION

The Department of Defense (DoD) has established the Military Munitions Response Program (MMRP) under the Defense Environmental Restoration Program (DERP) to address DoD sites with unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC) located on closed, transferring, and transferred (CTT) ranges. Properties classified as operational military ranges, permitted munitions disposal facilities or operating munitions storage facilities are not eligible for the MMRP, nor are sites that had releases after September 30, 2002. The United States (U.S.) Army’s (Army) inventory of CTT military ranges and defense sites with UXO, DMM, or MC has identified sites eligible for action under the MMRP. Two transferred ranges were identified during the inventory at Biak Training Center (BTC). This report presents the results of the Site Inspection (SI) Historical Records Review (HRR).

The DoD is currently establishing policy and guidance for munitions response actions under the MMRP. However, key program drivers developed to date conclude that munitions response actions will be conducted under the process outlined in the National Contingency Plan (40 Code of Federal Regulations 300) as authorized by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 United States Code (U.S.C.) 9605, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99-499 (hereinafter CERCLA). The DoD objective is to address the MMRP sites in accordance with CERCLA; however, the Army realizes that some installations will need to address these sites under the Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) Program. The Phase 3 CTT Range/Site Inventory Report for BTC, completed in October 2003, marks the completion of the Preliminary Assessment (PA) phase of work under CERCLA. The SI report is part of the CERCLA process and will complete the PA/SI requirement for the MMRP eligible sites.
1.1 PURPOSE AND SCOPE

The purpose of the HRR is to perform a records search to document historical and other known information for the MMRP sites at BTC. This information will be used to supplement the CTT Range inventory information, and to support the Technical Project Planning (TPP) process, which will facilitate decisions to focus on those areas where more information is needed to determine the next steps in the CERCLA process.

1.2 PROJECT DRIVERS

The regulatory structure for managing MMRP sites at BTC is guided by federal, state, and local laws, as well as DoD and Army regulations and guidance. However, key legislative and administrative precedents to date will influence the final regulatory framework for the MMRP. The key legislative, administrative, and historic precedents include the following:

Defense Environmental Restoration Program (DERP) Management Guidance (September 2001)
The DERP Management Guidance establishes a MMRP element for UXO, DMM, and MC defense sites. The history of DERP dates back to the SARA of 1986. The scope of the DERP is defined in 10 U.S.C. §2701(b), which states that the:

“Goals of the program shall include the following: (1) The identification, investigation, research and development, and cleanup of contamination from hazardous substances, and pollutants and contaminants. (2) Correction of other environmental damage (such as detection and disposal of unexploded ordnance) which creates an imminent and substantial endangerment to the public health or welfare or to the environment (3) Demolition and removal of unsafe buildings and structures, including buildings and structures of the Department of Defense at sites formerly used by or under the jurisdiction of the Secretary.”
**National Defense Authorization Act (Fiscal Year [FY] 02) (Sections 311-312)**

Sections 311-312 of the National Defense Authorization Act of FY02 reinforced the DoD’s 2001 DERP Management Guidance by tasking the DoD to develop and maintain an inventory of defense sites that are known or suspected to UXO, DMM, or MC. Section 311 requires the DoD to develop a protocol for prioritizing defense sites for response activities in consultation with the states and Tribes. Section 312 requires the DoD to create a separate program element to ensure that the DoD can identify and track munitions response funding.

**Munitions Response Site Prioritization Protocol (MRSSP) (32 CFR Part 179)**

The MRSSP was promulgated in October 2005, in compliance with Section 311 of the National Defense Authorization Act of FY02. This protocol provides the method by which DoD will assign a relative priority for munitions responses to each Munitions Response Site (MRS) in the inventory of defense sites known or suspected of containing UXO, DMM, or MC.

The September 2001 Management Guidance for the DERP and the Defense Authorization Act FY02, described above, established the MMRP. The DERP and the MMRP provide guidance and methods for conducting a baseline inventory of defense sites containing, or potentially containing, UXO, DMM, or MC. Data collected during the SI will be used to prepare the MRSSP for each MRS. The MRSSP provides the method for DoD to assign a relative priority for subsequent munitions response.

**1.3 BACKGROUND**

As stated above, the Phase 3 CTT Range/Site Inventory for BTC is considered to mark the completion of the PA phase of work under CERCLA. The SI is the next phase in the CERCLA process and will complete the PA/SI requirement for MMRP eligible sites. The following paragraphs summarize the results of the Range Inventory at BTC and present the primary goals of performing the SI.
1.3.1 Inventory

The Army Range Inventory program was conducted in three phases. The first phase (Phase 1) involved a data call issued through the Army Environmental Center (AEC) requesting general information about ranges on various installations under each U.S. Army Major Command (MACOM). The Phase 1 Inventory was conducted using a questionnaire called the Advance Range Survey (ARS). The ARS allowed the Army to meet the short-term data goal of supporting the DoD preparation of Senate Report 106-50.

The ARS allowed the Army to meet its short-term needs; however, the Army's long-term needs required a more detailed inventory of its ranges that was not achievable based on the information in the ARS. For management and budgetary reasons, the U.S. Army divided the detailed follow-on inventory into two phases. The Phase 2 Inventory addressed operational ranges [formerly referred to as active/inactive (A/I) ranges]. The Phase 3 Inventory covered CTT ranges or UXO/DMM/MC sites, Base Realignment and Closure (BRAC) sites, and Formerly Used Defense Sites (FUDS). This report deals only with the CTT inventory portion of Phase 3.

The Phase 2 A/I (Operational) Range Inventory for BTC was performed on 26 November 2001. The results were documented in an A/I range inventory binder (A/I binder) submitted to AEC, the respective U.S. Army Major Command (MACOM), and the installation. The A/I binder contains maps that delineate A/I range boundaries. The remainder of the property inside the installation boundary is designated non-A/I property by default. As part of the operational inventory effort, the data was electronically uploaded to the Army Range Inventory Database (ARID) maintained by AEC.

The Phase 3 CTT Range/Site Inventory Report for BTC was submitted to AEC in October 2003. The report summarized BTC as encompassing approximately 31,400 acres, of which approximately 27,961 acres were identified as operational range. The Phase 3 Inventory identified two transferred ranges at BTC - Transferred Range 1 and Transferred Range 2. The estimated acreage of the CTT military ranges/sites with UXO/DMM/MC is 861.48 and 115.34 acres, respectively.
1.3.2 Site Inspection

The primary goal of the MMRP SI is to collect information necessary to make one or more of the following decisions: 1) determine whether a Remedial Investigation/Feasibility Study (RI/FS) is required at a site; 2) determine whether an immediate response is needed; or 3) determine whether the site qualifies for no further action (NFA). The SI at BTC will address MEC, which includes UXO, DMM, and MC issues for the MMRP sites. The secondary goals of the SI are to complete the MRSPP for each MRS and allow the Army to develop better Cost-to-Complete (CTC) estimates.

1.4 REPORT ORGANIZATION

This HRR contains the following sections:

- Section 1 – Introduction
- Section 2 – Preliminary Assessment Findings
- Section 3 – Data Collection and Document Review Process
- Section 4 – Historical Records Review Findings
- Section 5 – Conceptual Site Model (CSM)
- Section 6 – Conclusions

The following supporting information and analyses are appended to this HRR:

- Archives Searched/Data Sources (Appendix A)
- Archive Documents (Appendix B)
- Interview Records (Appendix C)
- Munitions Technical Data Sheets (Appendix D).
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2.0 PRELIMINARY ASSESSMENT FINDINGS

The following sections provide installation and MMRP site descriptions including operational history and figures to identify specific site locations.

2.1 INSTALLATION DESCRIPTION

BTC is located in Deschutes and Crook Counties, Oregon and currently consists of approximately 43,985 acres of federal public lands (Archaeological Investigations Northwest, Inc., 2002). The installation is approximately three miles southeast of the City of Redmond, Oregon and fourteen miles northeast of the City of Bend, Oregon (Figure 2-1).

During World War II, the U.S. Army conducted training exercises on approximately 31,000 acres of U.S. Bureau of Land Management (BLM) land. BLM has continually issued a special use permit to the Oregon Army National Guard (ORARNG) since the 1960s to allow for military training at BTC.

BTC was used as a maneuver area for tracked and wheeled all-terrain vehicles and for infantry field training exercises consisting of land navigation, bivouacking, and temporary construction of fortifications and defensive positions. These same activities still occur throughout the installation. Live fire exercises are not allowed at BTC, except at the small arms range located at the Central Oregon Unit Training Equipment Site (COUTES) within the Operational Range Area.

BTC public lands remain open for public use. The primary public uses of BTC are livestock grazing, off-road vehicular recreation, target shooting, rockhounding, hiking, biking, and wildlife viewing.

BTC has been referenced under different names in the past. These names include the Central Oregon Training Site, High Desert Training Center, and the Redmond Training Site. ORARNG refers to this installation as Biak Training Center.
Biak Training Center

Vicinity Map

Oregon

Projection UTM, Zone 10N
Horizontal Datum WGS84
Units Meters
Scale 1:110,000
Photo Date 2004

1 centimeter equals 1,100 meters

Legend

Roberts Field
Brett Hall
Water
Installation Boundary
Roads

Military Munitions Response Program
Historical Records Review

Biak Training Center
Deschutes and Crook Counties, Oregon

U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

FIGURE 2-1

Biak Training Center
Vicinity Map

Date: June 2008
A timeline of significant events at the BTC is provided in Table 2-1.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Significant Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1942 – 1946</td>
<td>• Biak Training Center used by the Army and Army Air Corps during World War II.</td>
</tr>
<tr>
<td>1946 – 1948</td>
<td>• No record of training activities.</td>
</tr>
<tr>
<td>1948 – 2006</td>
<td>• Special Land-use Permits issued to the ORARNG by the BLM.</td>
</tr>
<tr>
<td>2006 – Present Day</td>
<td>• Land Use Lease Agreement issued to the ORARNG by the BLM.</td>
</tr>
</tbody>
</table>

2.2 MMRP SITE DESCRIPTIONS

Two sites (Transferred Range 1 and Transferred Range 2) were identified as MMRP eligible in the Phase 3 CTT Range/Site Inventory Report (e2M, 2003). Table 2-2 provides a summary of the sites and the acreage of the ranges as presented in the Phase 3 CTT Range/Site Inventory Report.

<table>
<thead>
<tr>
<th>MMRP Site</th>
<th>AEDB-R Site ID</th>
<th>Range Status</th>
<th>Original Site Size (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transferred Range 1</td>
<td>BTC-001-R-01</td>
<td>Transferred</td>
<td>861.48</td>
</tr>
<tr>
<td>Transferred Range 2</td>
<td>BTC-002-R-01</td>
<td>Transferred</td>
<td>115.34</td>
</tr>
</tbody>
</table>

The site locations are shown on Figure 2-2, and descriptions of the sites, as summarized in the Phase 3 CTT Range/Site Inventory Report, are presented below.
FIGURE 2-2
Biak Training Center
CTT Inventory Properties
2.2.1 Transferred Range 1 MRS (BTC-001-R-01)

This 861.48 acre former range is located to the southeast of the current installation, on property that was leased from the BLM from approximately 1960 through 1980. The ORARNG never owned this land. This range was used by the ORARNG to train troops on tracked and wheeled all-terrain vehicles and for infantry field training exercises consisting of land navigation, bivouacking, and temporary construction of fortifications and defensive positions. Training on the property involved the use of smoke grenades, artillery simulators and ground and aerial flares. No live firing was conducted on this range. This property is currently undeveloped, under the control of BLM, and is fenced with locked gates. No UXO removal has taken place at this range. Phone interviews with installation personnel yielded an estimated transfer date of 1980.

2.2.2 Transferred Range 2 MRS (BTC-002-R-01)

This 115.34 acre former range is located to the east of the current installation, on property that was leased from the BLM from approximately 1960 through 1980. The ORARNG never owned this land. This range was used by the ORARNG to train troops on tracked and wheeled all-terrain vehicles and for infantry field training exercises consisting of land navigation, bivouacking, and temporary construction of fortifications and defensive positions. Training on the property involved the use of smoke grenades, artillery simulators and ground and aerial flares. No live firing was conducted on this range. This property is currently owned by private ranchers and surrounded with four-strand barbed wire fences. No UXO removal has taken place at this range. Phone interviews with installation personnel yielded an estimated transfer date of 1980.

2.2.3 Updates

Subsequent to the 2003 Phase 3 CTT Range/Site Inventory Report, Transferred Range 2 was determined to be FUDS eligible. Transferred Range 2 is ineligible for the active Army MMRP because it is being addressed by FUDS and will not be discussed further in this document unless relevant to historical land use or other discussions.
3.0 DATA COLLECTION AND DOCUMENT REVIEW PROCESS

The following primary sources of information were researched as part of the data collection effort for the HRR:

1) National Archives and Records Administration (NARA), including both national and regional archives
2) Internet Research
3) Installation Site Visit
4) Personal Interviews
5) Phase 3 CTT Army Range Inventory Results
6) Summary of Previous Investigations

3.1 DATA COLLECTION METHODS

The following sections describe the data collection methods for the six primary sources identified above. A complete list of archival records from the National Archives and other repositories, in addition to online data sources are presented in Appendix A. Copies of archival records and repositories of correspondence are included in Appendix B. All attempts were made to use the highest quality source documents throughout the development of this report.

3.1.1 National Archives and Records Administration

Relevant archival record repositories and record groups (RGs) were selected based on guidance set Forth in the “Technical/Regulatory Guideline for Munitions Response Historical Records Review”, prepared by the Interstate Technology and Regulatory Council (ITRC) Unexploded Ordnance Team and based on the process developed by the USACE for performing Archive Search Reports (ASRs) (guidance provided at [http://www.mvs.usace.army.mil/engr/ed-p/asr.htm](http://www.mvs.usace.army.mil/engr/ed-p/asr.htm)). Only the record repositories that have historically proved to be most valuable were searched. The repositories and RGs that were searched for this HRR are listed below. The Biak Training Site ASR is presented in Appendix A.
The archival RGs searched at the National Archives, NARA, College Park, Maryland, included:

Textual Branch
- RG 159, Office of the Inspector General
- RG 168, National Guard Bureau
- RG 330, Department of Defense
- RG 338. U.S. Army Commands, 1942-present
- RG 553, U.S. Army Training and Doctrine Command

The archival records searched at the National Archives, NARA, College Park, Washington, DC included:
- RG 49, Bureau of Land Management

The archival records searched at the National Archives, NARA, Pacific Northwest, Seattle, WA included:
- RG 121, Public Buildings Service

The archival records searched at the Oregon State Archives, Salem, OR included:
- Oregon Military Department Records, 1847-1986

3.1.1.1 Archival Records

The following correspondence was obtained from the National Archives and other repositories including the Prineville Bureau of Land Management Office and was used to support the findings presented in this HRR. Repositories including the Oregon Military Museum, University of Oregon Map Library, Oregon Historical Society in Portland, Oregon Military Museum, and USACE office in Portland, were searched however no documents were found relating to the BTC. Copies have been included in Appendix B and the document number provided below is used to reference the document in the appendix.
• Oregon Military Department; Special Land Use Permit (18 March, 2004) to conduct military maneuvers at BTC. (BTC001 through BTC0014)

• Oregon Military Department; Special Land Use Permit (15 December, 1966) to conduct military maneuvers at BTC. (BTC0015 through BTC0019)

• Correspondence between the BLM and Brigadier General Staryl C. Austin Jr. (8 December, 1977) regarding continuing use of the Central Oregon Training Site. (BTC0020)

• Oregon Military Department; Special Land Use Permit (6 September, 1977) to conduct military maneuvers at BTC. (BTC0021 through BTC0025)

• BLM - Oregon Military Department; Legal Land Descriptions (15 March, 2004). (BTC0026 through BTC0029)

• Central Oregon Training Site; Schedule Usage Request (14 September, 1996). (BTC0030 through BTC0032)

• Correspondence between Ron Wortman and Shawn Stanfill (22 August, 2001) regarding the chronology of EIS/RMP. (BTC0033 through BTC0034)

• Correspondence between Oregon Military Department and BLM (4 October, 2006) regarding a 30 year land use term for BTC. (BTC0035 through BTC0047)

• Correspondence between ORARNG and BLM (1 September, 1999) regarding request for approval to use native material from the Clay Pit. (BTC0048 through BTC0049)

• Correspondence between Oregon Military Department and BLM (6 July, 1998) regarding training activities at BTC. (BTC0050 through BTC0076)

• Meeting minutes (6 February, 2001) regarding BTC 2001 training schedule. (BTC0077 through BTC0079)

• Oregon Military Department; Special Land Use Permit (2 February, 1995) to conduct military maneuvers at BTC. (BTC0080)

• Correspondence between Oregon Military Department ARNG Readiness Center (21 June, 1995) regarding Environmental Assessment of Central Oregon Training Site. (BTC0081 through BTC0087)

• BLM Serial Register Page (19 October, 1998) including legal descriptions for 1995 SLUP. (BTC0088 through BTC0094)
3.1.1.2 Maps/Drawings

No maps or drawings were obtained during the site visit or other research conducted throughout the HRR process.

3.1.1.3 Photographs/Aerial Photographs

A search of the Cartographic and Aerial Photography branch of the National Archives and Records Administration in College Park, Maryland conducted by Heritage Research Center, Ltd. identified four aerial photographs providing views of ranges of concern. Recent aerial photographs of the BTC and Millican Plateau were obtained from the Oregon Military Department.

- Aerial Photograph. Black and White. Digital Orthophoto Quadrangles (DOQs). Biak Training Center. 2004. (Not included, found in Figures 4-1 and 6-1)
3.1.2 Web Search

In addition to data sources listed above, research was conducted on the Internet to supplement the archival data and information received from the Biak Training Center. The list below presents the web sites that were searched for information on the Biak Training Center.

- City of Redmond, http://www.ci.redmond.or.us/internet/index.php
- Oregon Water Resources Department, http://www.wrd.state.or.us/
- Portland State University Northwest GeoData Clearinghouse, http://nwdata.geol.pdx.edu/
- San Bernardino County Assessor’s Office, ftp://gis1.sbcounty.gov/parcel_basemap_data/

3.1.3 Installation Site Visits

An initial site visit to the BTC was conducted on August 6, 2007, by FPM Group team members Gaby Atik and Garrick Marcoux. Document searches were also conducted at the Oregon Military Museum in Clackamas, Oregon, Oregon Military Department Headquarters in Salem, Oregon and with the Prineville District BLM Realty Specialist on August 6 and 7, respectively. The site visit was conducted to review relevant installation records to complete the HRR and to develop the CSMs for the BTC sites. While on-site, the data collection team reviewed environmental reports and documents for the BTC. Interviews with relevant personnel were also conducted. Results of the interviews are presented in Section 3.1.4.
3.1.4 Personal Interviews

The following interviews were conducted to collect information for the HRR. Interview records from these interviews are included in Appendix C.

**Biak Training Center, Oregon Military Department**

The data collection team interviewed Mr. Bill McCaffrey, former BTC Range Operations Officer and Environmental Protection Specialist of the Oregon Military Department on August 6, 2007 while at the installation for the site visit. Mr. McCaffrey indicated that it was his estimation that the use of Transferred Range 1 started sometime in the 1960s. He also said that Biak Training Center was formerly known as the Central Oregon Training Site (COTS). He said that any old maps that he came across at the installation were sent to the Oregon Military Museum in Clackamas. The museum curator, Tracy Buckley, was contacted however no relevant information was reported to exist.

Mr. McCaffrey was interviewed again on 21 March, 2008 via telephone correspondence. Mr. McCaffrey called in response to an email question FPM Group team member, Garrick Marcoux had regarding the 2004 Special Land Use Permit (SLUP). He stated that the SLUP was in effect until October 2006 when it was superseded by a Land Use Lease Agreement. He also confirmed that the last time Area A (Section 4.1.1) was used by the ORARNG was January 2003. Mr. McCaffrey stated that he and Mr. Ron Wortman of the BLM were the authors of the Land Use Lease Agreement that became effective in October 2006. At that time Mr. McCaffrey was the BTC Range Operations Officer.

When asked, Mr. McCaffrey indicated that Dave Duncan’s title is the BTC ITAM Program Coordinator. He also stated that the land use permits should be in the HQ AGI Office. Finally, Mr. McCaffrey volunteered that the lease boundary depicted in the figure FPM Group team member Garrick Marcoux sent him depicts a slight error in the SW boundary where the boundary should follow a road just east of the section line.
Biak Training Center, Oregon Military Department

The data collection team interviewed the current BTC ITAM Program Coordinator Mr. Dave Duncan of the Oregon Military Department on August 6, 2007 while at the installation for the site visit. Mr. Duncan said he was not aware of any use of the Transferred Range 1 area by ORARNG since 1992. He said that since 1992 (when he began working at the installation) only simulators had been used at Biak. He also said that the use of Range 1 had been by an agreement with the BLM and not a lease. He did confirm that he thought smoke grenades, artillery simulators and ground and aerial flares had been used in the Transferred Range 1 area.

Biak Training Center, Oregon Military Department

The data collection team interviewed Restoration Manager Mr. James Arnold and Mr. Dave Duncan on January 25, 2008 via teleconference. The meeting was held to discuss the property referred to as ‘Area A’ which lies west of the North Unit Main Canal (NUMC) that is no longer utilized by ORARNG. During the phone call, the following information was presented: Mr. Duncan’s personal knowledge of the site dates to the early 1990s. He recalled that only vehicle maneuvering occurred since 1993 or 1994. No live fire ammunition or pyrotechnic devices were ever used due to fire hazard. Prior to 1994 training was coordinated at the unit level and no records exist to substantiate what or when training occurred before this time. No blank ammunition was known to have been used. Most vehicle traffic was on Sheridan Road. The agreement with the BLM was that off-road vehicle travel was not permitted in Area A (west of the NUMC). Off-road vehicle travel was considered to be a fire hazard. The Pronghorn Resort (located in Area A) began construction in the late 1990s.

3.1.5 Phase 3 Army Range Inventory Results

The purpose of the Closed, Transferring, and Transferred Range/Site Inventory Report for BTC was to identify CTT ranges that are not within the operational training areas of the BTC. The specific requirements of this investigation included: mapping CTT ranges and sites with UXO, DMM, or MC; collecting and preparing the data for inclusion in the Army Range Inventory Database; conducting an assessment of explosive safety risk using the Risk Assessment Code (RAC) on each CTT range or site; and determining which sites potentially qualify for the
MMRP. Information collected during the Phase 3 CTT Range/Site Inventory was reviewed, and applicable information was extracted from the report for inclusion in this HRR report.

### 3.1.6 Summary of Previous Investigations

Based on the data repositories reviewed for the HRR, the following investigations were identified as containing information that pertained to munitions use and/or relevant environmental data at BTC (a summary of the information is also provided at the end of the section in Table 3-1).

**Final U.S. Army Closed, Transferring, and Transferred Range/Site Inventory for Biak Training Center, Oregon – October 2003**

The objective of this report was to present the CTT Range Inventory for BTC. In preparation of this report, historical research was conducted to identify CTT ranges and site subject to the inventory and their locations, periods of use, and associated types of UXO, DMM, or MC. This report contains a historical background of the BTC and installation summary.

**Inventory of Listed and Sensitive Wildlife Species at Biak Training Center, Oregon Army National Guard – August 2006**

The objective of this report was to identify wildlife habitats and determine if rare and sensitive species were present at Biak Training Center. The inventory documents the status and habitat distributions of select species.

**Biak Training Center Integrated Natural Resources Management Plan (INRMP) and Environmental Assessment – September 2001**

This document concentrates on the interrelationships among the natural resources managed by the BLM at the Biak Training Center (including soils, wildlife, vegetation communities, and outdoor recreation) and the military mission. The function of the INRMP is to direct the ORARNG in cooperatively managing, with the BLM, the natural resources on the federal public lands that compose the BTC.

The purpose of this report was to describe various geologic structures and stratigraphic units that form the framework for the ground-water flow system in the Upper Deschutes basin. The report includes site-specific geologic and hydrologic data, describes the volcano-tectonic evolution of the area, and explains water-bearing rock units.

Final Property Eligibility Report; Transferred Range #1 (BTC-001-R-01) Oregon NGB, Oregon – December 2004

This document summarizes the results of historical research to determine whether or not the Transferred Range 1 MRS is FUDS eligible. The findings of the document were that the site may be eligible for FUDS.

Final Property Eligibility Report; Transferred Range #2 (BTC-002-R-01) Oregon NGB, Oregon – December 2004

This document summarizes the results of historical research to determine whether or not the transferred Range #2 MRS is FUDS eligible. The findings of the document were that the site may be eligible for FUDS.

Integrated Cultural Resources Management Plan (ICRMP) for the Oregon Army National Guard – March 2007

The ICRMP evaluates cultural resource management requirements in all mission activities for which a compliance or stewardship requirement exists. This document provides a background of the ORARNG and the prehistory and history of Biak Training Center.

Upper Deschutes Record of Decision and Resource Management Plan – October 2005

This document provides guidance for the management of over 400,000 acres of land administered by the Bureau of Land Management in Central Oregon. The Resource Management Plan provided valuable information for the HRR including vegetation, hydrology, land uses, recreation, land ownership, and cultural resources.
Draft Technical Project Planning Memorandum; Northwest Maneuver Area FUD ID F10OR0208 – June 2007

The TPP Memorandum is used during the SI process to document information collected and processes used to evaluate FUDS for the possible presence of MEC. The document provided relevant information for the conceptual site model including sensitive environments, climate, geology, and hydrogeology.

Table 3-1
Summary of Documents and Relevant Information

<table>
<thead>
<tr>
<th>Document Name</th>
<th>General History</th>
<th>General Installation Information</th>
<th>Munitions Use</th>
<th>MC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final U.S. Army Closed, Transferring, and Transferred Range/Site Inventory for Biak Training Center, Oregon – October 2003</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Inventory of Listed and Sensitive Wildlife Species at Biak Training Center, Oregon Army National Guard – August 2006</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Biak Training Center Integrated Natural Resources Management Plan and Environmental Assessment – September 2001</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Final Property Eligibility Report; Transferred Range 1 (BTC-001-R-01) Oregon NGB, Oregon – December 2004</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Final Property Eligibility Report; Transferred Range #2 (BTC-002-R-01) Oregon NGB, Oregon – December 2004</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Integrated Cultural Resources Management Plan for the Oregon Army National Guard – March 2007</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Upper Deschutes Record of Decision and Resource Management Plan – October 2005</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Draft Technical Project Planning Memorandum; Northwest Maneuver Area FUD ID F10OR0208 – June 2007</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
4.0 HISTORICAL RECORDS REVIEW FINDINGS

The following sections provide the HRR findings for the Munitions Response site identified during the Phase 3 CTT Range/Site Inventory and a potentially new site identified during the HRR. These sections also provide supplemental information found subsequent to the Range Inventory in support of the HRR. This supplemental information is intended to help refine the data developed for the Range Inventory. The supplemental information acquired for the Munitions Response sites associated with BTC is detailed in the subsections presented below and is supported by various figures to facilitate the understanding of these changes.

4.1 MUNITIONS RESPONSE SITE DESCRIPTIONS

The following sections detail the operations and use of Transferred Range 1 and one potential new MMRP site.

4.1.1 Transferred Range 1 MRS (BTC-001-R-01)

The Transferred Range 1 MRS covers 861.48 acres and is located to the southeast of the current installation boundary. Information contained in the Phase 3 CTT Range/Site Inventory Report (e2M, 2003) indicates Transferred Range 1 was used for infantry maneuver training that may have included use of smoke grenades, artillery simulators and ground and aerial flares. The use of the above mentioned munitions was confirmed by Dave Duncan (BTC ITAM Program Coordinator) during a 6 August 2007 site visit (2007 Interview, Appendix C). The ORARNG does not own the BTC training properties (including Transferred Range 1), but is permitted by the BLM to utilize the land through special land use permits (SLUPs).

The Phase 3 CTT Range/Site Inventory Report identified a September 1975 installation map as the source of the Transferred Range 1 boundary. The 1975 map could not be located during the HRR. Instead SLUPs were used to reconstruct the training area boundaries. The SLUPs obtained during the HRR were for the following periods: 1966-1971, 1978-1983, 1989-1992, 1995-1998, and 2004-2007. Figure 4-1 shows the boundary of Transferred Range 1 MRS with
FIGURE 4-1

Transferred Range 1
CTT Inventory Boundary

Note/Reference:
CTT Range/Site Inventory Boundary (e2M, 2003)
respect to the current installation boundary\textsuperscript{1}. Note that the current boundary includes a large tract of land (Millican Plateau) to the southeast of the primary installation boundary as shown in the inset of Figure 4-1. According to the Restoration manager James Arnold, the Millican Plateau was not acquired by the ORARNG for training until October 2006. The Millican Plateau is shown in the inset of Figure 4-1 for completeness.

Figure 4-2 shows the current BTC boundary, the historical BTC boundary (prior to October 2006), and the Transferred Range 1 CTT Boundary. The 1966-1971 SLUP boundaries shown on Figure 4-2 were reconstructed based on the permit’s legal description of land use (Appendix B, BTC0015 through BTC0019). Other than those areas encompassed by the Training Area 1 Boundary (which was agreed to be addressed under the Active Army MMRP), the training areas possessed prior to 1986 are considered to be potentially FUDS eligible (Figure 4-2). These areas were determined to be potentially FUDS eligible as they were not in the possession of the Army after the October 1986 FUDS eligibility cut-off date. The triangular areas identified on Figure 4-2 (areas 1, 2, and 3) represent areas that are not FUDS eligible. These areas were permitted for use after October 1986, as evidenced by the 1989 SLUP (discussed in detail later in this section). Area A, identified in Figure 4-2, was permitted for training as per the 1966 SLUP. Area A is no longer utilized for military training. Training in this area ended in January 2003. Area A will be discussed in greater detail, and evaluated for MMRP eligibility, in Section 4.1.2.1.

Attachment B (Special Clauses) to the 1966 SLUP indicates that “There will be no discharging of live ammunition larger than 50 caliber. Firing of ammunition will be restricted to a small and carefully controlled area.” The area designated for small arms firing is not identified; however, the Central Oregon Unit Training and Equipment Site (COUTES) encompasses the current small arms training range (Figure 4-2). The COUTES is owned by the state and includes facilities to house and maintain vehicles. Attachment B to the 1966 SLUP goes on to indicate that vehicular traffic was to be limited to established roads and that “reasonable precautions for the prevention of fire” will be taken by ORARNG units training at BTC.

\textsuperscript{1} The current boundary is based on the Land Use Lease Agreement that became effective in October 2006 that replaced the 2004 SLUP.
1 centimeter equals 1,400 meters

Note/Reference:
Final Property Eligibility Report;
Transferred Range #1
(BTC-001-R-01) Oregon NGB,
Oregon (TechLaw, 2004)

Legend
Roberts Field
Brett Hall
FUDS potentially eligible
Transferred Range 1
(CTT Boundary)
Installation Boundary - Operational
Installation Boundary prior to October 2006
1966-1971 SLUP
Roads
123 Not FUDS Eligible

Military Munitions Response Program
Historical Records Review
Biak Training Center
Deschutes and Crook Counties, Oregon
U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

FIGURE 4-2
1966-1971 SLUP and
CTT Inventory Boundary

Date: June 2008
Figure 4-3 shows the current BTC boundary, the historical BTC boundary (prior to October 2006), and Transferred Ranges 1 and 2 CTT Boundaries. The 1978-1983 SLUP boundaries shown on Figure 4-3 were reconstructed based on the permit’s legal description of the land use (Appendix B). Transferred Range 2 is shown because the 1978 SLUP provided for training activities in that area. Transferred Range 2 was previously determined to be FUDS eligible (TechLaw, 2004), and the 1978 SLUP is the last permit obtained during the HRR that authorizes training in the Transferred Range 2 boundary.

Attachment A (Stipulations for the Oregon Military Department Temporary Use Permit) to the 1978 SLUP indicates that no live ammunition will be used, and similar to the 1966 SLUP, “reasonable precautions for the prevention of fire” will be taken by ORARNG (Appendix B, BTC0021 through BTC0025). Area A, identified in Figure 4-3, was permitted for training as per the 1978 SLUP. Area A is no longer utilized for military training and will be discussed in greater detail, and evaluated for MMRP eligibility, in Section 4.1.2.1.

Figure 4-4 shows the current BTC boundary and the historical BTC boundary (prior to October 2006). The 1989-1992 SLUP boundaries shown on Figure 4-4 were reconstructed based on the permit’s legal description of the land use (Appendix B). No stipulations or special clauses were attached to the 1989 SLUP that was obtained during the HRR. Note that areas 1, 2, and 3 identified on Figure 4-4 were part of the 1989 SLUP which renders the sites ineligible for FUDS. Areas 1 and 2 are not included in SLUPs dated after 30 September 2002 (the eligibility cut-off date for MMRP eligible sites) and therefore qualify for eligibility within the MMRP. There is no historical documentation regarding munitions use within Areas 1 and 2; however, due to their proximity to the Training Area 1 boundary they were incorporated into the MRS. Figure 4-5 shows the 1995-1998 SLUP, although no portion of the 1995 SLUP is near or affects the Transferred Range 1 boundary. Figure 4-6 illustrates the 2001-2004 SLUP which makes up the old installation boundary prior to October 1986. As in the previous figure, no area of the 2001 SLUP affects the Transferred Range 1 Boundary. As shown on Figure 4-7, area 3 was included in the 2004 SLUP, and is not eligible for the MMRP. Area A, illustrated in Figures 4-4 through 4-5 and Figure 4-7, was permitted for training in the 1989, 1995 and 2004 SLUPs. However, Area A was formerly transferred in October 2006 (when the Land Use Lease
Note/Reference:
Final Property Eligibility Report; Transferred Range #1 (BTC-001-R-01) Oregon NGB, Oregon (TechLaw, 2004)
FIGURE 4-4
1989-1992 SLUP and CTT Inventory Boundary

Note/Reference:
Final Property Eligibility Report; Transferred Range #1 (BTC-001-R-01) Oregon NGB, Oregon (TechLaw, 2004)

Legend
- Roberts Field
- Brett Hall
- Transferred Range #1 (CTT Boundary)
- Installation Boundary - Operational
- Installation Boundary prior to October 2006
- 1989-1992 SLUP Roads
- 123 Not FUDS Eligible

Military Munitions Response Program
Historical Records Review
Biak Training Center
Deschutes and Crook Counties, Oregon
U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

Date: June 2008
Note/Reference:
SLUP Boundaries
(Prineville BLM)

Legend

Roberts Field
Brett Hall
Transferred Range #1
(CTT Boundary)
Installation Boundary - Operational
Installation Boundary prior to October 2006
1995-1998 SLUP
Roads

Military Munitions Response Program
Historical Records Review
Biak Training Center
Deschutes and Crook Counties, Oregon
U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

FIGURE 4-5

1995-1998 SLUP and Modified MRS Boundary
Note/Reference:
Oregon Military Department
May 15, 2008

Legend

Roberts Field
Brett Hall
Installation Boundary - Operational
Installation Boundary prior to October 2006
2001 - 2004 SLUP
CTT Boundary
Roads

Military Munitions Response Program
Historical Records Review
Biak Training Center
Deschutes and Crook Counties, Oregon
U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

FIGURE 4-6
2001-2004 SLUP and CTT Inventory Boundary

Date: June 2008
Note/Reference: The 2004-2007 SLUP was replaced by the October 2006 Land Use Lease Agreement with the BLM.

Military Munitions Response Program
Historical Records Review

Biak Training Center
Deschutes and Crook Counties, Oregon
U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

FIGURE 4-7
2004-2007 SLUP and CTT Inventory Boundary
Agreement was approved. Training in this area ended in January 2003. Area A is discussed in greater detail, and evaluated for MMRP eligibility, in Section 4.1.2.1. Figure 4-8 shows the modified Transferred Range 1 Boundary that includes areas 1 and 2 (Figure 4-4). The modified MRS boundary encompasses approximately 1,108 acres.

Based on site data collected during the HRR, the analysis that this site was used to train troops on tracked and wheeled vehicles and for infantry field training exercises is considered to be of high quality with little uncertainty. Training at Transferred Range 1 MRS is documented to have started in 1966 and continued through 1992. The operational history of the Transferred Range 1 MRS suggests that the potential for MEC (smoke grenades, artillery simulators and ground and aerial flares) does exist. MC related to munitions use at the site is possible.

4.1.2 Additional Ranges Identified During HRR

4.1.2.1 Area A MRS (AEDB-R# N/A)

Area A is a transferred range located just to the west of the current installation boundary. Area A is shown in Figures 4-2 through 4-8. The date of transfer and potential for munitions use was evaluated as the determining criteria for MMRP eligibility. Figure 4-5 shows the 1995-1998 SLUP and Figure 4-7 shows the 2004-2007 SLUP. The permit(s) for the period 1999-2000 could not be obtained during the HRR. However, according to Jim Arnold (ORARNG Restoration Manager), the last time training took place in Area A was January 2003. Mr. Bill McCaffrey of the Oregon Military Department indicated via a phone interview that in October 2006 BTC entered into a Land Use Lease Agreement with the BLM. The Land Use Agreement replaced the 2004 SLUP and defines the current installation boundary shown on Figures 4-2 through 4-8. Mr. McCaffrey was the BTC Range operations Officer and Environmental Protection Specialist at the time the 2006 Land Use Lease Agreement was drafted and coauthored the agreement with Mr. Ron Wortman of the BLM. During a 25 January 2008 phone interview with ORARNG personnel Jim Arnold and Dave Duncan, it was reported that training in Area A did not include live fire ammunition, blanks, or pyrotechnic devices. The restrictions on the above mentioned munitions were due to the fire hazard in Area A. Training in Area A
Military Munitions Response Program
Historical Records Review

Biak Training Center
Deschutes and Crook Counties, Oregon

U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

FIGURE 4-8
Modified Transferred Range 1 MRS Boundary

Note/Reference:
MRS acreage = approximately 1,111 acres

Legend
Roberts Field
Brett Hall
Modified Transferred Range 1 MRS Boundary
Transferred Range #1 (CTT Boundary)
Installation Boundary - Operational
Installation Boundary prior to October 2006
Roads
12 Not FUDS Eligible

Site Location

Projection UTM, Zone 10N
Horizontal Datum WGS84
Units Meters
Scale 1:140,000
Photo Date NA

1 centimeter equals 1,400 meters

0 1,400 2,800 4,200 5,600 Meters
0 4,600 9,200 13,800 18,400 Feet

Date: June 2008
was also limited to vehicle maneuvering that did not include off-road travel. Neither Mr. Arnold nor Mr. Duncan could provide historical information prior to the early 1990s, as this was well before they were associated with BTC in their current capacity.

Based on site data collected during the HRR, the analysis that this site was used for vehicle maneuvering is considered to be of high quality with little uncertainty. Training at Area A is documented to have started in 1966 and continued through January 2003. The operational history of Area A (including lease special clauses) suggests that there is no potential for MEC at the site. Given the lack of evidence for munitions use of any variety in Area A, there is no potential for MC related to munitions use at the site. The reported use of Area A after the MMRP eligibility end date of 30 September 2002 also renders the site ineligible for the MMRP. Because the Area A site was used after 30 September 2002 for military training and because there is no potential for MEC/MC at the site, it is recommended that Area A not be further considered for MMRP inclusion.

**Figure 4-9** shows a summary of the HRR lease boundary findings. Close inspection of **Figure 4-9** will reveal one small green (1989-2007 lease) and 3 small greenish blue (1966-2007 lease) rectangular areas outside the east side of the installation boundary. These areas are not considered for FUDS or active Army MMRP eligibility because the periods of use extend beyond the October 1986 and 30 September 2002 eligibility cut-off dates, respectively. No historical documentation, including lease special clauses, specifically discuss military training activities in these areas, therefore no expectation that munitions training occurred in these areas.

### 4.2 POTENTIAL MEC AND MC

**Table 4-1** presents the potential MEC and the associated MC that may be present at the BTC ranges based on information obtained regarding the types of weapons and munitions reportedly fired.
FIGURE 4-9

Summary of HRR Findings

Biak Training Center

Site Location

Projection: UTM, Zone 10N
Datum: WGS84
Units: Meters
Scale: 1:140,000
Photo Date: NA

Note/Reference:
- Potentially FUDS Eligible.

Legend:
- CTT Boundary
- Roberts Field
- Brett Hall
- Installation Boundary - Operational
- Modified Transferred Range 1 MRS Boundary
- BLM Lease Period
  - 1966-1971
  - 1966-1983
  - 1966-1992
  - 1966-2007
  - 1989-2007
- Roads

Military Munitions Response Program
Historical Records Review

Biak Training Center
Deschutes and Crook Counties, Oregon

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OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

Date: June 2008
Table 4-1
Summary of Potential MEC and MC

<table>
<thead>
<tr>
<th>Munitions Response Site</th>
<th>Time Period of use</th>
<th>Potential Munitions</th>
<th>Primary Release Mechanism</th>
<th>Potential MEC</th>
<th>Potential MC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transferred Range 1 (BTC-001-R-01)</td>
<td>1966 – 1992</td>
<td>Smoke grenades</td>
<td>Thrown or fired</td>
<td>Smoke grenades</td>
<td>Terephthalic acid, potassium chlorate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Artillery simulators</td>
<td></td>
<td>Simulators</td>
<td>Potassium perchlorate, aluminum powder, sulfur, and antimony sulfide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ground and aerial flares</td>
<td></td>
<td>Flares</td>
<td>Illuminating compound (sodium nitrate, magnesium)</td>
</tr>
</tbody>
</table>
This page is intentionally left blank.
5.0 CONCEPTUAL SITE MODEL

Biak Training Center is located in Deschutes and Crook Counties in central Oregon. One MRS site was identified during the HRR process, encompassing an area of approximately 1,108 acres. The Transferred Range 1 MRS was used to train troops on tracked and wheeled vehicles and for infantry field training exercises. Exercises consisted of land navigation, bivouacking, and temporary construction of fortifications and defensive positions. Training at the MRS is estimated to have occurred from 1966 to 1992. Potential MEC associated with training activities on Transferred Range 1 MRS includes smoke grenades, artillery simulators, ground and aerial flares. The use of pyrotechnic devices in this MRS is considered to have been infrequent given the associated fire hazard potential.

The preliminary CSM is intended to organize and display data acquired during the HRR process in order to assist in the development of hypotheses related to site history and status. Of particular relevance are the delivery mechanisms responsible for the current location of MEC.

5.1 INSTALLATION PHYSICAL PROFILE

The following sections describe the area and layout of BTC and all man-made features at or near the BTC MRS boundaries.

5.1.1 Area and Layout

BTC is located in Deschutes County, with the easternmost portion of Crook County in Central Oregon. BTC is located approximately three miles southeast of the city of Redmond and fourteen miles northeast of the city of Bend. BTC consists of approximately 43,985 acres of federal public lands administered and managed by the BLM under a special use permit (Archaeological Investigations Northwest, Inc., 2007).
5.1.2 Climate

BTC is located at an elevation of approximately 300 to 800 feet above sea level within the High Lava Plains ecological province. The climate of the BTC region is semiarid with low annual precipitation, dry summers with warm days and cool nights (Tetra Tech Inc, 2001). The average annual precipitation at BTC is approximately 8.55 inches. The average daily temperature during the summer is 86 °F with extreme high temperatures reaching over 103 °F. The average daily temperature during the winter is 42.7 °F with an average low temperature of 22.7 °F (Oregon Climate Service, online source).

5.1.3 Geology

BTC is located amongst the north-south trending zone east of the Cascade Range and the Basin and Range Province in the High Lava Plains. The site is underlain almost entirely by the Columbia River Basalt Group (CRBG) which extends across Washington, Oregon and Idaho. The CRBG is largely of volcanic origin which occurred throughout the Eocene, Oligocene, and Miocene Epoch. Thickness of these formations may be up to thousands of feet. More recent volcanic activity, approximately 7,000 years ago, originated from the Newberry strato-composite volcano now known as Newberry National Volcanic Monument in the Deschutes National Forest (U.S. Army Center for Health Promotion and Preventive Medicine [USACHPPM], 2001). The lithology includes widespread Quaternary-age basalt and basaltic andesite ranging from 10 to 100 feet in thickness with minor tuffs, sandstone and siltstone (Northwest GeoData Clearinghouse, online source; USACHPPM, 2001; Tetra Tech Inc, 2001). In the BTC area, playa valleys are filled with fluvial sediments and volcanic ash (Tetra Tech Inc, 2001). Alluvial deposits may be less than a few tens of feet thick (Lite and Gannett, 2002).

All of the above formations are expected in the Transferred Range 1 MRS, due to the size of the site.
5.1.4 Topography

The High Lava Plains is a prominent valley on which BTC is located. It is north-south trending zone consisting of gently sloping and undulating terrain (Tetra Tech Inc., 2001). The width ranges from approximately 5 to 20 miles with the widest part south of the BTC boundary. Elevations in the BTC area gently decrease from the south (approximately 1,020 feet) to the north (approximately 900 feet). Relief within the Transferred Range 1 MRS, however, is minimal ranging from 980 feet to 1,010 feet. Figure 5-1 shows the topography in and around the Transferred Range 1 MRS.

5.1.5 Soil

The surface in the BTC is primarily outcropping volcanic rocks. Where soils do exist, they are relatively thin consisting of cobbly to loamy sands that formed in alluvium from volcanic ash and other materials weathered from volcanic rock (Tetra Tech Inc., 2001). Soils are minimally at risk for erosion due to the relatively flat topography. Soil types at the Transferred Range 1 MRS are pre-dominantly Stukel-Rock Outcrop-Deschutes and Gosney-Rock Outcrop-Deskamp complexes. Both soil complexes are excessively drained sandy loams with high permeability rates (Tetra Tech Inc, 2001).

5.1.6 Hydrogeology

BTC receives its potable water requirements from an aquifer reportedly ranging from 200 to 600 feet deep (Tetra Tech Inc., 2001). According to the INRMP (2001), ground water exists in fracture zones, voids of Quaternary and Tertiary lava flows and in permeable zones of sedimentary rocks.

No water rights exist within the MRS boundary; however fourteen water rights are located within a 2-mile radius within the Deschutes Water Basin. According to well log data from the Oregon
Biak Training Center

Surface Elevation Map

Biak Training Center

Deschutes and Crook Counties, Oregon

Military Munitions Response Program
Historical Records Review

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Deschutes and Crook Counties, Oregon

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CONTRACT W912DR-06-C-0029

FIGURE 5-1

Biak Training Center
Surface Elevation Map

Note/Reference:
Contour Interval 10 meters

Legend

- Elevation Contour
- MRS Boundary
- Installation Boundary

Projection: UTM, Zone 10N
Horizontal Datum: WGS84
Units: Meters
Scale: 1:60,000
Photo Date: NA

1 centimeter equals 600 meters
Water Resources Department, wells are used for irrigation, quasi-municipal use, and domestic use. The INRMP (2001) documents the existence of one well within the BTC drilled into the aquifer at a depth of approximately 420 feet.

5.1.7 Hydrology

The BTC is hydrologically undeveloped, due to the region’s geology and low annual precipitation. Any precipitation at the BTC quickly percolates into the thin soil or is evaporated in the dry atmosphere (USACHPPM, 2001). There is minimal surface drainage in the BTC area. The water features that do exist are internal, localized, and have ephemeral characteristics, with no natural waterways (Tetra Tech Inc, 2001). The single surface water source is the North Unit Main Canal, diverted from the Deschutes River, approximately two miles west of the MRS boundaries. The canal trends north and northeast carrying irrigation water to accommodate the growing season from April to October (Archaeological Investigations Northwest, Inc, 2002).

5.1.8 Vegetation

Seven major vegetative communities were identified by Oregon State University including Big Sagebrush of which is the most dominant vegetative community at the training center. Other communities include Bitterbrush shrubland, Western Juniper woodland, Western Juniper wooded herbaceous, Green Rabbitbrush shrub herbaceous, managed Big Sagebrush shrubland, and Microphyllous Evergreen shrubland (Tetra Tech Inc., 2001). Some of the most dominant species within these communities include cheatgrass, bluebunch wheatgrass and Idaho fescue. Crested wheatgrass and a mixture of native perennial grasses also exist in the BTC.
5.2 INSTALLATION LAND USE AND EXPOSURE PROFILE

5.2.1 Current Use

Current military land use at the BTC includes training for the ORARNG, Air National Guard, US Navy Construction Battalions, US Marine Corps as well as regular Army forces including Special Forces and Rangers (Global Security, online source). BTC land use includes developed areas used for administration and range control. Undeveloped, non-military land use includes livestock grazing and outdoor recreation (Tetra Tech Inc, 2001). The BTC area is popular for recreational activities including jogging, camping, bicycling and hunting.

5.2.2 Potential Future Land Use

No changes to the current land use are planned for BTC.

5.2.3 Zoning/Land Use Restrictions

No zoning or land use restrictions are in place for the BTC. Live fire exercises are restricted however to a controlled range. Signs for recreational visitors are posted throughout the training center and adjacent lands when training activities are in progress.

5.2.4 Current Human Receptors

Current human receptors within BTC include farm/range workers, trespassers and recreational visitors (hunting, hiking, off-road vehicles).

5.2.5 Potential Future Human Receptors

Potential future human receptors are the same as the current receptors, and may include farm/range workers, trespassers and recreational visitors.
5.2.6 Beneficial Resources

Beneficial resources at the BTC include recreational activities for visitors and grazing allotments for livestock. Cultural resources have also been identified in the BTC area.

5.2.7 Ecological Profile

The BTC lands provide habitat for many species of birds, mammals, reptiles and amphibians. A 1999-2000 Inventory of fauna found the most commonly sighted species of birds to be the American robin (Turdus migratorius), Townsend's solitaire (Myadestes townsendii), western meadowlark (Sturnella neglecta) and the northern flicker (Colaptes auratus). Commonly sighted mammals include the deer mouse (Peromyscus maniculatus), yellow-pine chipmunk (Tamias amoenus), bushy-tailed wood rat (Neotoma cinerea), black-tailed jackrabbit (Lepus californicus), and Nuttall's cottontail (Sylvilagus nuttalli). Common amphibians include the Pacific chorus frog (Pseudacris regilla) and the Great Basin spadefoot toad (Scaphiopus intermontanus), and reptiles frequently observed include the sagebrush lizard (Sceloporous graciosus), western fence lizard (Sceloporous occidentalis), and the western skink (Eumeoes skiltorianus) (Tetra Tech Inc., 2001). Game species found on BTC include mule deer, pronghorn antelope, American elk, upland game birds, and waterfowl.

Flora typical of the High Lava Plains ecoregional province are found at the BTC, including such native species as western juniper, big sagebrush, bitterbrush, gray and green rabbitbrush, Idaho fescue, and bluebunch wheatgrass. Cheatgrass can also be found at the BTC. Ground cover and tree density vary from open grassland without trees to dense stands of western juniper. Juniper, sagebrush, bitterbrush and native grasses provide forage and habitat for many of the resident and migrant species common to central Oregon. (Tetra Tech Inc., 2001).

Site-specific surveys were conducted for endangered species in 1993 and 2000. No federal-or state-listed threatened or endangered plants, mammals, amphibians, reptiles, and fish or their associated habitats are known to exist at the BTC. No proposed or designated critical habitat exists at BTC (Tetra Tech Inc., 2001).
5.2.8 Demographic

There are no residents within the BTC boundary. According to the official website of City of Redmond, the population of the city is 23,500 in 2006. As of the 2000 US Census, there were 115,367 people and 54,583 households residing in Deschutes County. Crook County includes 19,182 people in 8,264 households (U.S. Census, online source). According to the US Census Geographic Information System (GIS) coverage, a total of 732 persons reside in census blocks within a two-mile radius of the BTC MRS boundary.

5.3 TRANSFERRED RANGE 1 MRS (BTC-001-R-01)

5.3.1 Structures

There are no structures within the Transferred Range 1 MRS. However, numerous structures are present within a two mile radius of the MRS to accommodate the surrounding population.

5.3.2 Utilities

Based on the INRMP (Tetra Tech Inc., 2001) and the ICRMP (Archaeological Investigations Northwest Inc., 2002) no utilities exist within the Transferred Range 1 MRS area. Possible underground utilities may exist adjacent to Powell Butte Highway to the northwest of the MRS area. Consultation with BLM is required before conducting intrusive activities in BTC.

5.3.3 Boundaries

Transferred Range 1 MRS is split down the center by the Deschutes and Crook County line. The northwest corner of the Transferred Range 1 MRS boundary is adjacent to Powell Butte Highway. Undeveloped BLM land used for grazing and/or outdoor recreation occupies the eastern edge of the MRS boundary. The southern boundary of Transferred Range 1 MRS is adjacent to the current Biak military training area.
5.3.4 Security

BTC is open to unlimited public access. No security fences or other measures are in place to limit public access.

5.3.5 Land Use and Exposure Profile

5.3.5.1 Current Land Use/Activities

Land use at Transferred Range 1 includes livestock grazing and recreational activities such as hunting and camping and off-road vehicles.

5.3.5.2 Current Human Receptors

Current human receptors within BTC include farm/range workers, trespassers and recreational visitors (hunting, hiking, off-road vehicles).

5.3.5.3 Potential Future Land Use

Potential future land use is expected to be consistent with current land use.

5.3.5.4 Potential Future Human Receptors

No changes expected.

5.3.5.5 Ecological Receptors

Potential ecological receptors include the species identified in Section 5.2.7 and other species maintaining breeding populations.
5.3.5.6 Munitions Release Profile

Table 5-1 presents a summary of the types of munitions that may potentially exist at the BTC based on information obtained during the HRR. The mechanisms by which the munitions were released into the environment are also presented in this table. MEC resulting from smoke grenades, artillery simulators, and ground and aerial flares may be present in Transferred Range 1.

<table>
<thead>
<tr>
<th>MRS</th>
<th>Potential Munitions</th>
<th>Primary Release Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transferred Range 1</td>
<td>Smoke grenades, Artillery simulators, Ground and aerial</td>
<td>Launched, Thrown, Placed</td>
</tr>
<tr>
<td>(BTC-001-R-01)</td>
<td>flares</td>
<td></td>
</tr>
</tbody>
</table>

5.3.5.7 Maximum Probable Penetration Depth

The munitions associated with Transferred Range 1 MRS are expected to lie on the surface as they are not designed to function as penetrators.

5.3.5.8 Associated Munitions Constituents

As noted in Table 4-1, the MCs associated with these sites could include terephthalic acid and potassium chlorate (smoke grenades), potassium perchlorate, aluminum powder, sulfur, and antimony sulfide (simulators), and illuminating compound including sodium nitrate and magnesium (flares).

5.3.5.9 Transport Mechanisms/ Migration Routes

The primary transport mechanisms and their viability and potential significance at the BTC include the following:
**Erosion:** Some soil erosion occurs by wind, particularly in the thin sandy soils. Due to an arid climate and soil type, however, runoff potential is low. It is likely that wind erosion has been (or may be) a contributor to transporting MC contaminated soils.

**Soil Disturbance:** Surface and subsurface disturbances can lead to transport and migration of MC from one environmental media to another (soil to surface or groundwater or both) through surface water runoff, erosion, and/or infiltration. Although military vehicles have historically been limited to established roads, civilian off-road travel may occur, and soil disturbance is considered to be a potential transport mechanism at the Transferred Range 1 MRS.

**Infiltration:** Precipitation at BTC averages less than 9 inches per year, and MC migration from surface soil to subsurface soil and to groundwater via infiltration is expected to be minimal. Water well data indicates the only known water well on the installation to have a completion depth of 420 feet below ground surface.

### 5.3.6 Pathway Analysis

**Figure 5-2** presents a MEC pathway analysis for the Transferred Range 1 MRS. The primary exposure pathways for human and ecological receptors are handle/tread underfoot of surface MEC, and contact with MEC during intrusive activities.

Whether or not a potentially complete pathway exists depends on the presence of MEC. In order to complete the CSM, the assumption was made that MEC is potentially present. Once the results of the field work are known, the CSM can be modified to reflect whether or not MEC was observed at the MRS.
## Figure 5-2

**Transferred Range 1 MRS MEC Pathway Analysis**

<table>
<thead>
<tr>
<th>Source Area</th>
<th>Access</th>
<th>MEC Location/Release Mechanisms</th>
<th>Activity</th>
<th>Receptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transferred Range 1</td>
<td></td>
<td>MEC at Surface</td>
<td></td>
<td>Authorized Installation Personnel</td>
</tr>
<tr>
<td></td>
<td>Access</td>
<td>Redeposition Erosion</td>
<td>Handle/Tread Underfoot</td>
<td>Authorized Contractors and Range Workers</td>
</tr>
<tr>
<td></td>
<td>Available</td>
<td>MEC in Subsurface</td>
<td>Intrusive</td>
<td>Trespassers and Recreational Visitors</td>
</tr>
<tr>
<td></td>
<td>No Access</td>
<td></td>
<td></td>
<td>Biota</td>
</tr>
</tbody>
</table>

- • Complete Pathway
- ○ Incomplete Pathway
- ● Potentially Complete Pathway
Figure 5-3 presents a MC pathway analysis for the Transferred Range 1 MRS. The primary exposure pathway for human receptors is ingestion and/or inhalation of, or contact with, MC in surface and subsurface soil during intrusive activities. There is some groundwater usage on-site; however, most of the water use is associated with water guzzlers meant to water livestock and wildlife. The groundwater pathway is potentially complete.

The pathway between surface water and biota is considered incomplete since runoff from the site is not expected. The bioaccumulation pathway through game/fish/prey to installation personnel, contractors, and visitors, and biota are potentially complete because hunting is allowed in the MRS. Biota has potentially complete pathways through the potential ingestion of prey/vegetation that may have been exposed to site contaminants.
### Figure 5-3
Transferred Range 1 MRS MC Pathway Analysis

<table>
<thead>
<tr>
<th>Source Area</th>
<th>Source Media</th>
<th>Release Mechanisms</th>
<th>Exposure Media</th>
<th>Exposure Routes</th>
<th>Receptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transferred Range 1</td>
<td>Soil</td>
<td></td>
<td>Surface Soil, Surface Water/Sediment</td>
<td>Inhalation (Dust)</td>
<td>Domestic Animals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Game/Fish/Prey</td>
</tr>
<tr>
<td></td>
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<td>Vegetation</td>
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<td></td>
<td>Authorized Installation Personnel</td>
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<td></td>
<td></td>
<td></td>
<td>Authorized Contractors and Range Workers</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Trespassers and Recreational Visitors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biota</td>
</tr>
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<td>Biota</td>
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</table>

- Complete Pathway
- Incomplete Pathway
- Potentially Complete Pathway
6.0 CONCLUSIONS

The CTT Range/ Site Inventory (e2M, 2003) identified two MMRP sites (Transferred Range 1 and 2) at the BTC that covered 976.82 acres. Of the two original sites identified in the CTT Range/ Site Inventory, only Transferred Range 1 was determined to be eligible for the Active Army MMRP and recommended for further SI investigation. Based on the information collected during the HRR, it was determined that the remaining site, Transferred Range 2, was eligible for the FUDS MMRP.

The HRR process also revealed one potential new site at BTC – Area A. The potential site was created as a result of the BTC installation boundary being revised. Through the HRR process however, it was determined that Area A was not eligible for the Active Army MMRP. HRR research found that the site had no potential for MEC/MC and that it did not meet the Active Army MMRP eligibility cut-off date of 30 September 2002. Area A is therefore not recommended for further evaluation in the Active Army MMRP SI.

Table 6-1 presents a summary of the findings for the three sites evaluated as part of this HRR.

Figure 6-1 shows the HRR modified Transferred Range 1 MRS boundary. The footprint of the MRS increased from 861.48 to approximately 1,108 acres based on historical permit descriptions. Training at the Transferred Range 1 MRS is documented to have started in 1966 and continued through 1992. The operational history of the Transferred Range 1 MRS suggests that the potential for MEC (smoke grenades, artillery simulators and ground and aerial flares) does exist. There is also the potential for MC associated with the previously mentioned munitions types.
### Table 6-1

**Summary of HRR Findings**

<table>
<thead>
<tr>
<th>MRS Name</th>
<th>AEDB-R No.</th>
<th>CTT Reported Acreage</th>
<th>Modified Acreage</th>
<th>Recommendations</th>
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<tbody>
<tr>
<td>Transferred Range 1</td>
<td>BTC-001-R-01</td>
<td>861.48</td>
<td>1,108</td>
<td>MRS acreage should be increased slightly based on historical permits.</td>
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<tr>
<td>Transferred Range 2</td>
<td>BTC-002-R-01</td>
<td>115.34</td>
<td>0</td>
<td>Site is being addressed by FUDS and is not eligible for the MMRP.</td>
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<tr>
<td>Area A</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td>Based on lack of MEC/MC potential and use of the site for military training after 30 September 2002, recommend site does not advance in the MMRP.</td>
</tr>
</tbody>
</table>

Notes: N/A = Not applicable
Note/Reference:

MRS acreage = approximately 1,108 acres

Legend

- MRS Boundary
- Installation Boundary

Military Munitions Response Program
Historical Records Review

Biak Training Center
Deschutes and Crook Counties, Oregon

U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
CONTRACT W912DR-06-C-0029

FIGURE 6-1

Biak Training Center
MRS Boundary

Date: June 2008
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7.0 REFERENCES


Bureau of Land Management, 15 December, 1966, Special Land Use Permit, Biak Training Center, Department of the Interior.

Bureau of Land Management, 6 September, 1977, Special Land Use Permit, Biak Training Center, Department of the Interior.

Bureau of Land Management, 2 February, 1995, Special Land Use Permit, Biak Training Center, Department of the Interior.

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U.S. Army Center for Health Promotion and Preventative Medicine, July 2001, *Site Assessment Survey No. 38-EH-5048B-01, Oregon National Guard*.