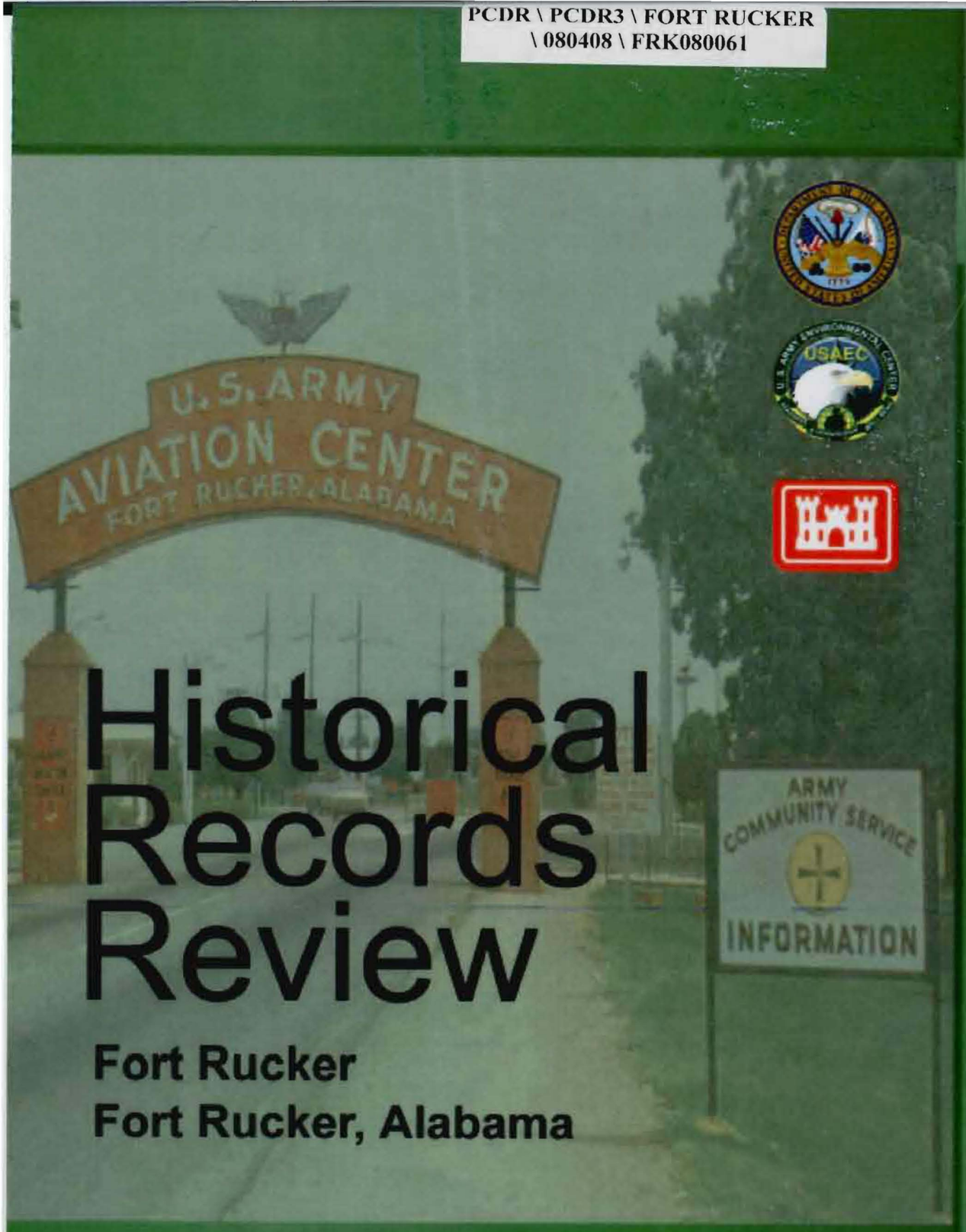

Historical Records Review

Fort Rucker
Fort Rucker, Alabama

MALCOLM PIRNIE

FINAL
HISTORICAL RECORDS REVIEW
FORT RUCKER, ALABAMA

July 2004

Prepared for:

U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT
P.O. Box 1715
Baltimore, Maryland 21203-1715

Prepared by:

MALCOLM PIRNIE, INC.
300 East Lombard Street, Suite 610
Baltimore, Maryland 21202

FINAL
HISTORICAL RECORDS REVIEW

FORT RUCKER

DoD Contract Number: DACA31-00-D-0043

Reviewed and Approved by:

_____

Gregory P. Matthews, P.E., Vice President
Program Officer
Malcolm Pirnie, Inc.

_____

John Nocera, P.E.
Project Manager
Malcolm Pirnie, Inc.

Malcolm Pirnie, Inc. prepared this report at the direction of U.S. Army Corps of Engineers (USACE). This document should be used only with the approval of the USACE. This report is based, in part, on information provided in other documents and is subject to the limitations and qualifications presented in the referenced documents.

JULY 2004

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TABLE OF ACRONYMS

Acronym	Definition
°F	Degrees Fahrenheit
AEC	Army Environmental Center
ARS	Advance Range Survey
ASR	Archives Search Report
ATG	Anti-Tank Grenade
ATR	Anti-Tank Rocket
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CSM	Conceptual Site Model
CTT	Closed, Transferring, and Transferred
D.C.	District of Columbia
DERP	Defense Environmental Restoration Program
DMM	Discarded Military Munitions
DNT	Dinitrocellulose
DoD	Department of Defense
FUDS	Formerly Used Defense Site
FY	Fiscal Year
GIS	Geographic Information System
GR	Grenade Range
HEAT	High Explosive Anti-Tank

TABLE OF ACRONYMS

Acronym	Definition
HRR	Historical Records Review
IFL	Infiltration Course
IRP	Installation Restoration Program
MC	Munitions Constituents
MD	Maryland
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MPI	Malcolm Pirnie Incorporated
NARA	National Archives and Records Administration
NCP	National Contingency Plan
NFA	No Further Action
PA	Preliminary Assessment
PETN	Pentaerythrite Tetranitrate
POC	Point of Contact
RG	Record Groups
RG FRAG	Rifle Grenade Fragmentation Range
SARA	Superfund Amendment and Reauthorization Act
SI	Site Inspection
SWMU	Solid Waste Management Unit
TNT	Trinitrotoluene
U.S.	United States

TABLE OF ACRONYMS

Acronym	Definition
USACE	United States Army Corps of Engineers
USATHMA	United States Army Toxic and Hazardous Materials Agency
U.S.C	United States Code
U.S.D.A.	United States Department of Agriculture
UXO	Unexploded Ordnance
VA	Virginia
WP	White Phosphorus

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.

Military 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 pads, impact areas, electronic scoring sites, buffer zones with restricted access and exclusionary areas, and airspace areas designated for the military used in accordance with regulations and procedures prescribed by the Administrator of the Federal Aviation Administration.

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.

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] or royal detonating explosive) present in high enough concentrations to pose an explosive hazard.

Operational Range – A military 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.

Other Than Operational Range – Encompasses closed, transferred and transferring ranges.

Transferred Range – A military 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 military 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 used 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 INTRODUCTION

The Department of Defense (DoD) has established the Military Munitions Response Program (MMRP) under the Defense Environmental Restoration Program (DERP) to address defense sites with munitions and explosives of concern (MEC) (including unexploded ordnance [UXO] and discarded military munitions [DMM]), and munitions constituents (MC). The U.S. Army's inventory of Closed, Transferred and Transferring (CTT) military ranges and sites has identified sites eligible for action under the MMRP. Properties classified as operational ranges are not eligible and, therefore, are excluded under the MMRP program. This report presents the result of the MMRP Historical Records Review (HRR) conducted at Fort Rucker in Dale County, Alabama.

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 (NCP) (40 Code of Federal Regulations 300) as authorized by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 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 Phase 3 CTT Range Inventory Report for Fort Rucker, completed in October 2003, marks the completion of the Preliminary Assessment (PA) phase of work under CERCLA. The Site Inspection (SI) report is part of the CERCLA process and will complete the PA/SI requirement for the MMRP eligible sites.

1.1 PURPOSE/SCOPE

The purpose of the HRR is to perform a limited-scope records search to document historical and other known information for MMRP sites at Fort Rucker. The HRR will supplement the inventory information and support the Technical Project Planning designed to facilitate decisions 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 Fort Rucker is guided by a mixture of federal, state, and local laws, as well as DoD and Army regulations and guidance. The picture is further complicated by debates at the national level between the DoD and the United States Environmental Protection Agency over key issues that include uncertainty of the final structure of the MMRP. However, key legislative and administrative precedents to date will undoubtedly 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.

National Defense Authorization Act (FY02) (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 contain MEC and 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.

The September 2001 Management Guidance for the DERP and the Defense Authorization Act 2002, 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.

1.3 BACKGROUND

As stated above, the Phase 3 Range Inventory for Fort Rucker 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 the MMRP eligible sites. The following paragraphs summarize the results of the Range Inventory at Fort Rucker and present the process for conducting 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. 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.

Mr. Joe Webers, the Installation Plans and Ops Specialist for Fort Rucker, completed the ARS Phase 1 inventory survey for Fort Rucker in November 2000. Two records for CTT ranges at Fort Rucker were found in the database. The CTT ranges listed in the ARS included: an Anti-Tank Rocket/Grenade Range (54 acres) and the Lake Tholocco Pistol Range (0.9 acres), both considered closed. The Fort Rucker ARS data was submitted to AEC and compiled into a master database of Army installations.

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 Army divided the detailed follow-on

inventory into two phases. The Phase 2 Inventory addressed operational ranges, while Phase 3 covered CTT ranges and sites with UXO, DMM, or MC. Malcolm Pirnie, Inc. (MPI) reviewed the U.S. Army Operational Range Inventory Information/Schedule List and found that a Phase 2 Inventory for Fort Rucker was conducted in the spring of 2001 by AEC. The results of the operational range inventory delineate the operational range boundaries, while the remainder of the property was designated as other than operational property by default.

In October 2003, the Phase 3 Inventory was completed for Fort Rucker by MPI. The site visit was conducted on February 6 and 7, 2002. The Final CTT Range/Site Inventory Report for Fort Rucker was submitted to AEC in October 2003. Two closed ranges were identified at Fort Rucker: the Anti-Tank Rocket/Grenade Range and the Lake Tholocco Pistol Range. Additional information on the results of the Phase 3 Range Inventory is discussed in Sections 2.2 and 3.3.

1.3.2 Site Inspection

The primary goal of the MMRP SI is to collect the minimum amount of information necessary to make one of the following decisions: 1) whether a Remedial Investigation/Feasibility Study is required at a site, 2) whether an immediate response is needed, and 3) whether the site qualifies for no further action. The installation-wide SI at Fort Rucker will address both MEC as well as MC issues for the MMRP eligible sites. The secondary goal of the SI is to collect information to develop better Cost to Complete estimates and prioritization for the MMRP eligible sites.

1.4 Report Organization

This SI has the following sections:

Section 1 – Introduction

Section 2 – Site Description

Section 3 – Data Collection and Document Review Process

Section 4 – Summary of Findings

Section 5 – Conceptual Site Model

Section 6 – Conclusions

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

Archives Searched/Data Sources (Appendix A)

Data Abstracts (Appendix B)

Interview Records (Appendix C)

Munitions Technical Data Sheets (Appendix D)

2 SITE DESCRIPTION

2.1 INSTALLATION DESCRIPTION

Fort Rucker is located in southeast Alabama, approximately 20 miles northwest of Dothan, in Dale (majority of the installation) and Coffee Counties (Map 2-1). The installation is approximately 160 miles east of Mobile, Alabama, 90 miles southwest of Columbus, Georgia, 80 miles southeast of Montgomery, Alabama, 10 miles east of Enterprise, Alabama, and a half-mile north of Daleville, Alabama. Currently, the installation encompasses nearly 98 square miles of land comprised of airfields, stagefields and tactical sites, as well as leased land for rotary-wing pads and fixed-wing airstrips. Fort Rucker is bordered to the north and west by agricultural land, to the south by the towns of Daleville and Enterprise, and to the east by the town of Ozark.

The current mission of the Army Aviation Center and Fort Rucker, Alabama, is to develop the aviation force for its worldwide mission. This includes developing concepts, doctrine, organization, training, leader development, materiel, and soldier requirements. It also provides resident and nonresident aviation maintenance, logistics and leadership training in support of the total force and foreign nations for the sustainment of joint and combined aviation operations. Fort Rucker is the home of Army Aviation, including the 1st Aviation Brigade, Aviation Training Brigade, Army Aviation Center Noncommissioned Officer Academy and the Aeromedical Center.

2.2 SITE DESCRIPTIONS

Two MMRP eligible sites were identified on Fort Rucker during the Phase 3 Army CTT Range Inventory. These sites are the Anti-Tank Rocket/Grenade Range and Lake Tholocco Pistol Range as illustrated in Map 2-1 and discussed in detail in Section 3.3. The information obtained and descriptions of these sites that resulted from the Phase 3 Inventory are presented below:

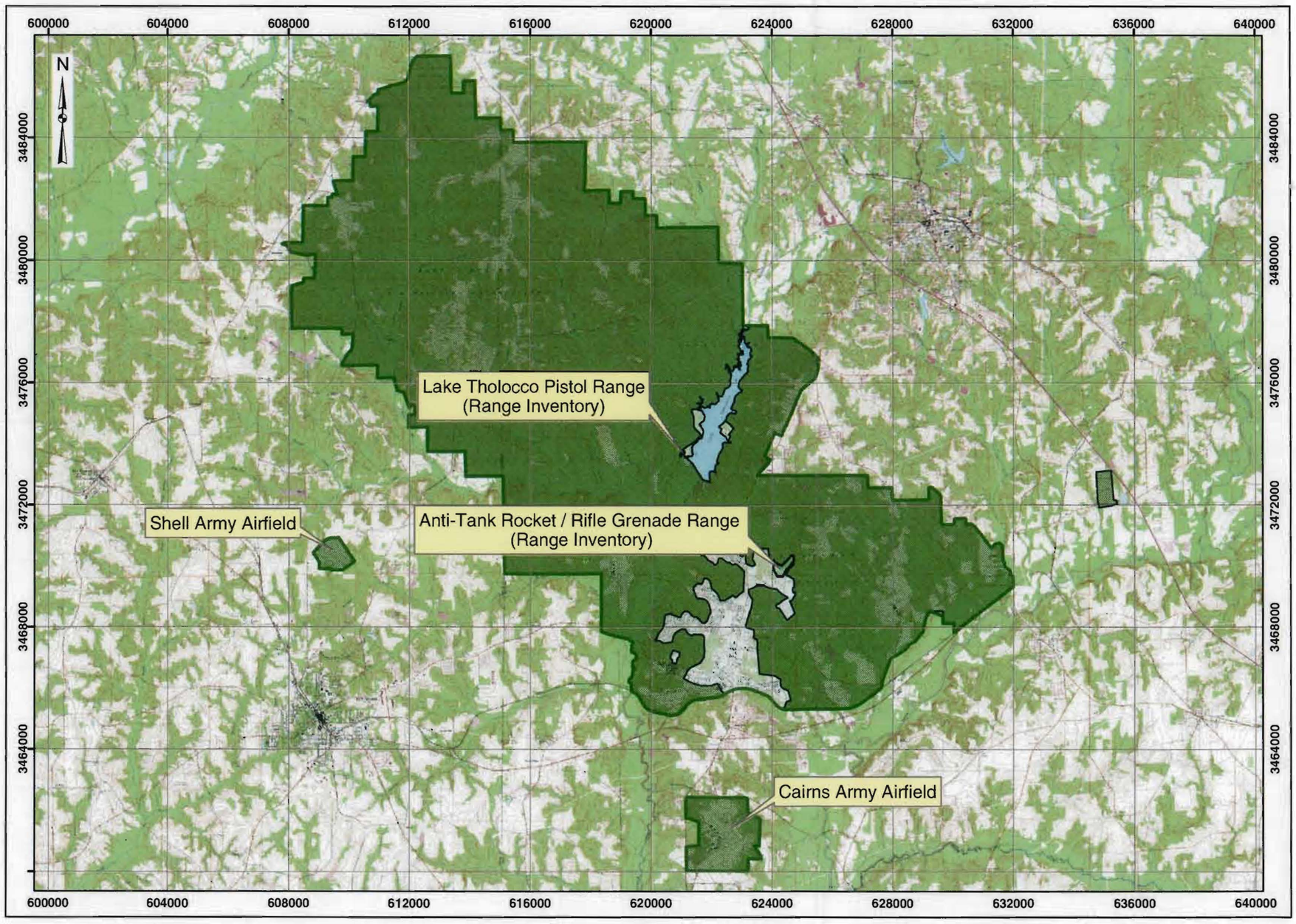
Anti-Tank Rocket/Grenade Range: The Anti-Tank Rocket/Grenade Range (Restoration Management Information System (RMIS) Range ID: FTRU-001-R-01) is 54 acres and located in the southern portion of the installation, northeast of the cantonment area. This area contains a number of ranges as the Anti-Tank Rocket/Grenade Range site for anti-tank rocket, hand grenade, rifle grenade, and infiltration course training. Range fans and other ranges extend into an area identified as the operational range area, which is to the east of the site and is not included in this HRR. However, these ranges may become closed under decision of the Army and subsequently included in the SI process.

Seven building/structures lie within the boundaries of the Anti-Tank Rocket/Grenade Range. In 1952, an 18-hole golf course was built over a large portion of the closed range. The golf course was modified with the construction of nine more holes in 1993, extending the golf course further into the range. Although no records of ordnance were found indicating the extent of the munition debris in the area, accounts of personnel encountering ordnance is common for the Anti-Tank Rocket/Grenade Range area. A driving range, built in 1993, is located on the eastern side of the former range, adjacent to a small berm as shown in Figure 2-1. A maintenance facility also resides on the range location on the west side of the small berm.

Figure 2-1: Driving Range and Berm Location

Lake Tholocco Pistol Range: The Lake Tholocco Pistol Range (RMIS Range ID: FTRU-001-R-02) is 0.9 acres and located in a central portion of the installation. The range is situated along the west side of Lake Tholocco with the firing direction being directed to the south. Munitions fired at the pistol range were restricted to small arms. Nearby structures include a recreational facility

also including water activities. This area is outside the cantonment area and located within a partially developed area of Fort Rucker. No UXO or DMM have been identified at the Lake Tholocco Pistol Range; however, MC lead projectiles from small arms have been confirmed at this site.



Historical Records Review
Fort Rucker, AL

MALCOLM PIRNIE

Map 2-1
Range Inventory Data

Legend

- Installation Boundary

CTT Range Area (Inventory)

- Operational Range Area
- Closed Range
- Transferring
- Transferred
- Non Range, Non UXO-DMM-MC Area

2,000 0 2,000 4,000 6,000 Meters

Data Source: USGS. 7.5 Minute Series
Topographic Survey Map

Victoria, AL, 1981	New Brockton, AL, 1981
Goodman, AL, 1960	Brundidge, AL, 1981
Enterprise NE, AL, 1981	Enterprise, AL, 1981
Ariton, AL, 1981	Ozark, AL, 1981
Daleville, AL, 1980	Skipperville, AL, 1969
Ewell, AL, 1969	Pinckard, AL, 1981

Coordinate System: UTM Zone 16N
Datum: NAD 1983
Units: Meters

Contract: DACA31-00-D-0043
Edition: Draft Historical Records Review
Date: April 2004

3 DATA COLLECTION AND DOCUMENT REVIEW PROCESS

Several primary sources of information were researched as part of the data collection effort for the HRR. The types of data included:

1) National and regional archives records groups (RG) search;

2) Installation site visit;

3) Review of administrative records for adjacent Formerly Used Defense Site (FUDS) properties;

4) Interviews; and

5) Review of Phase 3 Inventory Reports and backup data

3.1 DATA COLLECTION METHODS

3.1.1 National and Regional Archives

Relevant archival record repositories and record groups were selected based on guidance set forth in the *"Technical/Regulatory Guideline for Munitions Response Historical Records Review,"* prepared by the Interstate Technology & Regulatory Council Unexploded Ordnance Team. Only the record repositories that have historically proved to be most useful were searched. The archival repositories and RGs which were searched for this HRR are listed below.

National Archives, National Archives and Records Administration, College Park, Maryland (MD), and Regional Archives, Atlanta, Georgia

- RG 74 – Records of the Bureau of Ordnance
- RG 77 – Records of the Office of the Chief of Engineers
- RG 92 – Records of the Office of the Quartermaster General
- RG 107 – Records of the Office of the Secretary of War
- RG 121 – Records of the Public Buildings Service
- RG 153 – Records of the Army Adjutant General's Office
- RG 156 – Records of the Chief of Ordnance

- RG 175 – Records of the Chemical Warfare Service
- RG 269 – Records of the General Service Administration
- RG 270 – Records of the War Assets Administration
- RG 291 – Records of the Property Management and Disposal Service
- RG 336 – Records of the Chief of Transportation
- RG 338 – Records of the U.S.Army Command
- RG 393 – Records of the U.S. Army Continental Commands
- RG 407 – Records of the Adjutant General's Office

3.1.2 Web Search

In addition to the data sources listed above, MPI also conducted research on the Internet to supplement the archive data and information received from the installation. The list below presents the web sites that were searched for information on Fort Rucker. Information collected from the web search is presented in Section 3.2.

- http://www-rucker.army.mil/
- Department of Defense Archives www.defenselink.mil/pubs/archive.html
- Department of Defense Base Structure Report http://www.defenselink.mil/news/Jun2003/basestructure2003.pdf -
- National Imagery and Mapping Agency, Bethesda, MD http://www.nima.mil/
- U.S. Army Center of Military History, Fort McNair, Washington, District of Columbia (D.C.) http://www.army.mil/cmh-pg/
- U.S Army Corps of Engineers Office of History, Alexandria, Virginia (VA) http://www.hq.usace.army.mil/history/
- U.S Army Corps of Engineers Topographic Engineering Center , Alexandria, VA http://www.tec.army.mil/
- U.S. Army Military History Institute, Carlisle, Pennsylvania http://carlisle-www.army.mil/usamhi/

- U.S. Army Technical Center for Explosives Safety, McAlester, Oklahoma http://mcalestr-www.army.mil/
- U.S. Army Test and Evaluation Command http://www.atec.army.mil/
- ERIS Database Queries https://aecwww2.apgea.army.mil/pls/eris/eris.pmain.erishome

3.1.3 Site Visit

A site visit to Fort Rucker was conducted on February 10 and 11, 2004 by Mr. Al Larkins and Mr. Michael Garnes of MPI. The site visit was conducted to review relevant installation records to complete the HRR and develop a Conceptual Site Model (CSM) for Fort Rucker. While on-site, Mr. Larkins and Mr. Garnes reviewed environmental reports and documents for Fort Rucker, including relevant solid waste management unit (SWMU) data. Interviews with installation personnel and other sources from the surrounding community were also conducted. A summary of the applicable information collected during the site visit is presented in Sections 3.2.1 through 3.2.4. Results of the interviews are presented in Section 3.2.5.

3.1.4 Existing ASR and FUDS Information Review

Fort Rucker has 19 FUDS associated with the installation; however, none of the FUDS were located near the two closed range sites to provide any relevant data. Existing ASR data was not available to extract relevant historical data for the installation.

3.2 ARCHIVAL/HISTORICAL RECORDS COLLECTED

The following subsections present the data collected from the various sources outlined in Section 3.1. Although additional records may have been reviewed from the sources presented above, the records listed in this section represent the data that was determined to be applicable to development of the HRR and CSM at Fort Rucker.

3.2.1 Documents/Reports

Table 3-1 presents a list of documents that provided relevant information for the former range and training areas within Fort Rucker.

Table 3-1: Summary of documents and relevant information.

Document Name	General History	Munitions Use	Removal Actions	MC
Geophysical Summary Report, SWMU 2D, Closed Sanitary Landfill. Fort Rucker, Alabama. October 2003. Prepared for the U.S. Army Corps of Engineers (USACE).	X		X	
Installation Assessment of Fort Rucker, AL. February 1982. Prepared for the US Army Toxic and Hazardous Materials Agency (USATHMA).	X	X	X	
Integrated Natural Resources Management Plan 2001-2005 for Fort Rucker, Alabama. February 2001. Natural Resources Branch Operations and Maintenance Division Directorate of Public Works	X			

3.2.2 Archival Records

3.2.2.1 Correspondence (Historic)

- Letter. Subject: Training Aids, Camp Rucker, Alabama. From Colonel, A.G.D., Adjutant General L.B. Clapham to Commanding General, Army Ground Forces, Attention G-3 (Colonel Jones), Post Office Building, Atlanta, Georgia, April 9, 1942.

- Memorandum. Subject: Training Aids. From Major, G.S.C., Secretary General Staff, R.A. Hewitt to Brigadier General G.V. Franke., Office of the Chief of Staff, Headquarters, Army Ground Forces, Army War College, Washington D.C., April 15, 1942.

- Letter. Subject: Construction of Training Aids. From Lt. Col., G.S.C., Chief, Training Branch Stewert Lewis to Commanding Officers, Generals, All Posts and Stations, November 18, 1942.

- Memorandum. Subject: Training Aids, Cp Maxey, Texas. From G-3, To Gn Engr, C/S, AG., February 14, 1943.

- Letter. Subject: Additional Training Aids. From Colonel, Q.M.C., Commanding, Hall S. Crain, Jr. To Commanding General, Forth Service Command, Atlanta, Georgia, May 5, 1943.

- Letter. Subject: MCA Line Item 217, Industrial and Waste Treatment Facilities, From Assistant Adjutant General Norman E. Powell, DAC To Commander Army Training and Doctrine Command, November 30, 1977.

- Memorandum. Subject: Military Construction Project Data. Ammo Storage Facilities. May 1, 1978.

3.2.2.2 Books (Historic)

- The Origins of Fort Rucker. Written by Val L. McGee. Published by The Dale County Historical Society, Inc., Ozark, Alabama. 1987.

3.2.3 Maps/Drawings

- Range Area. Ozark Triangular Division Camp, Camp Rucker, Alabama. July 15, 1945.

- Ranges and Training Areas. Post Utilities Office, Engineering Section, Camp Rucker, Alabama. June 26, 1951.

- Daleville, Alabama. Army Map Service, Corps of Engineers. February 1952.

- Daleville, Alabama. Army Map Service, Corps of Engineers. March 1952.

- Ozark, Alabama, Dale County. Army Map Service, Corps of Engineers. March 1952.

- Fort Rucker General Layout Plan. Office of Post Engineer, Fort Rucker, Alabama. November 12, 1952.

- Daleville, Alabama, Southwest/4 Ozark 15' Quadrangle. 1960.

- Ozark, Alabama, Northwest /4 Ozark 15' Quadrangle. 1960.

- Ozark, Alabama, Northwest /4 Ozark 15' Quadrangle. 1960.

- Daleville, Alabama, Southwest /4 Ozark 15' Quadrangle. 1980.

- Enterprise Northeast, Alabama. Army Map Service, Corps of Engineers. July 1962.

- Daleville, Alabama. Army Map Service, Corps of Engineers. February 1963.
- Fort Rucker Special Overprint. July 1995.
- Fort Rucker Crash Rescue Map.
- Fort Rucker Golf Clubhouse. Area Engineer-U.S. Army Corps of Engineers, Fort Rucker, Alabama.
- Fort Rucker Military Installation Map. February 2001.

3.2.4 Photographs/Aerial Photographs

- Camp Rucker, Alabama, 81st Division. March 13, 1943 Aerial Photo. Photo by T/3 Monroe L. Grigg, 164th Signal Photo Company.
- Lake Tholocco. November 17, 1955.
- Aerial View of the Enlisted Men's housing units under construction. November 1957.
- Camp Rucker and Vicinity. November 1946

3.2.5 Interviews

The following interviews were conducted to collect information for the HRR. In addition, Mr. John Nocera from MPI visited the Mobile District office for any additional information regarding the closed ranges at Fort Rucker. Interview records from these interviews are included in Appendix C.

Fort Rucker Environmental Department – The data collection team interviewed Mr. Jim Swift, the Installation Restoration Program Manager (IRP), on February 10, 2004. Mr. Swift has been working at Fort Rucker for approximately 21 years. He provided the team access to environmental reports pertaining to the current installation. Mr. Ken Eisele was the primary point of contact (POC) for the Phase 3 Range Inventory and Mr. Swift the POC for the data collection portion of the SI.

Fort Rucker Engineering Department – The data collection team interviewed Mr. Ron Leatherwood, Head of Master Planning. Mr. Leatherwood has been working at Fort Rucker for approximately 27 years. He provided the team access to historical and current installation maps. Mr. Leatherwood also provided direction in obtaining soil boring logs and utility information near the two CTT sites under investigation.

Fort Rucker Natural Resources Department – The data collection team interviewed Mr. Delarie Parmer, Chief of Fort Rucker's Natural Resources Branch. Mr. Parmer has worked on the installation for over 20 years and provided the team with the Integrated Natural Resources Management Plan and recollected an isolated ordnance incident when a grenade was found northeast of the Anti-Tank Rocket/Grenade Range area during a timber sale. The ordnance was later determined by Army personnel to have been brought to the site through the movement of soil from an unknown location.

Fort Rucker Range Control – The data collection team interviewed Mr. Joe Weber, the Range Control Officer. Mr. Weber stated the Lake Tholocco Pistol Range closed in 1987, a year after his employment on the installation, due to baffle deterioration, which resulted in safety concerns. He was not familiar with the Anti-Tank Rocket/Grenade Range. Mr. Weber could not produce any explosive ordnance disposal incident reports for either of the two sites.

Fort Rucker Planning Office – The data collection team interviewed Mr. Mike Maxwell, Chief of Master Planning. Mr. Maxwell has worked on the installation for almost 30 years and was familiar with previous activities at the former ranges and had in his possession historic maps and aerials of Fort Rucker.

Fort Rucker Real Property – The data collection team interviewed Ms. Marlene Reseckler. Ms. Reseckler has worked at the installation for 25 years and has been

involved with real property for 20 years. Ms. Reseckler identified the construction dates of the golf course using facility cards. However, she had no information pertaining to the Lake Tholocco Pistol Range or the Anti-Tank Rocket/Grenade Range.

Fort Rucker Aviation Museum – The data collection team interviewed Mr. Steven Maxham. Mr. Maxham provided historic arerials of the installation and his knowledge of the installation. Mr. Maxham had very little information regarding the two ranges.

Ozark-Dale County Public Library – The data collection team visited the local public library for any additional information regarding Fort Rucker and the two closed ranges. Some general historical information was available; however, information on ranges used at the installation was not discussed.

Southern Star Newspaper - The data collection team interviewed Mr. Joe Adams, Southern Star Newspaper Editor. Mr. Adams has knowledge of historical activities at Fort Rucker; however, had no information regarding the two closed ranges.

3.3 PHASE 3 ARMY RANGE INVENTORY RESULTS

The purpose of the *Closed, Transferring, and Transferred Range/Site Inventory Report for Fort Rucker, Malcolm Pirnie, October 2003* was to identify CTT ranges/sites that are not within the operational range training areas of Fort Rucker. A description of the work conducted during the Phase 3 Range Inventory is presented in Section 1.3.1. Results from the inventory are presented in the site descriptions detailed in Section 2.2

3.4 SUMMARY OF PREVIOUS INVESTIGATIONS

Based on the data repositories reviewed for the HRR, the following previous investigations were identified which contained information pertaining to munitions use and/or relevant environmental data at Fort Rucker.

Geophysical Summary Report for SWMU 2D - October 2003.

This report documents initial investigation for the limits of waste at the closed sanitary landfill currently identified as SWMU 2D, located approximately 1.5 miles south and down gradient of the Anti-Tank Rocket/Grenade Range. Studies are being performed to provide data on the limits of waste and list potential fill materials to determine the potential for contamination of the soil/groundwater matrix. Soil boring logs and groundwater monitoring wells installed in support of this data collection process may provide insight for the nearby Anti-Tank Rocket/Grenade Range. Soil characterization and groundwater depths better identify MC migration, and sampling data provides background data for statistical analysis of downgradient soil and groundwater sampling.

Installation Assessment of Fort Rucker – February 1982

This report was generated by the USATHMA and marked the initial stage of the IRP. This report consists of a records search conducted in 1979, and the Installation Assessment Report published in February 1982. In this report, information regarding the various weapons and artillery training that occurred within the original boundaries of the installation was briefly mentioned. According to information in this report, Fort Rucker originally had a target area encircled by a number of various infantry training ranges prior to 1955. Later it was decided to move all ranges and firing points to the current location in the northern parcel of the installation.

Integrated Natural Resources Management Plan. - February 2001

This report guides implementation of the natural resources program on Fort Rucker from 2001 through 2005. The program conserves Fort Rucker's land and natural resources and helps ensure compliance with related environmental laws and regulations. The document identifies the major components of the natural habitat and the installation mission to maintain or make improvements to these areas. Although there are no maps to identify the location of characterized installation lands, the descriptions provide data used to

identify these resources, such as the use of tree stands that provide local longleaf pine for timber sales. Timber is harvested in the location of the Anti-Tank Rocket/Grenade Range. The Lake Tholocco Pistol Range sits adjacent to Lake Tholocco, a recreational and training location and also the home of native species of plant and animal. Identifying these resources identifies potential receptors for MEC and MC migration.

4 SUMMARY OF FINDINGS

4.1 IN DEPTH CHRONOLOGICAL HISTORY OF INSTALLATION

The U.S. Department of Agriculture (USDA) began acquiring poor farming land in the 1930's to help alleviate struggling farmers during the Great Depression. The USDA purchased the land with the intent to convert the land into a game and bird refuge, which caused local rumors and the nickname "Bear Farm." Purchased and officially named the Pea River Land Use Project, the land was soon considered for military occupation. In the summer of 1940, money was allocated for the construction of the Ozark Triangular Division Camp. The camp was constructed on 27,996 acres of land. In 1943 the facility was named Camp Rucker to honor General Edmund Winchester Rucker.

Land was purchased for the construction of present-day Cairns Army Airfield; however, the installation originally served as an infantry training ground and housed artillery, tank, anti-aircraft, medical, and quartermaster troops. The end of World War II brought Camp Rucker to an inactive standby status until conflicts with Korea resulted in the reopening of the camp for infantry training. In March of 1955, Camp Rucker was officially designated as the U.S. Army Aviation Center and soon after was a permanent U.S. military fort and renamed Fort Rucker.

The sixties brought growth to Fort Rucker to accommodate the increasing demands for trained aviators in response to the greater use of air power in Vietnam. Shell Field opened in 1965 as a heliport for rotary-wing training to replace the original use as a fixed-wing airfield. Additional off-post airfields were later acquired totaling approximately 1,220 acres.

The installation currently occupies approximately 57,772 acres of land with another 1,719 acres leased. Fort Rucker has continued the mission to maintain and operate facilities and provide services and materiel to support the rotary and fixed-wing pilot for

Army aviation, basic rotary-wing training for Air Force student pilots, aviation enlisted specialists, and related test activities. A chronological list of significant historical events is provided in Table 4.1 below:

Table 4-1: Timeline of Significant Events

Time Period	Significant Events
1930-1940	• 1935: USDA purchases the land from farming communities.
1940-1950	• 1940: Pea River Land Use Project is bought by the Army. • 1942: Ozark Triangular Division Camp is established. • 1943: The installation is renamed Camp Rucker. • 1946: The installation is put in inactive standby.
1950-1960	• 1950: Camp Rucker reopens from inactive standby for the Korean War. • 1955: Camp Rucker is designated the U.S. Army Aviation Center and becomes a permanent U.S. military installation, Fort Rucker.
1960- present	• Fort Rucker expands for increased need of trained aviators during the Vietnam War and maintains mission as an aviation training center for the Army.

4.2 MMRP Site Findings

Additional information regarding Fort Rucker, the Anti-Tank Rocket/Grenade Range, and the Lake Tholocco Pistol Range was obtained through the research performed for this HRR. As a result of this research, the Anti-Tank Rocket/Grenade Range was shown to contain a large number of ranges previously not recognized during the Phase 3 Inventory. The Phase 3 Inventory outlines an area originally calculated as 54 acres; however, after laying the Anti-Tank Rocket/Grenade Range boundaries into the geographic information

system, the acreage totaled 66.9 acres. In addition, a 3-acre parcel of land east of the original area was not originally included in the Phase 3 Inventory that is other than operational range designated property as shown in Map 4-2, marked in yellow as CTT Expanded Area. An additional area, the Infiltration/Grenade Range consists of 76.3 acres of other than operational range area southeast of the Anti-Tank Rocket/Grenade Range was also identified. This Site was added to the MMRP as a result of the HRR investigation and was separated from the Anti-Tank Rocket/Grenade Range because of the geographic separation from the CTT Range Inventory Site location. The original range area is illustrated in a 1945 map which shows overlapping range fans for 19 ranges that all generally target a common area within the circle of infantry training ranges. Many of the ranges identified in the 1945 map are located within the previously identified operational range area, eliminating these ranges from this HRR investigation. The .22 Caliber Target Butt is a 2.4-acre small arms range located in a central location of the cantonment area. This range is illustrated on a 1944 map which shows numerous ranges near the cantonment area. Three grenade and bayonet courts identified as A-Grenade and Bayonet Court, B-Grenade and Bayonet Court and C-Grenade and Bayonet Court, have also been identified on the 1944 installation map. The three grenade and bayonet courts have an area equal to 26.8 acres, 4.6 acres and 7.6 acres respectfully, while the C-Grenade and Bayonet Court extends an additional 11.9 acres into operational range area. The MMRP site boundaries were formulated from the Phase 3 Army CTT Range Inventory and the developments resulting from this HRR process as shown in Map 4-4 and discussed in Section 2.2. The findings are presented below:

4.2.1 Anti-Tank Rocket/Grenade Range

The Anti-Tank Rocket/Grenade Range Site is located northeast of the cantonment area, over the present day golf course and driving range (Map 4-2) and occupies approximately 66.9 acres of other than operational range designated area. The Anti-Tank Rocket/Grenade Range is made up of three distinct Sub-Sites. The individual Sub-Sites include: Anti-Tank Rocket Range No. 1 (ATR No. 1), Anti-Tank Grenade Range No.1 (ATG No.1), an Unnamed Range as illustrated in Map 4-2. According to information presented in the Phase 3 Army CTT Range Inventory, the Anti-Tank Rocket/Grenade

training occurred at Fort Rucker from approximately 1942 through 1951. Since range specific usage dates are not available, it is assumed that the Anti-Tank Rocket/Grenade Range was used for artillery training during this nine-year period. Although information regarding the frequency of use was not available, it is assumed, based on information found in various historical sources (documents, communications, and newspaper articles) and the climate in this area, that training occurred year round.

The three ranges are part of a large number of ranges found east of the original Range Inventory Site and are 66.9 acres in size, as shown in Map 4-2. Table 4-2 lists the acreage for each site. ATR No. 1 is west of Combat Road and located within the present day golf course. The range is approximately 86.9 acres of land (38.3 acres other than operational range, including the range fan which points north from apparent firing locations). ATG No.1, also west of Combat Road, is approximately 36 acres (20.8 acres other than operational range, including the range fan that overlaps with the fan of ATR No. 1). Holes 19 and 27 of the golf course run through the fan of this range, which points northwest from the firing line. The Unnamed Range is west of Combat Road and directly east of ATR No. 1, partially integrated with ATR No. 1. This range is approximately 7.8 acres and may have been used for similar activities as ATR No. 1.

Table 4-2: Total Anti-Tank Rocket/Grenade Range Acreage

Anti-Tank Rocket/Grenade Range Acreage				
	ATR No. 1	ATG No. 1	Unnamed Range	**Total**
Range Inventory	54	N/A	N/A	**54**
HRR	38.3	20.8	7.8	**66.9**

A visual survey of the Anti-Tank Rocket/Grenade Range resulted in the discovery of a MII practice rifle grenade, Figure 4-1. The projectile did not contain explosives; however, the result of finding practice ordnance confirms that this area was used for infantry training and ordnance still exists in the range area. Map 4-2 illustrates the location of this finding.

Figure 4-1: Practice Rifle Grenade

4.2.2 Infiltration/Grenade Range

The Infiltration/Grenade Range is adjacent to, but not contiguous with the Anti-Tank Rocket/Grenade Range, over the present day driving range (Map 4-2) and occupies approximately 76.3 acres of other than operational range designated area. The Infiltration/Grenade Range is made up of three distinct Sub-Sites. The individual Sub-Sites include: Infiltration Range No. 2 (IFL No. 2), Grenade Range No. 1 (GR No. 1) and Rifle Grenade Fragmentation Range (RG FRAG) as illustrated in Map 4-2. According to information presented in the Phase 3 Army CTT Range Inventory, the Infiltration/Grenade training occurred at Fort Rucker from approximately 1942 through 1951. Since range specific usage dates are not available, it is assumed that the Infiltration/Grenade Range was used for artillery training during this nine-year period. Although information regarding the frequency of use was not available, it is assumed, based on information found in various historical sources (documents, communications, and newspaper articles) and the climate in this area, that training occurred year round.

As the Anti-Tank Rocket/Grenade Range is subdivided, the three ranges are part of a large number of ranges found east of the original Range Inventory Site and are 76.3 acres in size, as shown in Map 4-2. Table 4-3 lists the acreage for each site. IFL No. 2 is east of Combat Road and west of ATR No. 1. IFL No. 2 is approximately 1087 acres, including the range fan that extends to the east across the driving range and into the operational range designated area; however, 10.2 acres are within the other than operational range designated area. IFL No. 2 was a live-fire basic training obstacle course that prepares soldiers for field advancement under enemy fire. GR No. 1 is approximately 41 acres (30.3 acres other than operational range, based on the blast and fragmentation radius for a hand grenade in all directions from the throwing point). The range is located south of IFL No. 2. RG FRAG is approximately 77 acres (35.8 acres other than operational range, including the blast area perimeter of the central firing location). This range sits adjacent to GR No. 1, so their blast radius fans intersect.

Table 4-3: Total Infiltration/Grenade Range Acreage

Infiltration Grenade Range Acreage				
	IFL No. 2	GR No. 1	RG FRAG	**Total**
Range Inventory	N/A	N/A	N/A	**N/A**
HRR	10.2	30.3	35.8	**76.3**

4.2.3 Lake Tholocco Pistol Range

The Lake Tholocco Pistol Range is 0.9 acres, located in a central portion of the installation as illustrated in Map 4-1. Lake Tholocco Pistol Range is adjacent to the lake, with a berm surrounding three sides, and the direction of fire pointing toward the south as illustrated in Map 4-3. No data was found to determine how often the range was used so it is assumed that the Lake Tholocco Pistol Range was used year round for small arms

training during an approximate 36-year period spanning from 1951 through 1987. Based on a GPS survey of the Lake Tholocco Pistol Range, it was determined to be in the operational range area and therefore is not eligible under MMRP for further investigation.

4.2.4 .22 Caliber Target Butt

The .22 Caliber Target Butt is 2.4 acres, located in a central portion of the cantonment area as shown in Map 4-1. Range specific usage dates are not available; however, maps from 1951 and 1952 display the site area as a golf course, so it is likely the .22 Caliber Target Butt was used as a range for the duration of WWII. Information regarding the frequency of use was not available, it is assumed, training occurred year round.

4.2.5 A-Grenade and Bayonet Court

The A-Grenade and Bayonet Court is 26.8 acres, and portion of a set of grenade and bayonet courts located in a central portion of the cantonment area as shown in Map 4-1. Range specific usage dates are not available; however, maps from 1951 and 1952 display the site area as a golf course, so it is likely the A-Grenade and Bayonet Court was used as a range for the duration of WWII. Information regarding the frequency of use was not available, it is assumed, training occurred year round.

4.2.6 B-Grenade and Bayonet Court

The B-Grenade and Bayonet Court is 4.6 acres, located on the southeast side of the cantonment area as shown in Map 4-1. Range specific usage dates are not available and maps from 1951 and 1952 no longer display the site, so it is likely the B-Grenade and Bayonet Court was used as a range for the duration of WWII. Information regarding the frequency of use was not available, it is assumed, training occurred year round.

4.2.7 C-Grenade and Bayonet Court

The C-Grenade and Bayonet Court is 7.6 acres, located on the northeast side of the cantonment area as shown in Map 4-1. The C-Grenade and Bayonet Court is adjacent to

the Anti-Tank Rocket/Grenade Range and the Infiltration/Grenade Range; however, only the 1944 installation map depicts the site and its location. Range specific usage dates are not available and maps from 1951 and 1952 no longer display the site, so it is likely the B-Grenade and Bayonet Court was used as a range for the duration of WWII. Information regarding the frequency of use was not available, it is assumed, training occurred year round.

4.3 POTENTIAL MEC AND MC

Table 4-4 below presents the potential MEC and the associated MC that are expected to be found at the Anti-Tank Rocket/Grenade Range, Infiltration/Grenade Range and Lake Tholocco Pistol Range. This information is based on the findings of the research conducted for the HRR.

Table 4-4: Summary of Potential MEC and MC

Range	Potential Munitions	Primary Release Mechanism	Potential MEC	Potential MC
Anti-Tank Rocket/Grenade Range	2.36" Rocket, M6A1 M9A1 HEAT M II A1- MII A4 Practice M17 Fragmentation	Munitions firing potentially from the following weapon systems: 2.36" Shoulder-fired rocket and M1 Rifle with Rifle Grenade Attachment	Partially/fully functioned projectiles/fuzes, Discarded munitions, Malfunctioned munitions	Black powder (potassium nitrate, sulfur, and charcoal) smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine) Perchlorate PETN Trinitrotoluene (TNT)

Range	Potential Munitions	Primary Release Mechanism	Potential MEC	Potential MC
Infiltration/ Grenade Range	M II A1- MII A4 Practice M17 Fragmentation 0.30-Cal	Munitions firing potentially from the following weapon systems: M1 Rifle with Rifle Grenade Attachment, Machine Gun	Partially/fully functioned projectiles/fuzes, Discarded munitions, Malfunctioned munitions	Black powder (potassium nitrate, sulfur, and charcoal) smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine) PETN Trinitrotoluene (TNT) For the Small Arms: Primary MC of concern is lead. Other associated MC less likely to be of concern may include: antimony (increases hardness), arsenic (present in lead), copper (bullet core alloy), iron (tips of penetrator rounds), copper, zinc, magnesium, strontium (present in tracer munitions), tin (increases hardness) and lead styphnate/lead azide (primer mixture).

Range	Potential Munitions	Primary Release Mechanism	Potential MEC	Potential MC
Lake Tholocco Pistol Range	.22-cal. .38-cal. .45-cal. 9-mm	Range was restricted to the use of pistols.	N/A	Primary MC of concern is lead. Other associated MC less likely to be of concern may include: antimony (increases hardness), arsenic (present in lead), copper (bullet core alloy), tin (increases hardness) and lead styphnate/lead azide (primer mixture).
.22 Caliber Target Range	.22-cal.	Range was restricted to the use of small arms.	N/A	Primary MC of concern is lead. Other associated MC less likely to be of concern may include: antimony (increases hardness), arsenic (present in lead), copper (bullet core alloy), tin (increases hardness) and lead styphnate/lead azide (primer mixture).

Range	Potential Munitions	Primary Release Mechanism	Potential MEC	Potential MC
A-Grenade and Bayonet Court	M2/MK2 Hand Grenade	Hand thrown	Partially/fully functioned grenades/fuzes	Black powder (potassium nitrate, sulfur, and charcoal) smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine) FHN PETN Trinitrotoluene (TNT)
B-Grenade and Bayonet Court	M2/MK2 Hand Grenade	Hand thrown	Partially/fully functioned grenades/fuzes	Black powder (potassium nitrate, sulfur, and charcoal) smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine) FHN PETN Trinitrotoluene (TNT)

Range	Potential Munitions	Primary Release Mechanism	Potential MEC	Potential MC
C-Grenade and Bayonet Court	M2/MK2 Hand Grenade	Hand thrown	Partially/fully functioned grenades/fuzes	Black powder (potassium nitrate, sulfur, and charcoal) smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine) FHN PETN Trinitrotoluene (TNT)

Historical Records Review
Fort Rucker, AL

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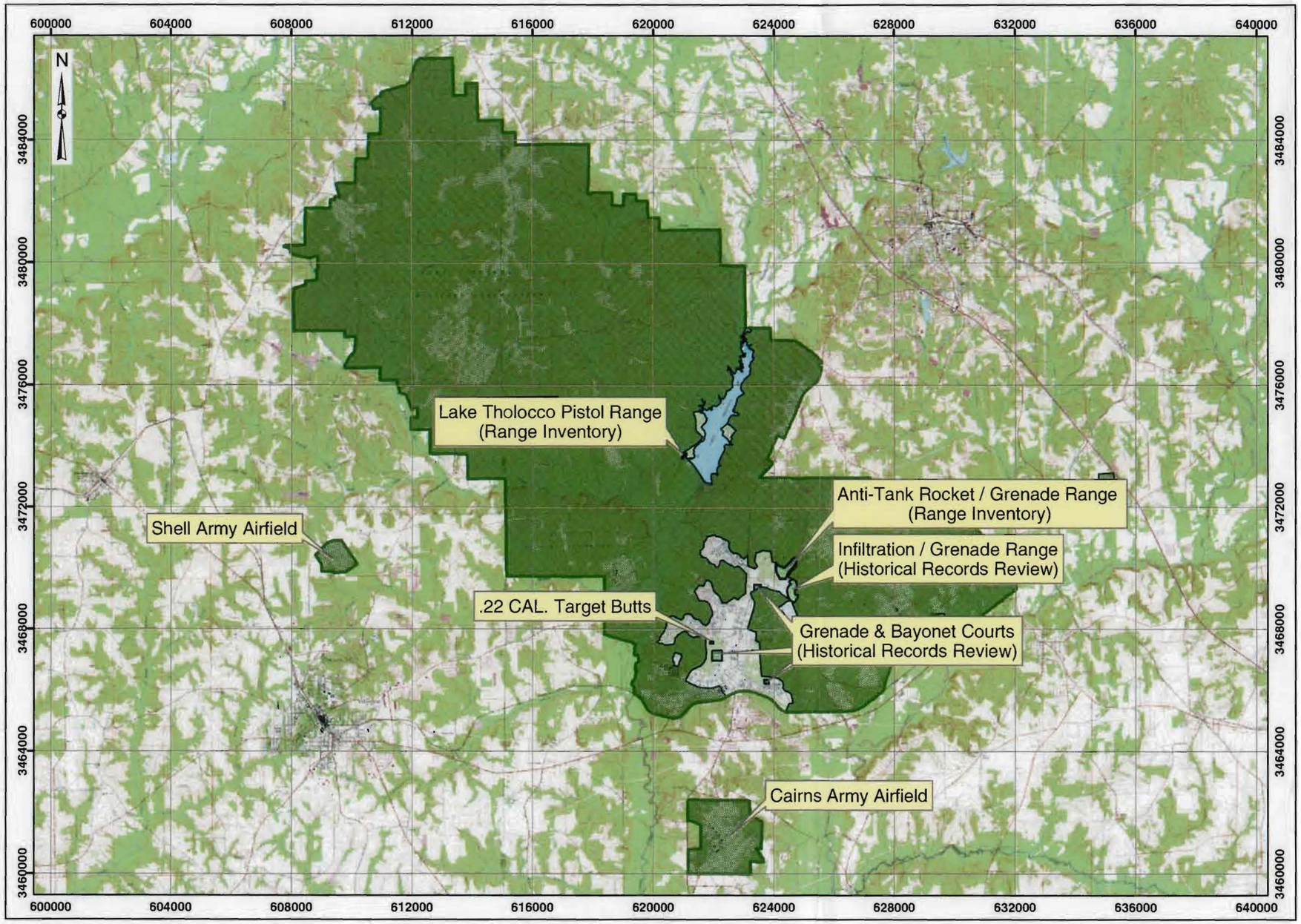
Map 4-1
Area Location Map



Legend

- Installation Boundary
- Operational Range Area
- Non Range, Non UXO-DMM-MC Area

CTT Ranges (Historical Records Review)

- MMRP Site

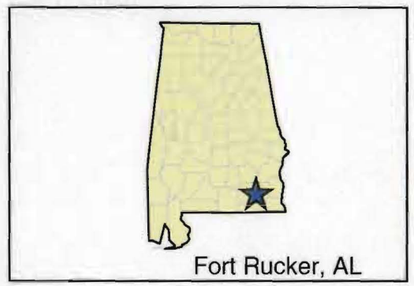
2,000 0 2,000 4,000 6,000 Meters

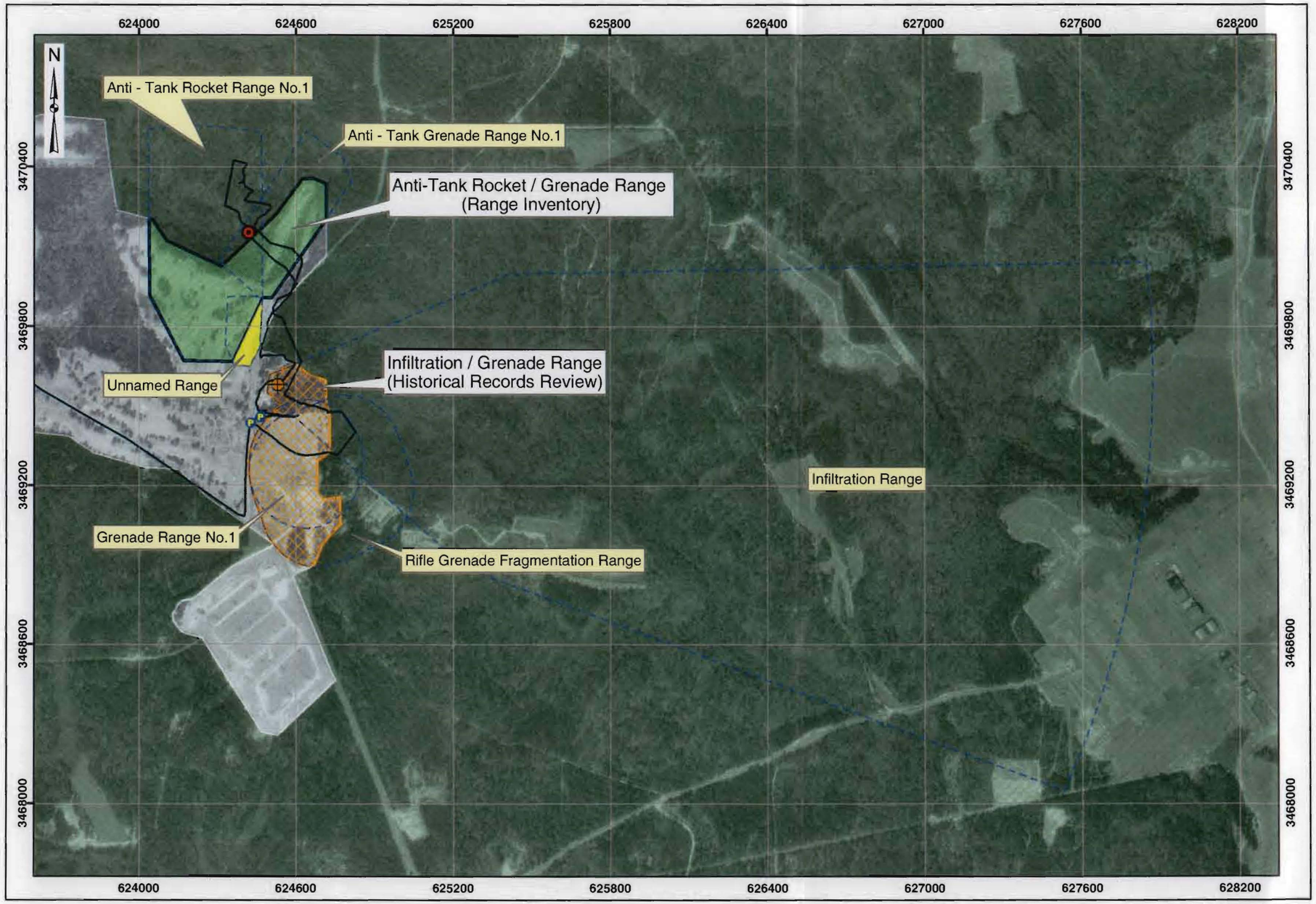
Data Source: USGS. 7.5 Minute Series
Topographic Survey Map

Victoria, AL, 1981	New Brockton, AL, 1981
Goodman, AL, 1960	Brundidge, AL, 1981
Enterprise NE, AL, 1981	Enterprise, AL, 1981
Ariton, AL, 1981	Ozark, AL, 1981
Daleville, AL, 1980	Skipperville, AL, 1969
Ewell, AL, 1969	Pinckard, AL, 1981

Coordinate System: UTM Zone 16N
Datum: NAD 1983
Units: Meters

Contract: DACA31-00-D-0043
Edition: Draft Historical Records Review
Date: July 2004





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Map 4-2
Anti-Tank Rocket/Grenade Range & Infiltration/Grenade Range Detail Map

Legend

- Installation Boundary
- Operational Range Area
- Non Range, Non UXO-DMM-MC Area

CTT Range Area (Range Inventory)
- MMRP Site (Anti-Tank Rocket / Grenade Range)

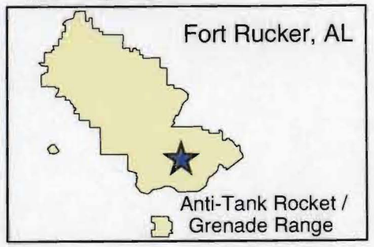
CTT Ranges (Historical Records Review)
- MMRP Site (Anti-Tank Rocket / Grenade Range)
- MMRP Site (Infiltration / Grenade Range)
- Range Firing Fans
- Expanded CTT Area
- Site Reconnaissance
- Firing Point
- Ordnance Find Location
- Photograph Location

200 0 200 400 600 Meters

Data Source: USGS. 7.5 Minute Series
Digital Orthophoto Quadrangle
Ozark, AL, 1998
Daleville, AL, 1998

Coordinate System: UTM Zone 16N
Datum: NAD 1983
Units: Meters

Contract: DACA31-00-D-0043
Edition: Draft Historical Records Review
Date: April 2004



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Map 4-3
Lake Tholocco Pistol Range - Detail Map

Legend

- Installation Boundary
- Operational Range Area
- Non Range - Non UXO-DMM-MC Area

CTT Ranges (Historical Records Review)

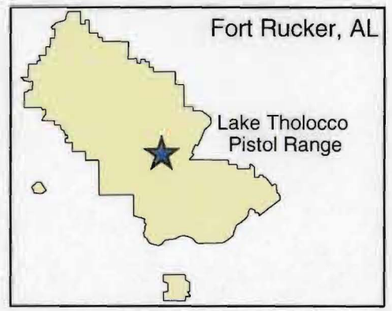
- MMRP Site
- Firing Point
- Target Areas
- Site Reconnaissance
- Photograph Location

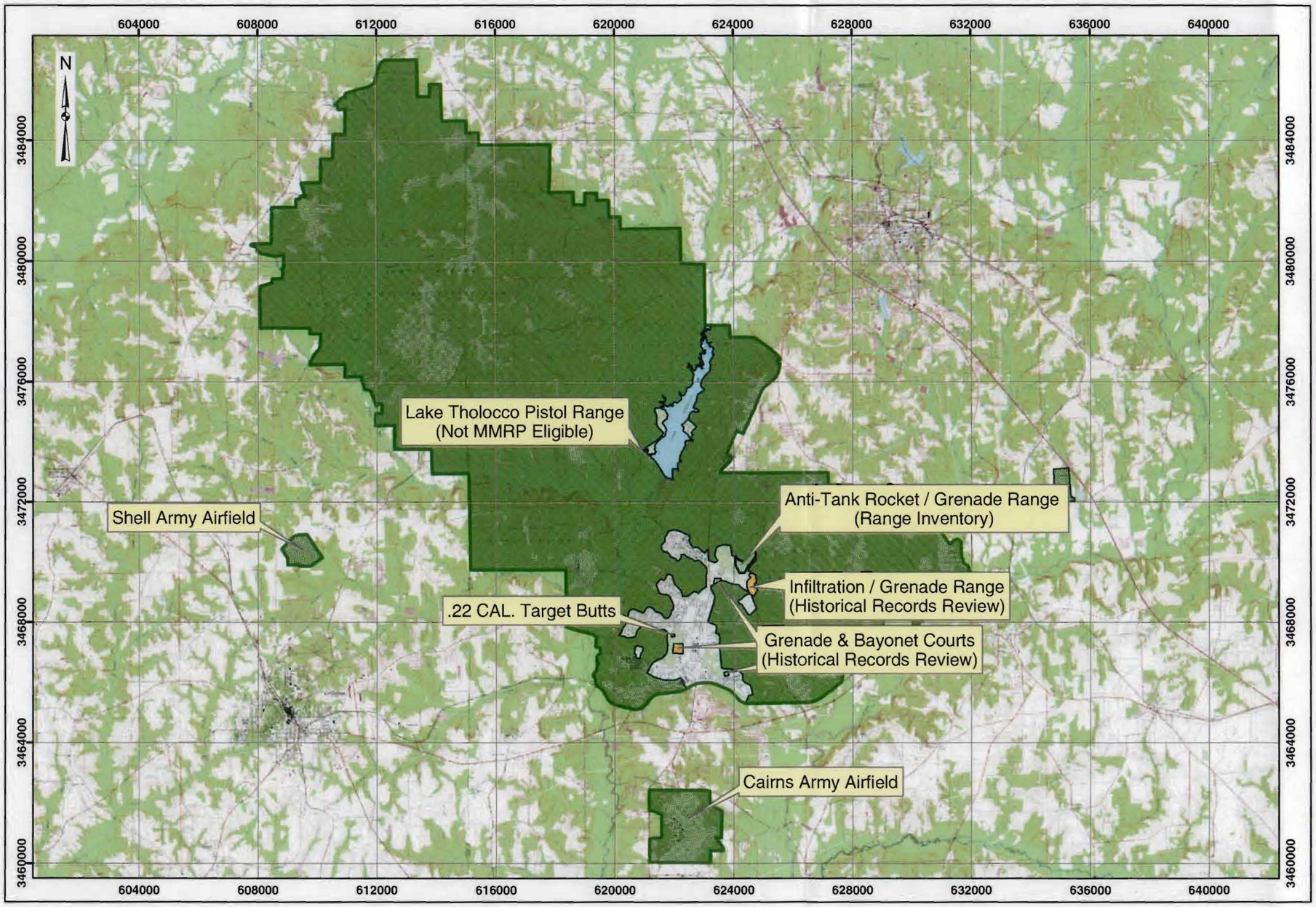
30 0 30 60 90 Meters

Data Source: USGS. 7.5 Minute Series
Digital Orthophoto Quadrangle
Ozark SW, 1998

Coordinate System: UTM Zone 16N
Datum: NAD 1983
Units: Meters

Contract: DACA31-00-D-0043
Edition: Draft Historical Records Review
Date: April 2004





Historical Records Review
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Map 4-4
CTT Range Inventory vs Historical Review Data

Legend

- Installation Boundary

CTT Range Area (Range Inventory)

- Operational Range Area
- Closed Range
- Transferring
- Transferred
- Non Range, Non UXO-DMM-MC Area

CTT Ranges (Historical Records Review)

- MMRP Site

2,000 0 2,000 4,000 6,000 Meters

Data Source: USGS. 7.5 Minute Series
Topographic Survey Map

Victoria, AL, 1981	New Brockton, AL, 1981
Goodman, AL, 1960	Brundidge, AL, 1981
Enterprise NE, AL, 1981	Enterprise, AL, 1981
Ariton, AL, 1981	Ozark, AL, 1981
Daleville, AL, 1980	Skipperville, AL, 1969
Ewell, AL, 1969	Pinckard, AL, 1981

Coordinate System: UTM Zone 16N
Datum: NAD 1983
Units: Meters

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Fort Rucker, AL

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Map 4-5
Grenade & Bayonet Courts
.22 CAL Target Butts
Detail Map

Legend

- Installation Boundary
- Operational Range Area
- Non Range, Non UXO-DMM-MC Area

CTT Ranges (Historical Records Review)

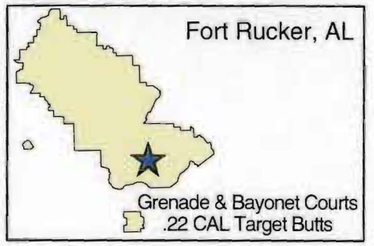
- Grenade & Bayonet Courts
- .22 CAL. Target Butts
- MMRP Site (Infiltration / Grenade Range)
- Site Reconnaissance

200 0 200 400 600 Meters

Data Source: USGS. 7.5 Minute Series
Digital Orthophoto Quadrangle
Ozark, AL, 1998
Daleville, AL, 1998

Coordinate System: UTM Zone 16N
Datum: NAD 1983
Units: Meters

Contract: DACA31-00-D-0043
Edition: Draft Historical Records Review
Date: July 2004



5 CONCEPTUAL SITE MODEL

5.1 ANTI-TANK ROCKET/GRENADE RANGE

5.1.1 MMRP Site Profile

5.1.1.1 Area and Layout

The Anti-Tank Rocket/Grenade Range is a 44-acre parcel located northeast of the cantonment area of Fort Rucker. The Anti-Tank Rocket/Grenade Range is made up of three distinct Sub-Sites. The individual Sub-Sites as described in Section 4.2 are:

- ATR No. 1
- ATG No.1
- Unnamed Range

The detailed layout of the Anti-Tank Rocket/Grenade Range is presented in Map 4-2.

5.1.1.2 Structures

The structures and building located within the Anti-Tank Rocket/Grenade Range include a 27-hole golf course, which is situated on an approximate 250-acre parcel, most of which is in the other than operational range designated area.

5.1.1.3 Utilities

The utilities servicing the golf course include electricity, potable water (sprinkler system and drinking fountains) and wastewater (at isolated locations).

5.1.1.4 Boundaries

The Anti-Tank Rocket/Grenade Range is bound to the north by an airstrip, the Equestrian Center to the south, the Infiltration/Grenade Range to the east and Andrews Avenue to the west.

5.1.1.5 Security

Access to Fort Rucker is restricted by guards and surveillance at every entrance. The perimeter of the Anti-Tank Rocket/Grenade Range is patrolled on a regular basis by Fort Rucker security. The current use of the site as a golf course and driving range presents an accessibility issue since no restrictions are enforced at the site location. In addition, hunting and horseback riding is allowed within the Anti-Tank/Grenade Range.

5.1.2 Physical Profile

5.1.2.1 Climate

Fort Rucker is located approximately 25 miles north of the Florida pan-handle and 80 miles north of the Gulf of Mexico, resulting in a warm and humid climate throughout most of the year. Summer months are long, having an average daily high temperature of 90.5 degrees Fahrenheit (°F); winter is relatively short, having an average daily low temperature of 37.8°F. The annual average precipitation recorded is 53 inches, with monthly average peaks as high as 6.49 inches in March and as low as 2.89 inches in October. Average annual snowfall is less than half an inch. Mean wind direction is east-southeast at an average of seven miles per hour. Relative humidity is approximately 76%.

5.1.2.2 Geology

The geology of Fort Rucker and the surrounding area is comprised of coastal plain sediments of Cretaceous and Tertiary age. These deposits primarily consist of unconsolidated sand and clay units with some limestone, sandstone, and siltstone beds. Previous investigations have identified, from oldest to youngest, the Ripley, Providence, Clayton, Nanafalia, Tuscahoma, Hatchetigbee, Tallahatta, and Lisbon Formations as

present in the stratigraphy of Fort Rucker and the surrounding area. These formations strike east-west, dip to the south, and have a total thickness of approximately 1,200 feet.

5.1.2.3 Topography

Fort Rucker is located within the Coastal Plains Physiographic Province. The Coastal Plains Physiographic Province dips seaward, and has a maximum elevation of only a few hundred feet in the vicinity of Fort Rucker. Localized erosion within this Province generates significant outcrops and bluffs of unconsolidated sediments. The local topography of the Anti-Tank Rocket/Grenade Range is generally flat, as shown in Figure 5-1; however due to soil erosion, small bluffs have formed in portions of the range area from the movement of surface water.

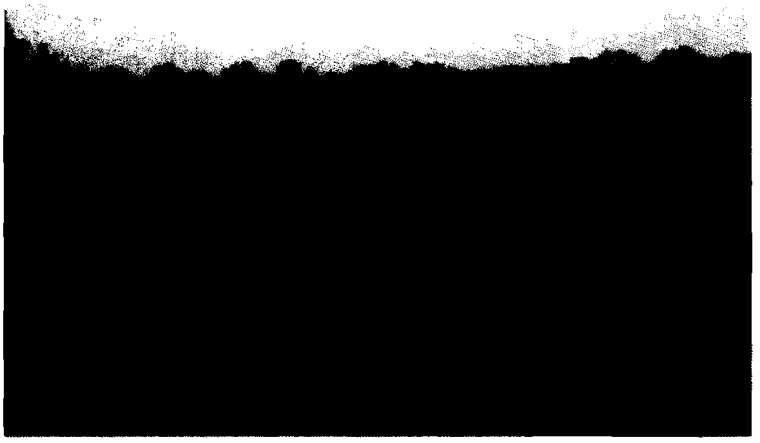


Figure 5-1: Topography of the Current Driving Range (Former Infiltration/Grenade Range)

5.1.2.4 Soil

The soils of Fort Rucker belong to the Shubata, Cuthbert, Boswell, Eustis, and Ruston series, and the Lakeland, Eustis, Norfolk, Ruston, and Cuthbert series. The former series consists of well-drained to poorly-drained soils derived from ridge tops and sides slopes, and have a clayey subsoil, while the later series contain excessively drained, deep soils derived from ridge tops and steep side slopes. Surface soils are described as high to moderate permeable sandy/silty clays, moderate reddish orange to moderate reddish-brown in color.

5.1.2.5 Hydrogeology

At Fort Rucker and the surrounding area three distinct aquifer zones have been identified within the unconsolidated and consolidated sediments of the subsurface. The Lisbon aquifer is the uppermost aquifer unit and receives recharge from precipitation. It is unconfined, and consists of geologic material of the Lisbon, Tallahatta, and Hatchetigbee Formations. Water levels in the Lisbon aquifer range from ground surface to approximately 20 feet below grade, and regional groundwater flow is to the south. The Tuscahoma confining unit separates the Lisbon aquifer from the lower aquifer.

The Nanafalia-Clayton aquifer is the middle aquifer unit and consists of geologic material of the Nanafalia and Clayton Formations. This aquifer serves as a source of drinking water for Fort Rucker and surrounding towns. Recharge to the Nanafalia-Clayton aquifer is to the north of Fort Rucker, where the formations are at the ground surface. Regional groundwater flow in this aquifer is to the south, with localized cones of depression at Fort Rucker and surrounding areas as a result of pumping wells. Previous investigations have reported the transmissivity of the Nanafalia-Clayton aquifer at 7.8 square feet per day.

The Providence-Ripley aquifer is the lower-most aquifer of the area and is composed of the Providence and Ripley Formations. It is a confined aquifer, and is separated from the Nanafalia-Clayton aquifer by a confining clay unit. Recharge to this aquifer is to the north of Fort Rucker, where the formations are at ground surface, and groundwater flow is to the south.

The Fort Rucker potable water supply is provided by groundwater from the Nanafalia/ Clayton and Providence Sand/Ripley formations. The aquifers retain an abundant water reserve to supply the needs of Fort Rucker and the surrounding communities.

5.1.2.6 Hydrology

Surface water at Fort Rucker occurs in the form of numerous streams and four man-made lakes. The streams primarily serve as wildlife habitats, and are not used for recreational or water supply purposes. Lake Tholocco is used for swimming, while Beaver Lake, Buckhorn Lake, and Ech Lake are used for fishing. None of the lakes are used for water supply; however, small groundwater supply wells are located near the shore of Lake Tholocco.

5.1.2.7 Vegetation

The location of the Anti-Tank Rocket/Grenade Range is generally forested; however, the current land use as a golf course and driving range has cleared portions of the site for those activities. Vegetation can be classified as new/old field species at the Anti-Tank Rocket/Grenade Range. The forest contains primarily longleaf pine, shortleaf pine and mixed hardwood and is fairly undisturbed, having moderate to thick undergrowth with trees averaging five inches in diameter. Mr. Parmer indicated that logging projects have taken place in the area, so portions of the land have been cleared to utilize this natural resource.

5.1.3 Land Use and Exposure Profile

5.1.3.1 Current Land Use/Activities

With the exception of activities that occur at the golf course, the site is an undeveloped/unused parcel of land. As mentioned above, logging projects have taken place within the site area. Adjacent land is qualified as operational range property with the potential to be used by the Army or closed in the future.

5.1.3.2 Current Human Receptors

As mentioned previously access to the Anti-Tank Rocket/Grenade Range is restricted to personnel with access to the base; therefore, human receptors are limited to authorized installation personnel, to include base housing residents, escorted guests, contractors, personnel enjoying recreational activities at the golf course and driving range, hunters and trespassers.

5.1.3.3 Potential Future Land Use

Currently there are no plans for future development of the land for the Anti-Tank Rocket/Grenade Range. The site area will continue to be used for the golf course. Remaining forested areas may be accessed for forestation and logging projects for the installation Natural Resources Department. Other activities that may potentially occur at the site would include erosion control efforts.

5.1.3.4 Potential Future Human Receptors

Potential future human receptors would include authorized installation personnel, to include base housing residents, escorted guests, contractors, personnel enjoying recreational activities at the golf course, hunters and trespassers.

5.1.3.5 Zoning/Land Use Restrictions

There are no specific restrictions associated with the site.

5.1.3.6 Beneficial Resources

Within Fort Rucker there are several streams and forested areas, including the Anti-Tank Rocket/Grenade Range areas, which are a valuable habitat for many species. Common passerine birds include the pine warbler, brown-headed nuthatch, red-eyed vireo, northern cardinal, Carolina wren, American crow, and blue jay. Also common are

several woodpeckers, including the downy, red-bellied, pleated and northern flicker. Other avian residents of Fort Rucker include the wild turkey, chuck-will's widow, and several raptors, such as the screech owl and broad-winged, red-tailed, and sharp-shinned hawks. Species diversity is greater during winter due to migrants and non-breeding winter residents. There are forest product markets readily available in the Fort Rucker area and careful planning of timber sales and artificial reforestation provides use of this resource and preservation of the natural habitat. As mentioned previously, groundwater is used at Fort Rucker and surrounding communities for private and public use.

5.1.3.7 Demographics/Zoning

Fort Rucker is located within Dale County, Alabama. Dale County is the fourth smallest county in the state with an area of 563 square miles and a population density of 90.6 people per square mile. The total population of Dale County was 49,186 in 2002; 49,129 in 2000; 49, 633 in 1990; and 47,821 in 1980. Between 1980 and 1990, the average population growth rate was 0.5%. Of the 18,993 people in the labor force in 1990, 50.7% were employed in white-collar jobs. The largest industry in Dale County is retail trade, employing 18.6% of the labor force. The median household annual income in 1999 was $31,998. Fort Rucker employs a significant workforce in the support of its mission.

5.1.4 Ecological Profile

5.1.4.1 Habitat Type

Fort Rucker has a diverse habitat that demonstrates the growth of the extreme southern area of Alabama. Upland forest areas have mixed pine-hardwood forests on moderately well-drained, mesic sites where mesophytic species predominate. Such forests are abundantly represented on the reservation in uplands with clay subsoils. Slopes which are steep (greater than 45 degrees), forested, and dominated by mature hardwood trees provide habitat which is likely to support some of the less-frequently encountered plants and animals in southeastern Alabama. On Fort Rucker, a hardwood-dominated mesic

forest habitat type occurs where mesic (moderate moisture) conditions prevail, such as on lower slopes, on floors of coves and ravines, and along some smaller permanent watercourses. Xeric (low moisture) forests consist principally of plants which require minimal amounts of moisture and which, consequently, can grow in excessively well-drained soils. In addition, wetlands, ponds, man-made lakes and open fields provide habitats for a variety of fauna and flora.

5.1.4.2 Degree of Disturbance

Portions of the Anti-Tank Rocket/Grenade Range have been redesigned as a golf course. At these locations local flora and fauna have been compromised for the development of the land. Disturbance is moderate because minimal impact has been made to the surrounding areas. This remaining property is relatively unscathed new/old species forest; however, surface water drainage from these two locations has caused some soil erosion and some random debris was identified in the forested areas of the site during the visual survey.

5.1.4.3 Ecological Receptors

Fort Rucker provides inventory and monitoring for the installation fish and wildlife management program. Census of game species is required for the establishment of harvest regulations that allow for sustained use of game species. The State of Alabama provides the framework within which Fort Rucker must harvest game species. In a few cases, particularly deer, Fort Rucker imposes more restrictive regulations. All game harvested must be reported. Combining harvest data with hunter effort provides information adequate to manage most game species. Every three years, Fort Rucker collects deer and performs necropsies for a general herd health check. Other species monitored include turkey, quail, mourning doves, waterfowl and fish populations.

A summary of species that have been observed or potentially could occur at Fort Rucker that are federal or state-listed, state-protected, or ranked by the Nature Conservancy has

been compiled, which include 24 species of avian and mammals and 12 species of fish, reptile and amphibians. Of the federally-listed species, none have been recorded as being present on the Fort Rucker reservation except for the bald eagle, which is listed as threatened, and the American alligator, which is listed as threatened only due to its similarity of appearance to the endangered American crocodile. State-protected species which have confirmed populations, or have been sighted on the reservation, are the gopher tortoise, osprey, bald eagle, common ground dove, and southeastern pocket gopher. A literature search, herbarium records, and an on-site flora survey indicate that no species listed as endangered or threatened by the U.S. Fish and Wildlife Service has been recorded. Several former Federal Category 2 species, the incised groovebur, flyer's nemesis, Baltzell's sedge, and Alabama anglepond, may occur on Fort Rucker, but are not confirmed despite recent surveys. The State of Alabama has no official list of threatened or endangered plants.

5.1.4.4 Relationship of MEC/MC to Habitat and Potential Ecological Receptors

MC can affect flora and fauna through uptake to biota through the food chain. The direct relationship/potential affect between MEC and ecological receptors is limited to fauna, as MEC typically remain passive until contacted by a receptor.

5.1.5 Munitions/Release Profile

5.1.5.1 Munitions Types and Release Mechanisms

Table 5-1 presents a summary of the types of MEC that are expected to exist, at the Anti-Tank Rocket/Grenade Range, based on information collected for this HRR. Also presented in this table are the mechanisms by which the MEC were released into the environment. The typical release mechanisms for the Anti-Tank Rocket/Grenade Range are: intentional activities such as firing into a target area; and unintentional activities such as rounds fired falling outside the target area; or rounds discarded for various reasons at the firing point.

Table 5-1: Summary of Potential MEC Types – Anti-Tank Rocket/Grenade Range

Range	Source Area	Potential Munitions	Primary Release Mechanism	Potential MEC
Anti-Tank Rocket/Grenade Range	ATR No. 1	2.36" Rocket, M6A1 M9A1 Heat M17 Fragmentation M II A1- MII A4 Practice M19A1 WP Smoke M21 Practice	Munitions firing potentially from the following weapon systems: 2.36 Shoulder-fired rocket.	Partially/fully functioned rockets/fuzes
	ATG No.1	M9 Rifle Grenade 2.36" Rocket, M6A1 M9A1 Heat M17 Fragmentation M II A1- MII A4 Practice	Munitions firing potentially from the following weapon systems: 2.36 Shoulder-fired rocket and M1 Rifle with Rifle Grenade Attachment	Partially/fully functioned grenades/fuzes and rockets/fuzes
	Unnamed Range	2.36" Rocket, M6A1 M9A1 Heat M17 Fragmentation M II A1- MII A4 Practice	Munitions firing potentially from the following weapon systems: 2.36 Shoulder-fired rocket and M1 Rifle with Rifle Grenade Attachment	Partially/fully functioned grenades/fuzes and rockets/fuzes

5.1.5.2 Maximum Probability Penetration Depth

Table 5-2 provides the expected depths of penetration for MEC that have either been found or are expected to be found at the Anti-Tank Rocket/Grenade Range. These expected depths were obtained from Engineering Manual 1110-1-4009 Ordnance and Explosives Response, prepared by USACE and include values for sand, loam, and clay. These penetration depths are estimated on a worst-case set scenario that assumes that the impact is perpendicular to ground surface and that the ordnance item does not deform upon impact.

The soils types in the Anti-Tank Rocket/Grenade Range are generally classified as silty/sandy clay with high permeability. Due to these soil characteristics, penetration depths may increase because of settlement and erosion. The ordnance items may slowly descend within the soil matrix if wind or water erosion is present as in the case of the Anti-Tank Rocket/Grenade Range.

Table 5-2: Summary of Expected MEC Penetration Depths

Ordnance Item/Weapon	Depth of Penetration (feet-bgs)		
	Sand	Loam	Clay
M9 Rifle Grenade	0.1	0.2	0.2
Frag. Grenade	0.1	0.2	0.2
2.36" Rocket, M6A1	0.4	0.5	0.8

5.1.5.3 MEC Density

Map 4-2 graphically presents the anticipated horizontal extent of MEC in the Anti-Tank Rocket/Grenade Range. These anticipated extents are based on the activities that occurred within the Anti-Tank Rocket/Grenade Range. Based upon observations made and data collected during the HRR process, the Anti-Tank Rocket/Grenade Range is very likely to contain MEC. Horizontal areas of higher density would be in the forested areas of the site and also any wash gullies due to the erosion of the soil and potential movement of ordnance items. Areas where the horizontal extent of MEC is expected to be low

include the open areas of the golf course and driving range. As a result of the visual survey, a practice round rifle grenade was discovered at the ground surface, confirming both the activities at the range and the undisturbed nature of the forest portion of the site location.

5.1.5.4 MEC Scrap/Fragments

The Anti-Tank Rocket/Grenade Range is likely to contain MEC scrap/fragments since no documentation of a removal action at Fort Rucker was discovered.

5.1.5.5 Associated Munitions Constituents

MC associated with anti-tank rockets and rifle grenades include black powder (potassium nitrate, sulfur, and charcoal), smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine), TNT, FHN, and PETN. No soil samples have been analyzed for explosives within this area or the surrounding FUDS property for MC, therefore it is not known whether explosives are present within the Anti-Tank Rocket/Grenade Range.

5.1.5.6 Transport Mechanisms / Migration Routes

The primary transport mechanisms identified for the Anti-Tank Rocket/Grenade Range include the following:

Erosion: Although much of the Anti-Tank Rocket/Grenade Range is heavily vegetated the soil characteristics of the site location (sandy/silty clay) and local precipitation cause high erosion areas where banks and small hills diverge, resulting in the transport of soils and potentially the movement of MEC and MC contaminated soil.

Soil Disturbance: Since the construction of the golf course at the Anti-Tank Rocket/Grenade Range, soil disturbance must be considered. In addition, tree logging projects may also contribute to the disturbance of potentially contaminated soil. Any surface or subsurface soil disturbance can cause both the transport and migration of MEC and MC. Subsurface disturbance can lead to the inadvertent off-site transportation of

MEC. Surface and subsurface disturbances can lead to both transport through off-site transportation and migration of MC from one environmental media to another (soil to surface or groundwater or both) through surface water runoff and erosion.

5.1.6 Pathway Analysis

5.1.6.1 MEC

The primary complete exposure pathway for human and ecological receptors is handle/underfoot tread of surface MEC as shown in Figure 5-2. The potential for a complete pathway to MEC is expected at the site, due to confirmed presence in locations within the Anti-Tank Rocket/Grenade Range. However, authorized installation personnel and base housing residents are required to be educated about the presence and dangers associated with the MEC located in the area. This education is intended to deter any activities that would involve interaction with MEC; however, this pathway is still considered complete. The surface pathway would also remain complete for the trespasser because there is no guarantee these individuals have been informed of the dangers. As mentioned earlier, personnel enjoying the recreational activities at the golf course have the potential to access this location. Since no engineered controls restrict access, the surface pathway is complete. Any MEC located in the subsurface would be exposed to receptors during intrusive activities; therefore, the subsurface pathways are complete for the authorized installation personnel and escorted contractors and incomplete for the trespasser because it is unlikely a trespasser would excavate soils and therefore not be exposed to subsurface MEC.

Surface pathways for biota would be complete, as their movement throughout the Anti-Tank Rocket/Grenade Range is not restricted. The subsurface pathway would be incomplete because biota may nest or burrow at the site, and in doing so may come into contact with MEC.

5.1.6.2 MC

The MC Pathway Analysis Figure, Figure 5-3, shows several potentially complete pathways. MC are associated with the inert items used at the Anti-Tank Rocket/Grenade Range. Components of the munitions items contain metals that with time may leach into the soil. Metals may penetrate the surface soils. As erosion and runoff are possible at this site, it is possible for the contaminated soils to migrate to surface waters and sediments. Receptors of the surface water and surface soils include installation personnel, escorted visitors, trespassers, and biota. Biota and hunters may both potentially ingest game/prey/vegetation on site.

Figure 5-2: MEC Pathway Analysis Figure

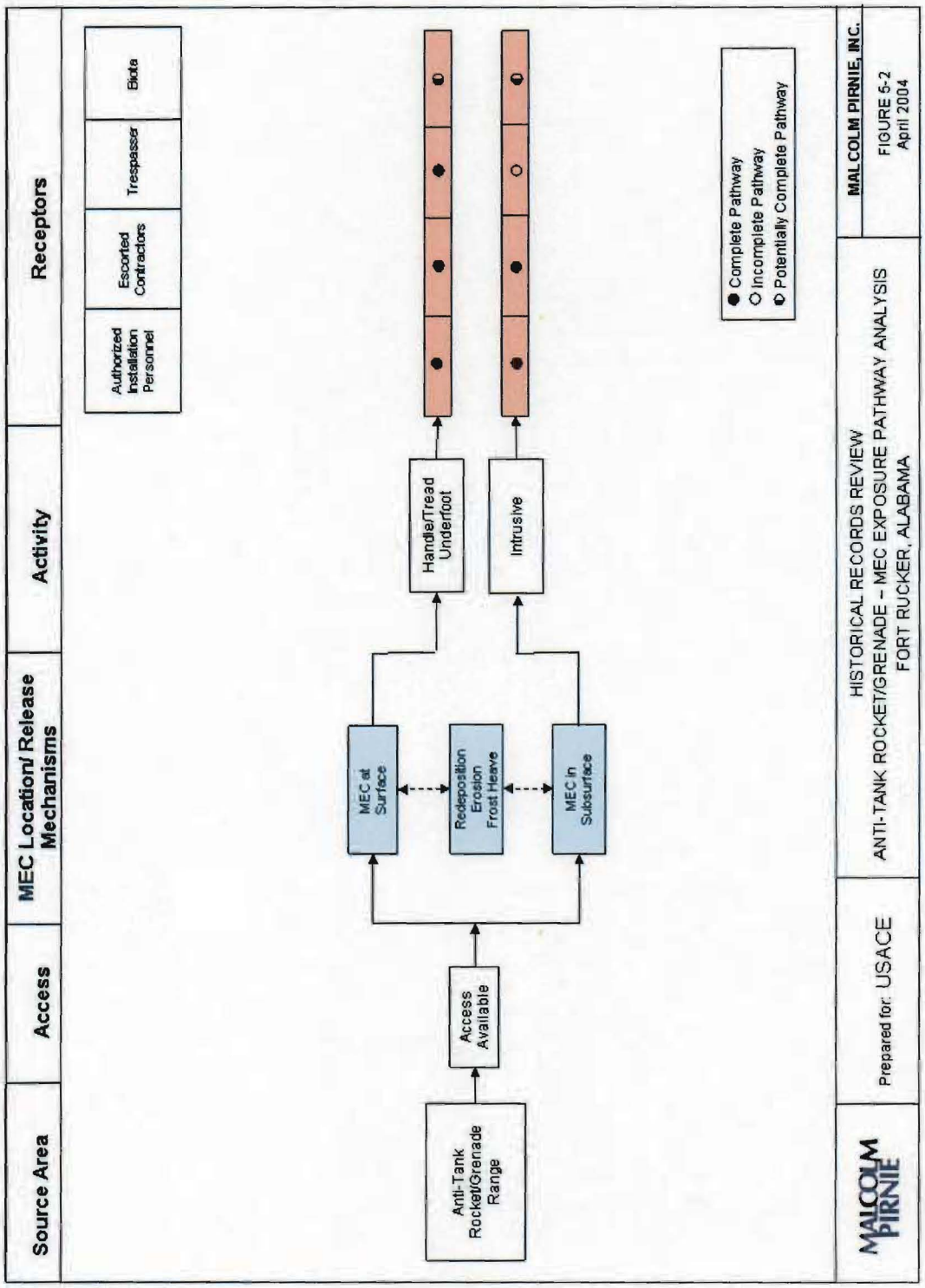
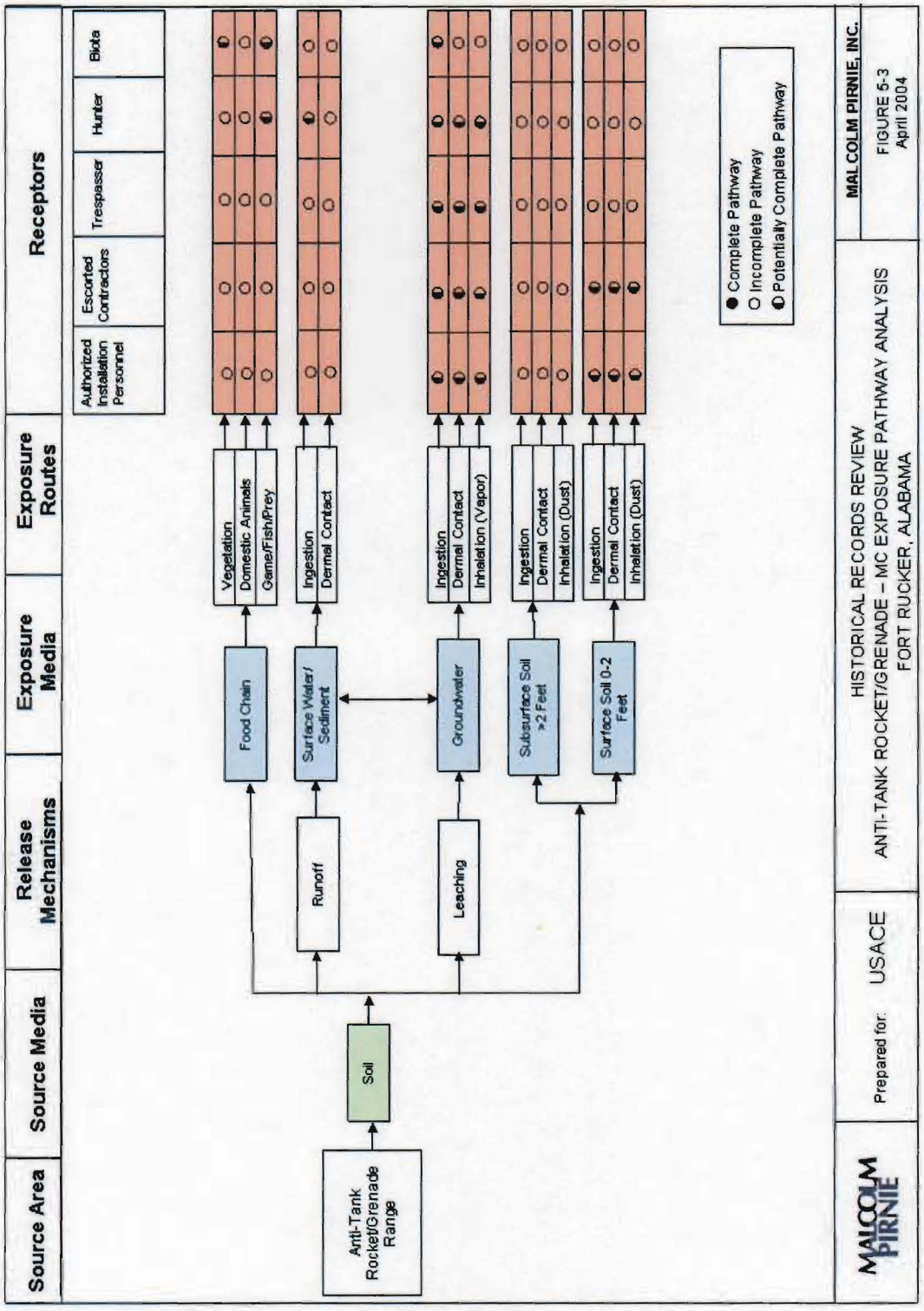


Figure 5-3: MC Pathway Analysis Figure



5.2 INFILTRATION/GRENADE RANGE

5.2.1 MMRP Site Profile

5.2.1.1 Area and Layout

The Infiltration/Grenade Range is a 76.3-acre parcel located northeast of the cantonment area of Fort Rucker adjacent to the Anti-Tank Rocket/Grenade Range. The Anti-Tank Rocket/Grenade Range is made up of three distinct Sub-Sites. The individual Sub-Sites as described in Section 4.2 are:

- IFL No. 2
- GR No. 1
- RG FRAG

The detailed layout of the Infiltration/Grenade Range is presented in Map 4-2.

5.2.1.2 Structures

The structures and building located within the Infiltration/Grenade Range include the driving range that is situated on an 8.5-acre parcel and the maintenance buildings.

5.2.1.3 Utilities

The utilities servicing the driving range include electricity, potable water (sprinkler system and drinking fountains) and wastewater (at isolated locations). The maintenance facility has electricity, potable water, wastewater, and telecommunications utilities.

5.2.1.4 Boundaries

The Infiltration/Grenade Range is bound to the north by an airstrip, the Equestrian Center to the south, the operational range area to the east and the Anti-Tank Rocket/Grenade Range to the west.

5.2.1.5 Security

Access to Fort Rucker is restricted by guards and surveillance at every entrance. The perimeter of the Infiltration/Grenade Range is patrolled on a regular basis by Fort Rucker security. The current uses of the site as a maintenance facility and a driving range presents an accessibility issue since no restrictions are enforced at the site location. In addition, hunting and horseback riding is allowed within the Infiltration/Grenade Range.

5.2.2 Physical Profile

The Infiltration/Grenade Range has similar physical characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.2.2.1 Climate

General climate information specific to Fort Rucker is located in Section 5.1.2.1.

5.2.2.2 Geology

General geologic information specific to Fort Rucker is located in Section 5.1.2.2.

5.2.2.3 Topography

General topographic information specific to Fort Rucker is located in Section 5.1.2.3.

5.2.2.4 Soil

General soil characterization specific to Fort Rucker is located in Section 5.1.2.4.

5.2.2.5 Hydrogeology

General information regarding hydrogeology specific to Fort Rucker is located in Section 5.1.2.5.

5.2.2.6 Hydrology

General information regarding hydrology specific to Fort Rucker is located in Section 5.1.2.6.

5.2.2.7 Vegetation

General information regarding vegetation specific to Fort Rucker is located in Section 5.1.2.7.

5.2.3 Land Use and Exposure Profile

The Infiltration/Grenade Range has similar characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.2.3.1 Current Land Use / Activities

With the exception of activities that occur at the driving range, the site is an undeveloped/unused parcel of land. In addition, a maintenance shop with a small storage yard has been constructed west of the driving range, adjacent to the small earthen berm, the only remaining former structure. As mentioned above, logging projects have taken place within the site area. Adjacent land is qualified as operational range property with the potential to be used by the Army or closed in the future.

5.2.3.2 Current Human Receptors

As mentioned previously access to the Infiltration/Grenade Range is restricted to personnel with access to the base; therefore, human receptors are limited to authorized

installation personnel, to include base housing residents, escorted guests, contractors, personnel enjoying recreational activities at the driving range, hunters and trespassers.

5.2.3.3 Potential Future Land Use

Currently there are no plans for future development of the land for the Infiltration/Grenade Range. The site area will continue to be used for the driving range and the maintenance facility. Remaining forested areas may be accessed for forestation and logging projects for the installation Natural Resources Department. Other activities that may potentially occur at the site would include erosion control efforts.

5.2.3.4 Potential Future Human Receptors

Potential future human receptors would include authorized installation personnel, to include base housing residents, escorted guests, contractors, personnel enjoying recreational activities at the driving range, hunters and trespassers.

5.2.3.5 Zoning/Land Use Restrictions

There are no specific restrictions associated with the site.

5.2.3.6 Beneficial Resources

General information regarding beneficial resources specific to Fort Rucker is located in Section 5.1.3.6.

5.2.3.7 Demographics/Zoning

General information regarding demographics/zoning specific to Fort Rucker is located in Section 5.1.3.7.

5.2.4 Ecological Profile

The Infiltration/Grenade Range has similar characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.2.4.1 Habitat Type

General information regarding habitat type specific to Fort Rucker is located in Section 5.1.4.1.

5.2.4.2 Degree of Disturbance

Portions of the Anti-Tank Rocket/Grenade Range have been redesigned as a driving range. At these locations local flora and fauna have been compromised for the development of the land. Disturbance is moderate because minimal impact has been made to the surrounding areas. This remaining property is relatively unscathed new/old species forest; however, surface water drainage from these two locations has caused some soil erosion and some random debris was identified in the forested areas of the site during the visual survey.

5.2.4.3 Ecological Receptors

General information regarding ecological receptors specific to Fort Rucker is located in Section 5.1.4.3.

5.2.4.4 Relationship of MEC/MC to Habitat and Potential Ecological Receptors

MC can affect flora and fauna through uptake to biota through the food chain. The direct relationship/potential affect between MEC and ecological receptors is limited to fauna, as MEC typically remain passive until contacted by a receptor.

5.2.5 Munitions/Release Profile

5.2.5.1 Munitions Types and Release Mechanisms

Table 5-3 presents a summary of the types of MEC that are expected to exist, at the Infiltration/Grenade Range, based on information collected for this HRR. Also presented in this table are the mechanisms by which the MEC were released into the environment. The typical release mechanisms for the Infiltration/Grenade Range are: intentional activities such as firing into a target area; and unintentional activities such as rounds fired falling outside the target area; or rounds discarded for various reasons at the firing point.

Table 5-3: Summary of Potential MEC Types – Infiltration/Grenade Range

Range	Source Area	Potential Munitions	Primary Release Mechanism	Potential MEC
Infiltration/ Grenade Range	IFL No. 2	Small Arms ammo .30-Cal	Machine Gun	N/A
	GR No. 1	M2/MK2 Hand Grenade	N/A	Partially/fully functioned grenades/fuzes
	RG FRAG	M17 Fragmentation M II A1- MII A4 Practice	Munitions Firing potentially from the following weapon systems: M1 Rifle with Rifle Grenade Attachment	Partially/fully functioned grenades/fuzes

5.2.5.2 Maximum Probability Penetration Depth

Table 5-4 provides the expected depths of penetration for MEC that have either been found or are expected to be found at the Infiltration/Grenade Range. These expected depths were obtained from Engineering Manual 1110-1-4009 Ordnance and Explosives Response, prepared by USACE and include values for sand, loam, and clay. These penetration depths are estimated on a worst-case set scenario that assumes that the impact is perpendicular to ground surface and that the ordnance item does not deform upon impact.

The soils types in the Infiltration/Grenade Range are generally classified as silty/sandy clay with high permeability. Due to these soil characteristics, penetration depths may increase because of settlement and erosion. The ordnance items may slowly descend within the soil matrix if wind or water erosion is present as in the case of the Infiltration/Grenade Range.

Table 5-4: Summary of Expected MEC Penetration Depths

Ordnance Item/Weapon	Depth of Penetration (feet-bgs)		
	Sand	Loam	Clay
Hand Grenade	0.0	0.0	0.0
M9 Rifle Grenade	0.1	0.2	0.2
Frag. Grenade	0.1	0.2	0.2

5.2.5.3 MEC Density

Map 4-2 graphically presents the anticipated horizontal extent of MEC in the Infiltration/Grenade Range. These anticipated extents are based on the activities that occurred within the Infiltration/Grenade Range. Based upon observations made and data collected during the HRR process, the Infiltration/Grenade Range is very likely to contain MEC. Horizontal areas of higher density would be in the forested areas of the site and

also any wash gullies due to the erosion of the soil and potential movement of ordnance items. Areas where the horizontal extent of MEC is expected to be low include the open areas of the golf course and driving range. As a result of the visual survey, a practice round rifle grenade was discovered at the ground surface, confirming both the activities at the range and the undisturbed nature of the forest portion of the site location.

5.2.5.4 MEC Scrap/Fragments

The Infiltration/Grenade Range is likely to contain MEC scrap/fragments since no documentation of a removal action at Fort Rucker was discovered.

5.2.5.5 Associated Munitions Constituents

MC associated with rifle and hand grenades include black powder (potassium nitrate, sulfur, and charcoal), smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine), TNT, FHN, and PETN. No soil samples have been analyzed for explosives within this area or the surrounding FUDS property for MC, therefore it is not known whether explosives are present within the Infiltration/Grenade Range.

The primary MC of concern associated with the IFL No. 2 is lead. Other MCs of concern include: antimony and tin which increase the hardness of bullets; arsenic present in lead; copper as present in the bullet core alloy; copper and zinc, which are present in the jacket alloy; the tips of penetrator rounds contain iron; copper; zinc, strontium, and magnesium, which are present in tracer munitions; and lead styphnate/lead azide, which are in the primer mixture.

5.2.5.6 Transport Mechanisms / Migration Routes

The primary transport mechanisms identified for the Infiltration/Grenade Range include the following:

Erosion: Although much of the Infiltration/Grenade Range is heavily vegetated the soil characteristics of the site location (sandy/silty clay) and local precipitation cause high erosion areas where banks and small hills diverge, resulting in the transport of soils and potentially the movement of MEC and MC contaminated soil.

Soil Disturbance: Since the construction of the golf course, driving range and maintenance facility at the Infiltration/Grenade Range, soil disturbance must be considered. In addition, tree logging projects may also contribute to the disturbance of potentially contaminated soil. Any surface or subsurface soil disturbance can cause both the transport and migration of MEC and MC. Subsurface disturbance can lead to the inadvertent off-site transportation of MEC. Surface and subsurface disturbances can lead to both transport through off-site transportation and migration of MC from one environmental media to another (soil to surface or groundwater or both) through surface water runoff and erosion.

5.2.6 Pathway Analysis

5.2.6.1 MEC

The primary complete exposure pathway for human and ecological receptors is handle/underfoot tread of surface MEC as shown in Figure 5-4. The potential for a complete pathway to MEC is expected at the site, due to confirmed presence in locations within the Infiltration/Grenade Range. However, authorized installation personnel and base housing residents are required to be educated about the presence and dangers associated with the MEC located in the area. This education is intended to deter any activities that would involve interaction with MEC; however, this pathway is still considered complete. The surface pathway would also remain complete for the trespasser because there is no guarantee these individuals have been informed of the dangers. As mentioned earlier, personnel enjoying the recreational activities at the driving range have the potential to access this location. Since no engineered controls restrict access, the surface pathway is complete. Any MEC located in the subsurface would be exposed to receptors during intrusive activities; therefore, the subsurface pathways are complete for

the authorized installation personnel and escorted contractors and incomplete for the trespasser because it is unlikely a trespasser would excavate soils and therefore not be exposed to subsurface MEC.

Surface pathways for biota would be complete, as their movement throughout the Infiltration/Grenade Range is not restricted. The subsurface pathway would be potentially complete because biota may nest or burrow at the site, and in doing so may come into contact with MEC.

5.2.6.2 MC

The MC Pathway Analysis Figure, Figure 5-5, shows several potentially complete pathways. MC are associated with the inert items used at the Infiltration/Grenade Range. Components of the munitions items contain metals that with time may leach into the soil. Metals may penetrate the surface soils. As erosion and runoff are possible at this site, it is possible for the contaminated soils to migrate to surface waters and sediments. Receptors of the surface water and surface soils include installation personnel, escorted visitors, trespassers, and biota. Biota and hunters may both potentially ingest game/prey/vegetation on site.

Figure 5-4: MEC Pathway Analysis Figure

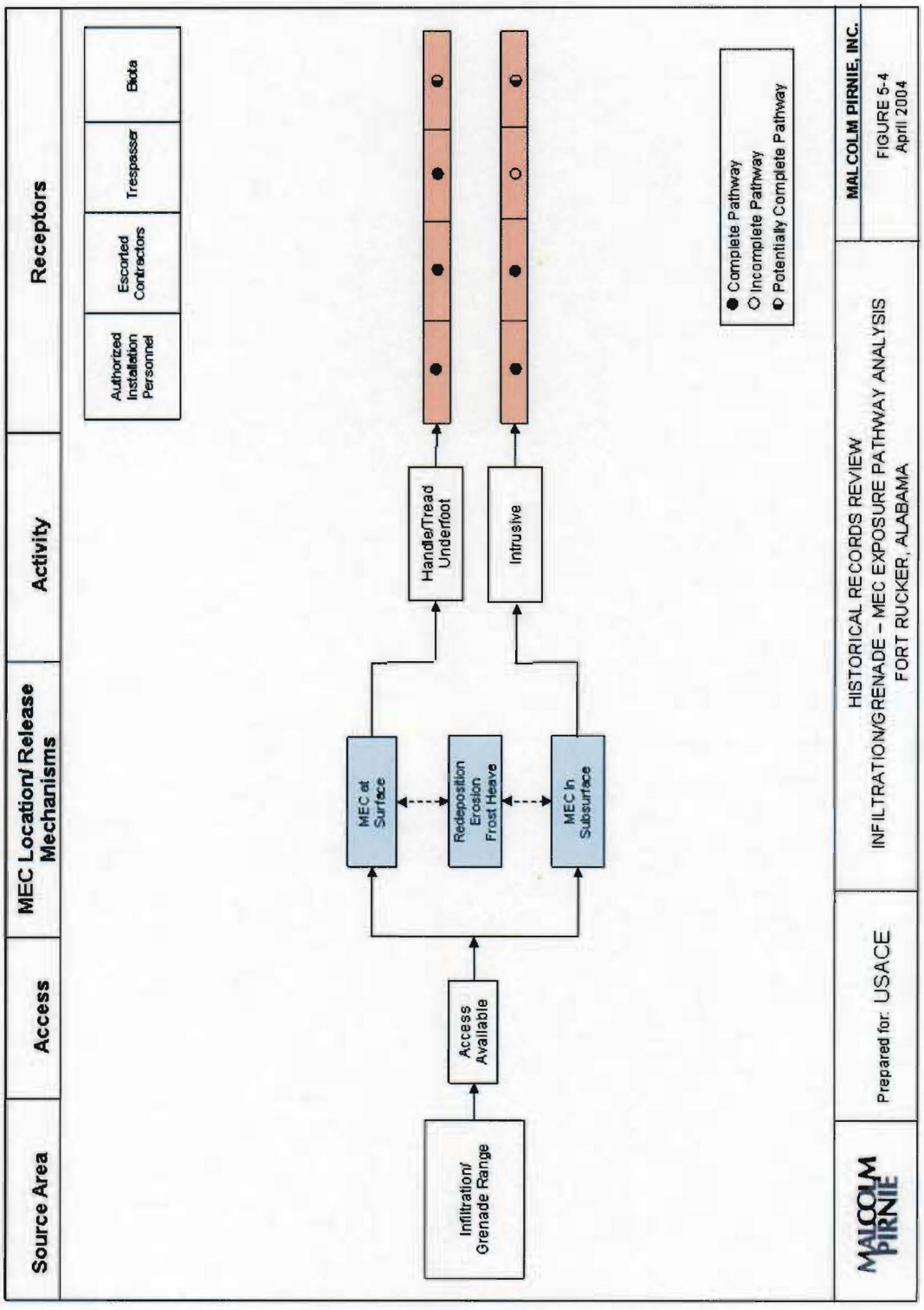
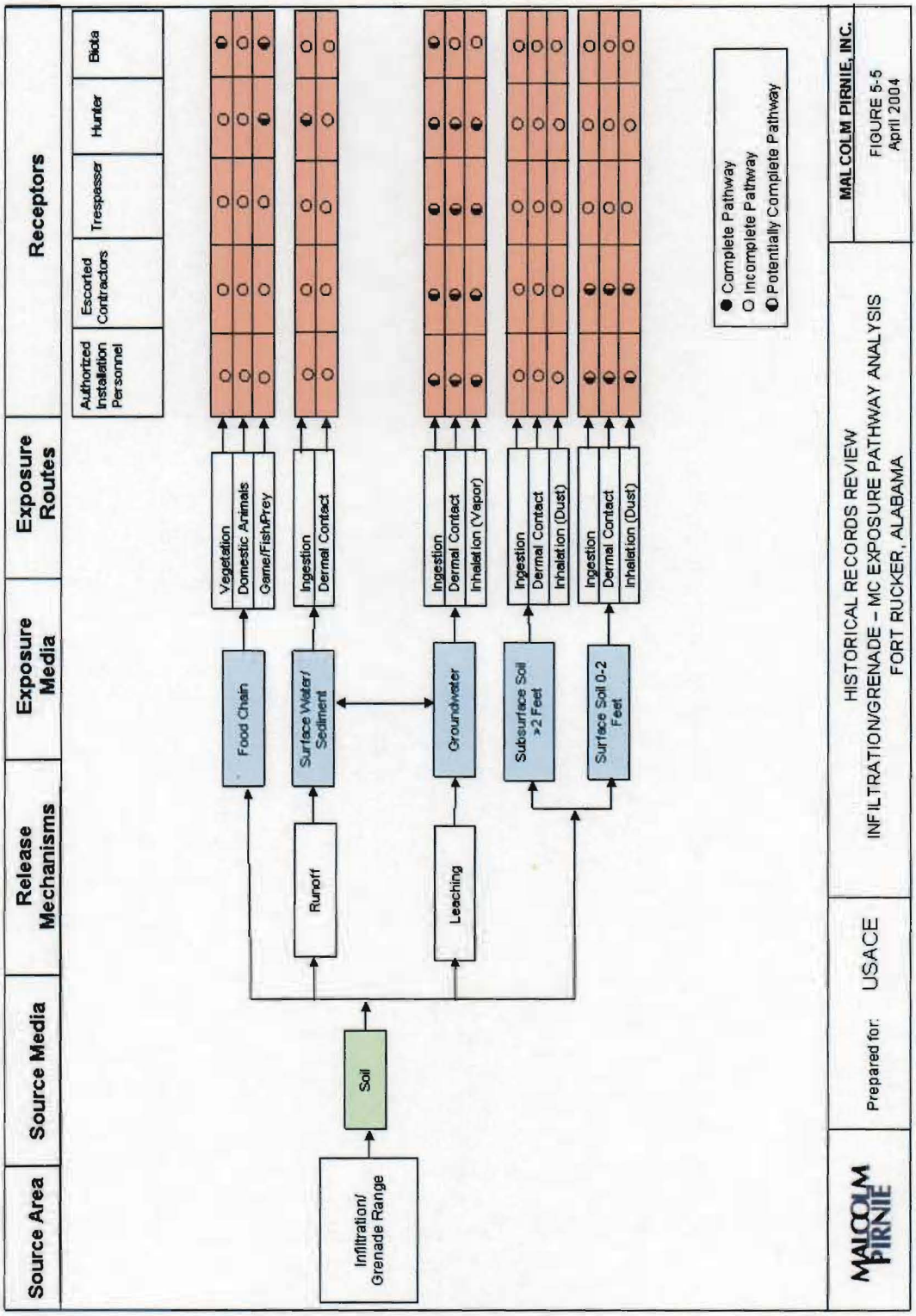


Figure 5-5: MC Pathway Analysis Figure



5.3 LAKE THOLOCCO PISTOL RANGE

Based on a GPS survey of the site, it has been determined that the Lake Tholocco Pistol Range is within the current boundaries of Fort Rucker's operational range area. The site is therefore not eligible under the MMRP and will not be investigated further at this time.

5.4 .22 CALIBER TARGET BUTT

5.4.1 MMRP Site Profile

5.4.1.1 Area and Layout

The .22 Caliber Target Butt is a 2.4-acre parcel located within a central location of the cantonment area of Fort Rucker, Map 4-5.. The .22 Caliber Target Butt has not been surveyed at this time due to the discovery of this site after the initial phase of the HRR process, which includes the site investigation. Subsequent information resulting from the SI investigation will be incorporated into the SI report that identifies this area.

5.4.1.2 Structures

Information regarding the structures at the .22 Caliber Target Butt is not available. This information will be updated and included in the SI report.

5.4.1.3 Utilities

Information regarding utilities at the .22 Caliber Target Butt is not available. This information will be updated and included in the SI report.

5.4.1.4 Boundaries

Boundaries have not yet been identified for the .22 Caliber Target Butt.

5.4.1.5 Security

Access to Fort Rucker is restricted by guards and surveillance at every entrance. The perimeter of the .22 Caliber Target Butt is patrolled on a regular basis by Fort Rucker security. The current uses of the site as a golf course presents an accessibility issue since no restrictions are enforced at the site location.

5.4.2 Physical Profile

The .22 Caliber Target Butt has similar physical characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.4.2.1 Climate

General climate information specific to Fort Rucker is located in Section 5.1.2.1.

5.4.2.2 Geology

General geologic information specific to Fort Rucker is located in Section 5.1.2.2.

5.4.2.3 Topography

General topographic information specific to Fort Rucker is located in Section 5.1.2.3.

5.4.2.4 Soil

General soil characterization specific to Fort Rucker is located in Section 5.1.2.4.

5.4.2.5 Hydrogeology

General information regarding hydrogeology specific to Fort Rucker is located in Section 5.1.2.5.

5.4.2.6 Hydrology

General information regarding hydrology specific to Fort Rucker is located in Section 5.1.2.6.

5.4.2.7 Vegetation

General information regarding vegetation specific to Fort Rucker is located in Section 5.1.2.7.

5.4.3 Land Use and Exposure Profile

The .22 Caliber Target Butt was not identified until the Draft HRR was completed therefore no data is available at this time. This information will be updated and included in the SI report.

5.4.3.1 Current Land Use / Activities

Information regarding current land use/activites at the .22 Caliber Target Butt is not available. Adjacent land is qualified as operational range property with the potential to be used by the Army or closed in the future.

5.4.3.2 Current Human Receptors

Information regarding current human receptors at the .22 Caliber Target Butt is not available. This information will be updated and included in the SI report.

5.4.3.3 Potential Future Land Use

Information regarding potential future land use at the .22 Caliber Target Butt is not available. This information will be updated and included in the SI report.

5.4.3.4 Potential Future Human Receptors

Information regarding potential future human receptors at the .22 Caliber Target Butt is not available. This information will be updated and included in the SI report.

5.4.3.5 Zoning/Land Use Restrictions

Information regarding zoning/land use restrictions at the .22 Caliber Target Butt is not available. This information will be updated and included in the SI report.

5.4.3.6 Beneficial Resources

General information regarding beneficial resources specific to Fort Rucker is located in Section 5.1.3.6.

5.4.3.7 Demographics/Zoning

General information regarding demographics/zoning specific to Fort Rucker is located in Section 5.1.3.7.

5.4.4 Ecological Profile

The .22 Caliber Target Butt has similar characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.4.4.1 Habitat Type

General information regarding habitat type specific to Fort Rucker is located in Section 5.1.4.1.

5.4.4.2 Degree of Disturbance

Information regarding the degree of disturbance of the .22 Caliber Target Butt is not available. This information will be updated and included in the SI report.

5.4.4.3 Ecological Receptors

General information regarding ecological receptors specific to Fort Rucker is located in Section 5.1.4.3.

5.4.4.4 Relationship of MEC/MC to Habitat and Potential Ecological Receptors

MC can affect flora and fauna through uptake to biota through the food chain. The direct relationship/potential affect between MEC and ecological receptors is limited to fauna, as MEC typically remain passive until contacted by a receptor.

5.4.5 Munitions/Release Profile

5.4.5.1 Munitions Types and Release Mechanisms

Table 5-5 presents a summary of the types of MEC that are expected to exist, at the Infiltration/Grenade Range, based on information collected for this HRR. Also presented in this table are the mechanisms by which the MEC were released into the environment. The typical release mechanisms for the .22 Caliber Target Butt are: intentional activities such as firing into a target area; and unintentional activities such as rounds fired falling outside the target area; or rounds discarded for various reasons at the firing point.

Table 5-5: Summary of Potential MEC Types – .22 Caliber Target Butt

Range	Source Area	Potential Munitions	Primary Release Mechanism	Potential MEC

Range	Source Area	Potential Munitions	Primary Release Mechanism	Potential MEC
.22 Caliber Target Butt	.22 Caliber Target Butt	Small Arms ammo .22-Cal	Handgun or rifle	N/A

5.4.5.2 Maximum Probability Penetration Depth

Table 5-6 provides the expected depths of penetration for MEC that have either been found or are expected to be found at the .22 Caliber Target Butt. These expected depths were obtained from Engineering Manual 1110-1-4009 Ordnance and Explosives Response, prepared by USACE and include values for sand, loam, and clay. These penetration depths are estimated on a worst-case set scenario that assumes that the impact is perpendicular to ground surface and that the ordnance item does not deform upon impact. However, the guidance documents do not apply to small arms. The .22 Caliber Target Butt was designed so that the small arms ammunition fired at the range would have impacted either the baffle system or a berm behind the targets.

Only small arms ammunition were used at the site. The .22 Caliber Target Butt was designed so that the small arms ammunition fired at the range would have impacted either the baffle system or a berm behind the targets. As such, the maximum probability penetration depth is zero to .2 feet bgs.

Table 5-6: Summary of Expected MEC Penetration Depths

Ordnance Item/Weapon	Depth of Penetration (feet-bgs)		
	Sand	Loam	Clay
.22 Caliber Handgun or rifle	0.1	0.2	0.2

5.4.5.3 MEC Density

A visual survey has not been conducted at this time to determine anticipated locations of items containing MEC at the .22 Caliber Target Butt; however, it is unlikely the site contains items with MEC because the site was restricted to small arms.

5.4.5.4 MEC Scrap/Fragments

The .22 Caliber Target Butt is not likely to contain MEC scrap/fragments since no documentation suggests the use of the site for items potentially containing MEC. The .22 Caliber Target Butt was restricted to small arms ammunition.

5.4.5.5 Associated Munitions Constituents

The primary MC of concern associated with the .22 Caliber Target Butt is lead. Other MCs of concern include: antimony and tin which increase the hardness of bullets; arsenic present in lead; copper as present in the bullet core alloy; copper and zinc, which are present in the jacket alloy; and lead styphnate/lead azide, which are in the primer mixture.

5.4.5.6 Transport Mechanisms / Migration Routes

The primary transport mechanisms identified for the .22 Caliber Target Butt are not available until a visual survey of the site has been completed.

5.4.6 Pathway Analysis

5.4.6.1 MEC

Information regarding potential pathway analysis for items containing MEC at the .22 Caliber Target Butt is not available. This site was identified after the Draft HRR was released; therefore, no data has been collected to confirm or deny the presence of items containing MEC. The Pathway Analysis will be updated and included in the SI report.

5.4.6.2 MC

Information regarding potential pathway analysis for items containing MC at the .22 Caliber Target Butt is not available. The Pathway Analysis will be updated and included in the SI report.

5.5 A – GRENADE AND BAYONET COURT

5.5.1 MMRP Site Profile

5.5.1.1 Area and Layout

The A-Grenade and Bayonet Court is a 26.8-acre parcel located within a central location of the cantonment area of Fort Rucker, Map 4-5. The A-Grenade and Bayonet Court has not been surveyed at this time due to the discovery of this site after the initial phase of the HRR process, which includes the site investigation. Subsequent information resulting from the SI investigation will be incorporated into the SI report that identifies this area.

5.5.1.2 Structures

Information regarding structures within the vicinity of the A-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.5.1.3 Utilities

Information regarding utilities at the A-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.5.1.4 Boundaries

Boundaries have not been identified for the A-Grenade and Bayonet Court. This information will be updated and included in the SI report.

5.5.1.5 Security

Access to Fort Rucker is restricted by guards and surveillance at every entrance. The perimeter of the A-Grenade and Bayonet Court is patrolled on a regular basis by Fort Rucker security. The current uses of the site as a golf course presents an accessibility issue since no restrictions are enforced at the site location.

5.5.2 Physical Profile

The A-Grenade and Bayonet Court has similar physical characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.5.2.1 Climate

General climate information specific to Fort Rucker is located in Section 5.1.2.1.

5.5.2.2 Geology

General geologic information specific to Fort Rucker is located in Section 5.1.2.2.

5.5.2.3 Topography

General topographic information specific to Fort Rucker is located in Section 5.1.2.3.

5.5.2.4 Soil

General soil characterization specific to Fort Rucker is located in Section 5.1.2.4.

5.5.2.5 Hydrogeology

General information regarding hydrogeology specific to Fort Rucker is located in Section 5.1.2.5.

5.5.2.6 Hydrology

General information regarding hydrology specific to Fort Rucker is located in Section 5.1.2.6.

5.5.2.7 Vegetation

General information regarding vegetation specific to Fort Rucker is located in Section 5.1.2.7.

5.5.3 Land Use and Exposure Profile

The A-Grenade and Bayonet Court has similar physical characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.5.3.1 Current Land Use / Activities

Information regarding current land use/activites at the A- Grenade and Bayonet Court is not available. Adjacent land is qualified as operational range property with the potential to be used by the Army or closed in the future. This information will be updated and included in the SI report.

5.5.3.2 Current Human Receptors

Information regarding current human receptors at the A-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.5.3.3 Potential Future Land Use

Information regarding potential future land use at the A-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.5.3.4 Potential Future Human Receptors

Information regarding potential future human receptors at the A-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.5.3.5 Zoning/Land Use Restrictions

Information regarding zoning/land use restrictions at the A-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.5.3.6 Beneficial Resources

General information regarding beneficial resources specific to Fort Rucker is located in Section 5.1.3.6.

5.5.3.7 Demographics/Zoning

General information regarding demographics/zoning specific to Fort Rucker is located in Section 5.1.3.7.

5.5.4 Ecological Profile

The A-Grenade and Bayonet Court has similar characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.5.4.1 Habitat Type

General information regarding habitat type specific to Fort Rucker is located in Section 5.1.4.1.

5.5.4.2 Degree of Disturbance

Information regarding the degree of disturbance of the A-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.5.4.3 Ecological Receptors

General information regarding ecological receptors specific to Fort Rucker is located in Section 5.1.4.3.

5.5.4.4 Relationship of MEC/MC to Habitat and Potential Ecological Receptors

MC can affect flora and fauna through uptake to biota through the food chain. The direct relationship/potential affect between MEC and ecological receptors is limited to fauna, as MEC typically remain passive until contacted by a receptor.

5.5.5 Munitions/Release Profile

5.5.5.1 Munitions Types and Release Mechanisms

Table 5-7 presents a summary of the types of MEC that are expected to exist, at the A-Grenade and Bayonet Court, based on information collected for this HRR. Also presented in this table are the mechanisms by which the MEC were released into the environment. The typical release mechanisms for the A-Grenade and Bayonet Court are: intentional activities such as thrown into a target area; and unintentional activities such as rounds thrown outside the target area; or rounds discarded for various reasons at the bunker.

Table 5-7: Summary of Potential MEC Types – A-Grenade and Bayonet Court

Range	Source Area	Potential Munitions	Primary Release Mechanism	Potential MEC
A-Grenade and Bayonet Court	A-Grenade and Bayonet Court	M2/MK2 Hand Grenade	N/A	Partially/fully functioned grenades/fuzes

5.5.5.2 Maximum Probability Penetration Depth

Table 5-8 provides the expected depths of penetration for MEC that have either been found or are expected to be found at the A-Grenade and Bayonet Court. These expected depths were obtained from Engineering Manual 1110-1-4009 Ordnance and Explosives Response, prepared by USACE and include values for sand, loam, and clay. These penetration depths are estimated on a worst-case set scenario that assumes that the impact is perpendicular to ground surface and that the ordnance item does not deform upon impact.

The soils types in the A-Grenade and Bayonet Court are generally classified as silty/sandy clay with high permeability. Due to these soil characteristics, penetration depths may increase because of settlement and erosion. The ordnance items may slowly descend within the soil matrix if wind or water erosion is present as in the case of the A-Grenade and Bayonet Court.

Table 5-8: Summary of Expected MEC Penetration Depths

Ordnance Item/Weapon	Depth of Penetration (feet-bgs)		
	Sand	Loam	Clay
Hand Grenade	0.0	0.0	0.0

5.5.5.3 MEC Density

A visual survey has not been conducted at this time to determine anticipated locations of items containing MEC at the A-Grenade and Bayonet Court.

5.5.5.4 MEC Scrap/Fragments

A visual survey has not been conducted at this time to determine anticipated locations of items containing MEC at the A-Grenade and Bayonet Court.

5.5.5.5 Associated Munitions Constituents

MC associated with hand grenades include black powder (potassium nitrate, sulfur, and charcoal), smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine), TNT, FHN, and PETN. No soil samples have been analyzed for explosives within this area or the surrounding FUDS property for MC, therefore it is not known whether explosives are present within the A-Grenade and Bayonet Court.

5.5.5.6 Transport Mechanisms / Migration Routes

The primary transport mechanisms identified for the A-Grenade and Bayonet Court are not available until a visual survey of the site has been completed.

5.5.6 Pathway Analysis

5.5.6.1 MEC

Information regarding potential pathway analysis for items containing MEC at the A-Grenade and Bayonet Court is not available. The Pathway Analysis will be updated and included in the SI report.

5.5.6.2 MC

Information regarding potential pathway analysis for items containing MC at the A-Grenade and Bayonet Court is not available. The Pathway Analysis will be updated and included in the SI report.

5.6 B – GRENADE AND BAYONET COURT

5.6.1 MMRP Site Profile

5.6.1.1 Area and Layout

The B-Grenade and Bayonet Court is a 4.6-acre parcel located within a central location of the cantonment area of Fort Rucker, Map 4-5.. The B-Grenade and Bayonet Court has not been surveyed at this time due to the discovery of this site after the initial phase of the HRR process, which includes the site investigation. Subsequent information resulting from the SI investigation will be incorporated into the SI report that identifies this area.

5.6.1.2 Structures

Information regarding structures within the vicinity of the B-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.6.1.3 Utilities

Information regarding utilities at the B-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.6.1.4 Boundaries

Boundaries have not been identified for the B-Grenade and Bayonet Court. This information will be updated and included in the SI report.

5.6.1.5 Security

Access to Fort Rucker is restricted by guards and surveillance at every entrance. The perimeter of the B-Grenade and Bayonet Court is patrolled on a regular basis by Fort Rucker security. The current uses of the site as a golf course presents an accessibility issue since no restrictions are enforced at the site location.

5.6.2 Physical Profile

The B-Grenade and Bayonet Court has similar physical characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.6.2.1 Climate

General climate information specific to Fort Rucker is located in Section 5.1.2.1.

5.6.2.2 Geology

General geologic information specific to Fort Rucker is located in Section 5.1.2.2.

5.6.2.3 Topography

General topographic information specific to Fort Rucker is located in Section 5.1.2.3.

5.6.2.4 Soil

General soil characterization specific to Fort Rucker is located in Section 5.1.2.4.

5.6.2.5 Hydrogeology

General information regarding hydrogeology specific to Fort Rucker is located in Section 5.1.2.5.

5.6.2.6 Hydrology

General information regarding hydrology specific to Fort Rucker is located in Section 5.1.2.6.

5.6.2.7 Vegetation

General information regarding vegetation specific to Fort Rucker is located in Section 5.1.2.7.

5.6.3 Land Use and Exposure Profile

The B-Grenade and Bayonet Court has similar physical characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.6.3.1 Current Land Use / Activities

Information regarding current land use/activites at the B-Grenade and Bayonet Court is not available. Adjacent land is qualified as operational range property with the potential to be used by the Army or closed in the future. This information will be updated and included in the SI report.

5.6.3.2 Current Human Receptors

Information regarding current human receptors at the B-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.6.3.3 Potential Future Land Use

Information regarding potential future land use at the B-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.6.3.4 Potential Future Human Receptors

Information regarding potential future human receptors at the B-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.6.3.5 Zoning/Land Use Restrictions

Information regarding zoning/land use restrictions at the B-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.6.3.6 Beneficial Resources

General information regarding beneficial resources specific to Fort Rucker is located in Section 5.1.3.6.

5.6.3.7 Demographics/Zoning

General information regarding demographics/zoning specific to Fort Rucker is located in Section 5.1.3.7.

5.6.4 Ecological Profile

The B-Grenade and Bayonet Court has similar characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.6.4.1 Habitat Type

General information regarding habitat type specific to Fort Rucker is located in Section 5.1.4.1.

5.6.4.2 Degree of Disturbance

Information regarding the degree of disturbance of the B-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.6.4.3 Ecological Receptors

General information regarding ecological receptors specific to Fort Rucker is located in Section 5.1.4.3.

5.6.4.4 Relationship of MEC/MC to Habitat and Potential Ecological Receptors

MC can affect flora and fauna through uptake to biota through the food chain. The direct relationship/potential affect between MEC and ecological receptors is limited to fauna, as MEC typically remain passive until contacted by a receptor.

5.6.5 Munitions/Release Profile

5.6.5.1 Munitions Types and Release Mechanisms

Table 5-9 presents a summary of the types of MEC that are expected to exist, at the B-Grenade and Bayonet Court, based on information collected for this HRR. Also presented in this table are the mechanisms by which the MEC were released into the environment. The typical release mechanisms for the B-Grenade and Bayonet Court are: intentional activities such as thrown into a target area; and unintentional activities such as rounds thrown outside the target area; or rounds discarded for various reasons at the bunker.

Table 5-9: Summary of Potential MEC Types – B-Grenade and Bayonet Court

Range	Source Area	Potential Munitions	Primary Release Mechanism	Potential MEC
B-Grenade and Bayonet Court	A-Grenade and Bayonet Court	M2/MK2 Hand Grenade	N/A	Partially/fully functioned grenades/fuzes

5.6.5.2 Maximum Probability Penetration Depth

Table 5-10 provides the expected depths of penetration for MEC that have either been found or are expected to be found at the B-Grenade and Bayonet Court. These expected depths were obtained from Engineering Manual 1110-1-4009 Ordnance and Explosives Response, prepared by USACE and include values for sand, loam, and clay. These penetration depths are estimated on a worst-case set scenario that assumes that the impact is perpendicular to ground surface and that the ordnance item does not deform upon impact.

The soils types in the B-Grenade and Bayonet Court are generally classified as silty/sandy clay with high permeability. Due to these soil characteristics, penetration depths may increase because of settlement and erosion. The ordnance items may slowly descend within the soil matrix if wind or water erosion is present as in the case of the B-Grenade and Bayonet Court.

Table 5-10: Summary of Expected MEC Penetration Depths

Ordnance Item/Weapon	Depth of Penetration (feet-bgs)		
	Sand	Loam	Clay
Hand Grenade	0.0	0.0	0.0

5.6.5.3 MEC Density

A visual survey has not been conducted at this time to determine anticipated locations of items containing MEC at the B-Grenade and Bayonet Court.

5.6.5.4 MEC Scrap/Fragments

A visual survey has not been conducted at this time to determine anticipated locations of items containing MEC at the B-Grenade and Bayonet Court.

5.6.5.5 Associated Munitions Constituents

MC associated with hand grenades include black powder (potassium nitrate, sulfur, and charcoal), smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine), TNT, FHN, and PETN. No soil samples have been analyzed for explosives within this area or the surrounding FUDS property for MC, therefore it is not known whether explosives are present within the B-Grenade and Bayonet Court.

5.6.5.6 Transport Mechanisms / Migration Routes

The primary transport mechanisms identified for the B-Grenade and Bayonet Court are not available until a visual survey of the site has been completed.

5.6.6 Pathway Analysis

5.6.6.1 MEC

Information regarding potential pathway analysis for items containing MEC at the B-Grenade and Bayonet Court is not available. The Pathway Analysis will be updated and included in the SI report.

5.6.6.2 MC

Information regarding potential pathway analysis for items containing MC at the B-Grenade and Bayonet Court is not available. The Pathway Analysis will be updated and included in the SI report.

5.7 C – GRENADE AND BAYONET COURT

5.7.1 MMRP Site Profile

5.7.1.1 Area and Layout

The C-Grenade and Bayonet Court is a 7.6-acre parcel located within a central location of the cantonment area of Fort Rucker, Map 4-5. The C-Grenade and Bayonet Court has not been surveyed at this time due to the discovery of this site after the initial phase of the HRR process, which includes the site investigation. Subsequent information resulting from the SI investigation will be incorporated into the SI report that identifies this area.

5.7.1.2 Structures

Information regarding structures within the vicinity of the C-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.7.1.3 Utilities

Information regarding utilities at the C-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.7.1.4 Boundaries

Boundaries have not been identified for the C-Grenade and Bayonet Court. This information will be updated and included in the SI report.

5.7.1.5 Security

Access to Fort Rucker is restricted by guards and surveillance at every entrance. The perimeter of the C-Grenade and Bayonet Court is patrolled on a regular basis by Fort Rucker security. The current uses of the site as a golf course presents an accessibility issue since no restrictions are enforced at the site location.

5.7.2 Physical Profile

The C-Grenade and Bayonet Court has similar physical characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.7.2.1 Climate

General climate information specific to Fort Rucker is located in Section 5.1.2.1.

5.7.2.2 Geology

General geologic information specific to Fort Rucker is located in Section 5.1.2.2.

5.7.2.3 Topography

General topographic information specific to Fort Rucker is located in Section 5.1.2.3.

5.7.2.4 Soil

General soil characterization specific to Fort Rucker is located in Section 5.1.2.4.

5.7.2.5 Hydrogeology

General information regarding hydrogeology specific to Fort Rucker is located in Section 5.1.2.5.

5.7.2.6 Hydrology

General information regarding hydrology specific to Fort Rucker is located in Section 5.1.2.6.

5.7.2.7 Vegetation

General information regarding vegetation specific to Fort Rucker is located in Section 5.1.2.7.

5.7.3 Land Use and Exposure Profile

The C-Grenade and Bayonet Court has similar physical characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.7.3.1 Current Land Use / Activities

Information regarding current land use/activites at the C-Grenade and Bayonet Court is not available. Adjacent land is qualified as operational range property with the potential to be used by the Army or closed in the future. This information will be updated and included in the SI report.

5.7.3.2 Current Human Receptors

Information regarding current human receptors at the C-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.7.3.3 Potential Future Land Use

Information regarding potential future land use at the C-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.7.3.4 Potential Future Human Receptors

Information regarding potential future human receptors at the C-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.7.3.5 Zoning/Land Use Restrictions

Information regarding zoning/land use restrictions at the C-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.7.3.6 Beneficial Resources

General information regarding beneficial resources specific to Fort Rucker is located in Section 5.1.3.6.

5.7.3.7 Demographics/Zoning

General information regarding demographics/zoning specific to Fort Rucker is located in Section 5.1.3.7.

5.7.4 Ecological Profile

The C-Grenade and Bayonet Court has similar characteristics to the Anti-Tank Rocket/Grenade Range due to the Site proximity.

5.7.4.1 Habitat Type

General information regarding habitat type specific to Fort Rucker is located in Section 5.1.4.1.

5.7.4.2 Degree of Disturbance

Information regarding the degree of disturbance of the C-Grenade and Bayonet Court is not available. This information will be updated and included in the SI report.

5.7.4.3 Ecological Receptors

General information regarding ecological receptors specific to Fort Rucker is located in Section 5.1.4.3.

5.7.4.4 Relationship of MEC/MC to Habitat and Potential Ecological Receptors

MC can affect flora and fauna through uptake to biota through the food chain. The direct relationship/potential affect between MEC and ecological receptors is limited to fauna, as MEC typically remain passive until contacted by a receptor.

5.7.5 Munitions/Release Profile

5.7.5.1 Munitions Types and Release Mechanisms

Table 5-11 presents a summary of the types of MEC that are expected to exist, at the C-Grenade and Bayonet Court, based on information collected for this HRR. Also presented in this table are the mechanisms by which the MEC were released into the environment. The typical release mechanisms for the C-Grenade and Bayonet Court are: intentional activities such as thrown into a target area; and unintentional activities such as rounds thrown outside the target area; or rounds discarded for various reasons at the bunker.

Table 5-11: Summary of Potential MEC Types – C-Grenade and Bayonet Court

Range	Source Area	Potential Munitions	Primary Release Mechanism	Potential MEC
C-Grenade and Bayonet Court	A-Grenade and Bayonet Court	M2/MK2 Hand Grenade	N/A	Partially/fully functioned grenades/fuzes

5.7.5.2 Maximum Probability Penetration Depth

Table 5-12 provides the expected depths of penetration for MEC that have either been found or are expected to be found at the C-Grenade and Bayonet Court. These expected depths were obtained from Engineering Manual 1110-1-4009 Ordnance and Explosives Response, prepared by USACE and include values for sand, loam, and clay. These penetration depths are estimated on a worst-case set scenario that assumes that the impact is perpendicular to ground surface and that the ordnance item does not deform upon impact.

The soils types in the C-Grenade and Bayonet Court are generally classified as silty/sandy clay with high permeability. Due to these soil characteristics, penetration depths may increase because of settlement and erosion. The ordnance items may slowly descend within the soil matrix if wind or water erosion is present as in the case of the C-Grenade and Bayonet Court.

Table 5-12: Summary of Expected MEC Penetration Depths

Ordnance Item Weapon	Depth of Penetration (feet-bgs)		
	Sand	Loam	Clay
Hand Grenade	0.0	0.0	0.0

5.7.5.3 MEC Density

A visual survey has not been conducted at this time to determine anticipated locations of items containing MEC at the C-Grenade and Bayonet Court.

5.7.5.4 MEC Scrap/Fragments

A visual survey has not been conducted at this time to determine anticipated locations of items containing MEC at the C-Grenade and Bayonet Court.

5.7.5.5 Associated Munitions Constituents

MC associated with hand grenades include black powder (potassium nitrate, sulfur, and charcoal), smokeless powder (nitrocellulose, DNT, dibutylphalate, diphenylamine), TNT, FHN, and PETN. No soil samples have been analyzed for explosives within this area or the surrounding FUDS property for MC, therefore it is not known whether explosives are present within the C-Grenade and Bayonet Court.

5.7.5.6 Transport Mechanisms / Migration Routes

The primary transport mechanisms identified for the C-Grenade and Bayonet Court are not available until a visual survey of the site has been completed.

5.7.6 Pathway Analysis

5.7.6.1 MEC

Information regarding potential pathway analysis for items containing MEC at the C-Grenade and Bayonet Court is not available. The Pathway Analysis will be updated and included in the SI report.

5.7.6.2 MC

Information regarding potential pathway analysis for items containing MC at the C-Grenade and Bayonet Court is not available. The Pathway Analysis will be updated and included in the SI report.

6 CONCLUSIONS

The following conclusions are provided as a result of the information reviewed for this HRR.

Anti-Tank Rocket/Grenade Range: This range was previously identified during the Phase 3 Inventory; however, the boundaries of the range area extend across Combat Road to include the grenade ranges and infiltration area as scoped in the previous inventory reports. This is a 66.9-acre parcel, including the other than operational range area, and is located northeast of the cantonment area, as identified in Map 4-2. In addition to the 66.9 acre other than operational range area, the range fans extend out into the operational range area, which may contain ordnance as well. This property was used in the 1940s for a number of ranges, which include the use of said munitions and small arms. Sightings of expended munitions are not uncommon at the golf course that encroaches the former training site, causing the potential for MEC at the range to be high. The potential for MC and MEC to be present at the site suggest further action.

Infiltration/Grenade Range: This range was identified during the Historical Records Review as a subsidiary to the Anti-Tank Rocket/Grenade Range, previously identified in the Phase 3 Inventory. The boundaries of the range area are east of Combat Road to include the grenade ranges and infiltration area, but not included in the previous inventory reports. Since this range complex is near, but not contiguous with the Anti-Tank Rocket/Grenade Range, it has been separated out as an additional site. This is a 76.3-acre parcel, including only the other than operational range area, and is located northeast of the cantonment area, as identified in Map 4-2. In addition to the 76.3 acres of other than operational range area, the range fans extend out into the operational range area, which may contain ordnance as well. Similar to the Anti-Tank Rocket/Grenade Range, this property was used in the 1940s for a number of ranges, which include the use of said munitions and small arms. The potential for MC and MEC to be present at the site suggest further action.

.22 Caliber Target Butt: This range was identified after the initial phase of the HRR process therefore no data was collected and no information is known about the background and current status of the range. The .22 Caliber Target Butt is shown on a map dated in 1944 adjacent to a Grenade and Bayonet Court.

A-Grenade and Bayonet Court: As with the .22 Caliber Target Butt, this range was identified after the initial phase of the HRR process therefore no data was collected and no information is known about the background and current status of the range. The A-Grenade and Bayonet Court is shown on a map dated in 1944 adjacent to the .22 Caliber Target Butt.

B-Grenade and Bayonet Court: As with the .22 Caliber Target Butt, this range was identified after the initial phase of the HRR process therefore no data was collected and no information is known about the background and current status of the range. The A-Grenade and Bayonet Court is shown on a map dated in 1944 adjacent to the .22 Caliber Target Butt.

C-Grenade and Bayonet Court: As with the .22 Caliber Target Butt, this range was identified after the initial phase of the HRR process therefore no data was collected and no information is known about the background and current status of the range. The A-Grenade and Bayonet Court is shown on a map dated in 1944 adjacent to the .22 Caliber Target Butt.

Lake Tholocco Pistol *Range:* The pistol range was originally reported in the Phase 3 Army CTT Range Inventory. Review of the historical records indicate that this was a remote range, located away from general training areas, that was used for 36 years before closing because of safety issues. Currently, the Lake Tholocco Pistol Range falls within

the operational range boundary and therefore is not eligible for consideration under the MMRP.

Appendix A: Archives Searched/Data Sources

National Archives and Records Administration
Record Groups Searched

Relevant Documents:

RG 77 Chief of Engineering

Box 4

-Military Construction Correspondence. Military Construction Project Data, May 1, 1978. Ammo Storage Facilities. Fort Rucker, Alabama.

RG 337 Headquarters of Army Ground Forces

Box 1121

- Letter From L. B. Clapham. To: The Commanding General, Army Ground Forces, Colonel Jones. April 9, 1942.
-Memorandum From Major, G. S. C., Secretary General Staff, R. A. Hewitt. To: Brigadier General G. V. Franke. April 15, 1942.
-Letter From Hall S. Crain Jr. Colonel, Q. M. C. Commanding. To Commanding General, Forth Service Command, Atlanta, Georgia. May 5, 1943.

Non-Pertinent Sources:

RG 77 Chief of Engineering

Box 12

-Military Construction Correspondence. Industrial Waste and Treatment Facilities. Fort Rucker, Alabama. November 30, 1977.

RG 111

Box 173

-Photograph. A portion of the installation for review for MG Paul J. Mueller, 81st Division (The Wildcat Division). March 13, 1943.

RG 319

Box 48

-Photograph. Photo 319-CE. Lake Tholocco. November 17, 1955.
- Photograph. Aerial view of the Enlisted Men's housing unit under construction. November 1, 1957.

RG 337 Headquarters of Army Ground Forces

Box 1121

- Correspondence. Construction of Training Aids. From Stuart Lewis Lt. Col., G. S. C. To Commanding Officers, Gernerals All Posts and Stations. November 18, 1942.
- Memorandum. To The Headquarters of Army Ground Forces. January 30, 1943.

Appendix B: Data Abstracts

April 9, 1942

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COPY

HEADQUARTERS FOURTH CORPS AREA
Office of the Corps Area Commander

AIR MAIL

DDB-JAB-DFE-faf

Post Office Building
Atlanta, Georgia.
April 9, 1942.

614 - General (DF)

SUBJECT: Training Aids, Camp Rucker, Alabama.

TO : Commanding General, Army Ground Forces, Attention G-3 (Colonel Jones)

1. Confirming telephone conversation this date between Colonel Jones, G-3 Section, Army Ground Forces and Lt. Colonel Barksdale, Asst. G-3 this headquarters, there is inclosed herewith map (in duplicate) of the Camp Rucker, Alabama area.

2. a. Area colored in yellow is that previously approved as reservation area.

b. Area colored in green (approximately 8,000 acres) is that land which would have to be acquired to permit location of small arms ranges adjacent to cantonment area.

3. In view of the limited time available for construction of training aids at Camp Rucker request this headquarters be advised by wire at earliest possible date whether or not the additional land will be acquired.

For the Commanding General:

L. B. CLAPHAM,
Colonel, A.G.D.,
Adjutant General.

1 Incl.
Map in dup

- 1 -

RG 337, Hq. Army Ground Forces
E. 55, Gen. Corr., 1942-48
Box 1121

LDB/fjt

BASIC: Ltr, Hq Fourth Corps Area to CG, AGF, April 9, 1942, file 614 - General (MP), subject, "Training Aids, Camp Rucker, Alabama".

684.1 - GNGCT
(4-9-42) 1st Ind.

HEADQUARTERS ARMY GROUND FORCES, Army War College, Washington, D. C., April 15, 1942.- TO: The Chief of Engineers, U. S. Army (Attention: Colonel John J. O'Brien, Chief Real Estate Branch, Construction Division, Temporary Building "T", 14th St., and Constitution Ave., Washington, D.C.)

1. The additional land, shown on the inclosed map in green, consisting of approximately 8,000 acres at Camp Rucker, Alabama, is essential for training and it is requested that the necessary action be taken to acquire this land by purchase. It is requested that this acquisition be expedited, because the land is needed for the building of essential training aids which should be completed prior to June 15, 1942, when the 81st Division is to be activated.

2. Your attention is invited to paragraph 3 of basic letter requesting that the Commanding General, Fourth Corps Area be notified by wire relative to the acquisition of this land.

For the COMMANDING GENERAL:

#8858

CLYDE L. HYSSONG
Colonel, A.G.D.
Adjutant General

1 Incl:
Map (dup copy w/drawn)

4-15-42
G-3 SECTION

Copy furnished Construction Div

Sent by mgr

- 2 -

November 18, 1942

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COPY

DK:SL:TMH:hwa

AG 614 - General

November 18, 1942

SUBJECT: Construction of Training Aids.

TO: Commanding Officers, Generals
All Posts and Stations.

1. Reference is made to paragraph 6 of Memorandum dated October 29, 1942, Headquarters Army Ground Forces, Washington, D. C. to Chief of Engineers:

"6. In the construction of all 1,000 inch ranges, except anti-aircraft ranges, it is desirable that an earth mound be provided for the salvage of lead and reduction of richochets, providing the construction of the mound offers no engineering difficulty."

2. It is desired that you forward to this office an estimated cost of construction of these earth mounds for each of the existing 1,000 inch ranges at your station; other than anti-aircraft ranges. These mounds are to be three (3) feet above the top of the target and have a minimum thickness of two(2) feet for .22 calibre ammunition and three (3) feet for .30 calibre.

3. It is desired that you expedite this report.

By command of Major General BRYDEN:

/S/ Stuart Lewis

STUART LEWIS
Lt. Col., G. S. C.
Chief, Training Branch

-1-

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Incl #1

RG 337, HQ Army Ground Forces
E. 55, Gen. Corr., 1942-48
Box 1122

2

ESTIMATED CONSTRUCTION COSTS FOR MOUNDS

POST OR STATION	ESTIMATED COST
Camp Van Dorn	$ 5,000.00
Camp Rucker	3,135.00
Fort Bragg	8,960.00
Fort McClellan	4,000.00
Camp McCain	7,536.00
Camp Croft	8,217.00
Camp Sutton	3,000.00
Camp Shelby	3,669.00

Draft #2

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179009

SC 179009
Review for MG Paul J. Mueller, OCSigO
(The Wildcat Division)

CAMP RUCKER, AL
13 Mar 43

Photo by T/3 Monroe L. Grigg
164th Sig Photo Co.
134-003-43-251

REGRADED UNCLASSIFIED PER
RO #76-76 23 Nov 76

mrn

PG III SC Records of Office of Chief Signal Officer Box 173

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NOV 17 1955

FOR OFFICIAL USE ONLY

F04515 ALABAMA

Lake Tholocco is located on the Fort Rucker reservation. The 960-acre body of water is haven for wild ducks as well as a favorite outing place for the personnel of Fort Rucker.

17 November 1955

01-044-1[illegible]-1/AF-55-5026 (Waddle)
UNCLASSIFIED by OCSigO, 12 Jun 56

FM

Aerial Views of Ft Rucker

RG 319
319-CE
Box 48

November 30, 1977

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DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY AVIATION CENTER AND FORT RUCKER
FORT RUCKER, ALABAMA 36362

ATZQ-FE-PS 30 NOV 1977

SUBJECT: MCA Line Item 217, Industrial and Waste Treatment Facilities

Commander
TRADOC
ATTN: ATEN-FE-U
Fort Monroe, VA 23651

1. The above subject MCA line item is under contract and includes the construction of 25 vault-type latrines at outlying ranges and training areas. Matteson Range is included among the sites to receive a latrine.

2. Matteson Range is the primary aerial Gunnery Range used at Fort Rucker. During the summer, a National Guard Engineer Construction Battalion partially constructed a masonry warm-up building which included space for male and female latrines. There is no water available or sewage treatment facilities; therefore, the latrines have not been completed.

3. It was the intent of the installation to finance the completion of the latrines and construction of a well and septic tank with FY 78 OMA funds. However, since the District Engineer has under contract similar type facilities, it is requested that the Mobile District Engineer be authorized to issue a modification to the existing contract to incorporate completion of the latrine and construction of a well, well house, septic tank, and drain field. Attached is one copy of plans developed by this installation indicating work to be accomplished.

FOR THE COMMANDER:

1 Incl
as

Norman E. Powell
NORMAN E. POWELL, DAC
Assistant Adjutant General

AMERICAN REVOLUTION BICENTENNIAL

RG 77, Cl. of Eng.
E. 13 (U.P.) Military Constr. Corres.
Box 12

ATEN-C-C (30 Nov 77) 1st Ind
SUBJECT: MCA Line Item 217, Industrial and Waste Treatment Facilities

HQ TRADOC, Ft Monroe, VA 23651 6 DEC 1977

TO: HQDA (DAEN-MCC) WASH DC 20314

1. This headquarters has reviewed Fort Rucker's request in basic letter and supports the need for completion of the latrine facility at the Matteson Range in lieu of providing a vault-type latrine.

2. Request the Mobile District Engineer be authorized to incorporate this additional work into subject FY 77 MCA project.

FOR THE COMMANDER:

1 Incl
nc

DOREATHA MANGRUM
DAC
Asst AG

CF: wo incl
Cdr, USAAVNC & Ft Rucker
ATTN: ATZQ-FE-PS
DISTENGR, USA ENGRDIST, Mobile
DIVENGR, USA ENGRDIV, South Atlantic

DAEN-MCC-A 12 April 1978

SUBJECT: MCA Line Item 217, Industrial and Waste Treatment Facilities, Fort Rucker, Alabama

Commander
US Army Training & Doctrine Command
ATTN: ATEN-C-C
Fort Monroe, Virginia 23651

1. References:

a. ATEN-C-C 1st Indorsement, 16 December 1977, on ATZQ-FE-PS letter, 30 November 1977, subject as above.

b. ATEN-C-C 1st Indorsement, 23 March 1978, on ATZQ-FE-PS letter, 17 March 1978, subject: MCA Project No. 217 for Industrial Waste Treatment Facilities, Fort Rucker, Alabama.

c. FONCON 12 April 1978, between Mr. Virgili, TRADOC and Mr. Franklin, OCE.

2. The request in reference 1a to complete a latrine facility at the Matteson Range in lieu of providing a vault-type latrine has been favorably considered. The CWE for this requested work is $34,914. It is understood that the fire truck washrack connection requested in reference 1b will be included in a future project as discussed in reference 1c.

3. Funds remaining in the Station Total are $50,604. Project No. 217 is only 43% complete and it is essential that the remaining $50,604 be held until both Project No. 217 and Project No. 211, Flight Simulator Building, now 40% complete, are completed to assure that funds will be available for unforeseen changes resulting from design omissions or site conditions.

DAEN-MCC-A 12 April 1978
SUBJECT: MCA Line Item 17, Industrial and Waste Treatment Facilities, Fort Rucker, Alabama

4. Mobile District is being directed to delete the vault at Matteson Range and accomplish design for completing the latrine as requested in reference 1a. The actual construction for this change will be delayed until it is determined that sufficient contingency funds remain as discussed during reference 1c.

FOR THE CHIEF OF ENGINEERS:

F. P. McNEELY, P.E.
Chief, Construction Division
Military Construction

CC:
1. South Atlantic Division, SADCO-GC
2. Mobile District, SAMEN

Franklin

Murphy

Burke

RECORD: These projects are well into construction, however, they are the kind of jobs that are prone to numbrous design deficiencies. TRADOC and SAD (Mr. Allen) have agreed to waiting until most work is done before authorizing the latrine hook-up at Matteson Range.

DAEN-MCC-A (Record)

Munitions Table

10/03/2003

INSTALLATION NAME	FFID	RANGE/SITE NAME
RUCKER	AL213720776	ANTI-TANK ROCKET/GRENADE RANGE

DODIC	DODIC DESCRIPTION	START DATE	END DATE	MUNITIONS EXPENDED
CTT19	GROUND ROCKETS, RIFLE GRENADES (SMOKE, WP, INCENDIARY)	01/1942	12/1951	
CTT07	GROUND ROCKETS, RIFLE GRENADES, LIVE	01/1942	12/1951	
CTT08	GROUND ROCKETS, RIFLE GRENADES, PRACTICE	01/1942	12/1951	

INSTALLATION NAME	FFID	RANGE/SITE NAME
RUCKER	AL213720776	LAKE THOLOCCO PISTOL RANGE

DODIC	DODIC DESCRIPTION	START DATE	END DATE	MUNITIONS EXPENDED
CTT16	SMALL ARMS	01/1951	12/1987	

** Not all items listed under the DODIC Description may be present at the range/site.

Ownership Table

10/03/2003

INSTALLATION NAME	FFID	RANGE/SITE NAME	ALL ARMY OWNED	OWNER	OWNER DESCRIPTION
RUCKER	AL213720776	ANTI-TANK ROCKET/GRENADE RANGE	Y	DOD	N/A

FEDERAL LEASE FLAG	STATE LEASE FLAG	LOCAL LEASE FLAG	TRIBAL LEASE FLAG	PRIVATE LEASE FLAG	OTHER LEASE FLAG	OTHER LEASE DESCRIPTION	LEASE TERMINATED	REVOCATION OF LAND
N	N	N	N	N	N	N/A	N	N

INSTALLATION NAME	FFID	RANGE/SITE NAME	ALL ARMY OWNED	OWNER	OWNER DESCRIPTION
RUCKER	AL213720776	LAKE THOLOCCO PISTOL RANGE	Y	DOD	N/A

FEDERAL LEASE FLAG	STATE LEASE FLAG	LOCAL LEASE FLAG	TRIBAL LEASE FLAG	PRIVATE LEASE FLAG	OTHER LEASE FLAG	OTHER LEASE DESCRIPTION	LEASE TERMINATED	REVOCATION OF LAND
N	N	N	N	N	N	N/A	N	N

Land Use Restriction Table

10/03/2003

INSTALLATION NAME	FFID	RANGE/SITE NAME	RESTRICTION TYPE	RESTRICTION	PUBLIC ACCESS
RUCKER	AL213720776	ANTI-TANK ROCKET/GRENADE RANGE	ACCESS CONTROL	FENCES	LPA

DESCRIPTION: THE AREA IS CURRENTLY USED AS A GOLF COURSE. BECAUSE OF THE RANGE'S LOCATION ON THE INSTALLATION, ACCESS IS LIMITED.

INSTALLATION NAME	FFID	RANGE/SITE NAME	RESTRICTION TYPE	RESTRICTION	PUBLIC ACCESS
RUCKER	AL213720776	LAKE THOLOCCO PISTOL RANGE	ACCESS CONTROL	FENCES	LPA

DESCRIPTION: THE AREA IS CURRENTLY USED FOR RECREATION. BECAUSE OF THE RANGE'S LOCATION ON THE INSTALLATION, ACCESS IS LIMITED.

PUBLIC ACCESS DEFINITIONS

NPA = No Public Access: The public does not have any access to the range/site.
LPA = Limited Public Access: The public does have some access to the range/site, but that access doesn't involve any digging, only surface access, such as livestock grazing or use as a wildlife preserve or refuge.
RPA = Restricted Public Access: The public does have some access to the range/site and that access may involve some surface disturbance, such as agricultural use, forestry, recreation, and vehicle or supply storage facility use.
UPA = Unrestricted Public Access: There are no restrictions on the use of the range/site (excavation is allowed).

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Range Demographics Table 10/03/2003

INSTALLATION NAME	FFID	RANGE/SITE NAME	TYPE	NAME	STATE	COUNTRY
RUCKER	AL213720776	ANTI-TANK ROCKET/GRENADE RANGE	COUNTY	DALE	AL	UNITED STATES
RUCKER	AL213720776	LAKE THOLOCCO PISTOL RANGE	COUNTY	DALE	AL	UNITED STATES

RMIS Information Table 10/03/2003

INSTALLATION NAME	FFID	RANGE/SITE NAME	RMIS RANGE ID	RMIS SITE ID	ON RANGE FLAG
RUCKER	AL213720776	ANTI-TANK ROCKET/GRENADE RANGE	FTRU-001-R	FTRU-001-R-01	Y

RMIS SITE USEAGE:

BUFFER AREA	DISPOSAL	OBOD	SMALL ARMS RANGE	SKEET RANGE	TESTING	TRAINING	WASTE MILITARY MUNITIONS	OTHER	OTHER DESCRIPTION
N	N	N	N	N	N	Y	Y	N	None

DRINKING WATER	GROUNDWATER DEPTH (FT)	CONSTITUENT FLAG	UXO DENSITY
POTENTIAL	60	UNKNOWN	MEDIUM

INSTALLATION NAME	FFID	RANGE/SITE NAME	RMIS RANGE ID	RMIS SITE ID	ON RANGE FLAG
RUCKER	AL213720776	LAKE THOLOCCO PISTOL RANGE	FTRU-002-R	FTRU-002-R-01	Y

RMIS SITE USEAGE:

BUFFER AREA	DISPOSAL	OBOD	SMALL ARMS RANGE	SKEET RANGE	TESTING	TRAINING	WASTE MILITARY MUNITIONS	OTHER	OTHER DESCRIPTION
N	N	N	Y	N	N	Y	N	N	None

DRINKING WATER	GROUNDWATER DEPTH (FT)	CONSTITUENT FLAG	UXO DENSITY
POTENTIAL	60	UNKNOWN	

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DSERTS Information Table 10/03/2003

INSTALLATION NAME	FFID	RANGE/SITE NAME	DSERTS SITE ID	DSERTS CTC INCLUDES UXO-DMM	DSERTS SITE ID HAS BRAC UXO FLAG	DERP ELIGIBILITY	RMIS SITE ID
RUCKER	AL213720776	ANTI-TANK ROCKET/GRENADE RANGE				MR	FTRU-001-R-01

DSERTS PHASE	RESPONSE COMPLETE: FLAG	REASON

INSTALLATION NAME	FFID	RANGE/SITE NAME	DSERTS SITE ID	DSERTS CTC INCLUDES UXO-DMM	DSERTS SITE ID HAS BRAC UXO FLAG	DERP ELIGIBILITY	RMIS SITE ID
RUCKER	AL213720776	LAKE THOLOCCO PISTOL RANGE				MR	FTRU-002-R-01

DSERTS PHASE	RESPONSE COMPLETE: FLAG	REASON

Stewardship Table

Natural and Cultural Resources:

INSTALLATION	RANGE NAME	FFID	SPECIAL STATUS SPECIES	CULTURAL RESOURCES
RUCKER	ANTI-TANK ROCKET/GRENADE RANGE	AL213720776		
RUCKER	LAKE THOLOCCO PISTOL RANGE	AL213720776		

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G. RISK ASSESSMENT CODE ANALYSIS

As part of the CTT Inventory, the data collection teams performed an assessment of explosives safety risk using the RAC process. The RAC process requires the completion of a worksheet that consists of a series of questions regarding the range or site. Based on the results of the worksheet, relative values for the severity and probability of explosives safety risk associated with the range area are assigned. The severity and probability values are then combined to arrive at an overall score (RAC score).The RAC score is an estimate of the relative explosives risk, which is reported as a number between 1 and 5. The following is a description of the RAC scores.

RAC 1 High Explosives Safety Risk - Highest priority for further action.

RAC 2 Serious Explosives Safety Risk - Priority for further action.

RAC 3 Moderate Explosives Safety Risk - Recommend further action.

RAC 4 Low Explosives Safety Risk - Recommend further action.

RAC 5 Negligible Explosives Safety Risk - No explosive related action necessary.

As designed by USACE, a site's RAC score is calculated and revised up to the end of the site's investigation as an expression of the explosives safety risk at the site. The RAC scoring performed under this CTT inventory is based on the munitions used, discarded, or disposed of at the CTT military range or site with UXO, DMM, or MC as determined through interviews, site visits and historic records and does not reflect any clean-up actions that may have already been performed at the site. If cleanup actions have been completed at the site, this is noted in the Narrative at the end of the RAC worksheet. Hence, the actual RAC score may reflect a higher than anticipated current risk at the site. DoD is currently developing a new priority assessment tool for site explosives safety risk. Until a new tool is approved for use, DoD is mandating the use of RAC scoring for the analysis of explosives safety risk associated with ranges and sites identified during this CTT inventory.

The area, probability value, severity value and overall RAC score for each of the CTT range, UXO and DMM sites in the inventory are provided in Table G-1 below.

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Table G-1: Risk Assessment Code Analysis Results

INSTALLATION	RANGE NAME	ACRES	SEVERITY*	PROBABILITY**	OVERALL***
RUCKER	ANTI-TANK ROCKET/GRENADE RANGE	54	II	B	2
RUCKER	LAKE THOLOCCO PISTOL RANGE	0.9	V	E	5

* Severity – 5 possible classifications from I (catastrophic) to V (none)
** Probability – 5 possible classifications from A (frequent) to E (improbable).
*** "0" indicates that the site is a MC site and therefore, RAC scores have not been prepared.

According to the RAC worksheet instructions, if the severity value is V, the probability value does not need to be calculated, and a RAC score of 5 should be assigned to the range.

The completed RAC worksheet for each range in the CTT inventory is also included in this section. RAC worksheets were not prepared for MC sites.

RISK ASSESSMENT CODE WORKSHEETS

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RISK ASSESSMENT CODE WORKSHEETS

Anti-Tank Rocket/Grenade Range

Anti-Tank Rocket/Grenade Range

RISK ASSESSMENT CODE WORKSHEETS

Site Name: Anti-Tank Rocket/Grenade Range Rater's Name: Rhonda Stone

Site Location: RUCKER Phone: 215-399-4265

Date Completed: 02/06/02 Organization: MPI

Score: RAC 2

Explosive Relative Risk Assessment:

This risk assessment procedure was developed in accordance with Military Standard 882C and Army Regulation 385-10. The Risk Assessment Code (RAC) score will be used by DoD and the U.S. Army to assist in the prioritization and sequencing of projects. The risk assessment is based on the best available information resulting from the data collection effort of the CTT inventory. This information is used to assess the explosive relative risk involved with the CTT ranges/sites identified in this inventory. The risk assessment is composed of two factors, hazard severity and hazard probability.

PART I. HAZARD SEVERITY

Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)	VALUE
A. Conventional ordnance and ammunition:	
Medium/large caliber (20mm and larger)	☐ 10
Bombs, explosive	☐ 10
Grenades, hand or rifle, explosive	☑ 10
Landmine, explosive	☐ 10
Rockets, guided missile, explosive	☑ 10
Detonators, blasting caps, fuzes, boosters, bursters	☐ 6
Bombs, practice (w/spotting charges)	☐ 6
Grenades, practice (w/spotting charges)	☐ 4
Landmine, practice (w/spotting charges)	☐ 4
Small arms, complete round (.22 cal -.50 cal)	☐ 1
Small arms, expended	☐ 0
Practice ordnance (w/o spotting charges)	☐ 0

Conventional ordnance and ammunition (largest single value): 10

What evidence do you have regarding conventional unexploded ordnance?

According to the Range Area, Ozark Triangular Division Camp Map from 1945, this area was used for anti-tank rocket and anit-tank grenade training.

Anti-Tank Rocket/Grenade Range

B. The Values for Pyrotechnics (for munitions not described above):	**VALUE**
Munition (containers) containing White Phosphorus (WP) or other pyrophoric material (i.e.,spontaneously flammable)	☐ 10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	☐ 6
Flares, signals, simulators, screening smokes (other than WP)	☐ 4

Pyrotechnics (select the single largest value): 0

What evidence do you have regarding pyrotechnics?

None found during site visit and document search.

C. Bulk High Explosives (HE) (not an integral part of conventional ordnance; uncontainerized):	**VALUE**
Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	☐ 10
Demolition charges	☐ 10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	☐ 8
Military dynamite	☐ 6
Less sensitive explosives (Ammonium Nitrate, Explosive D, etc.)	☐ 3

High explosives (select the single largest value): 0

What evidence do you have regarding bulk explosives?:

None found during site visit and document search.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance;	
Solid or liquid propellants	☐ 6

Propellants: 0

What evidence do you have regarding bulk propellants?

None found during site visit and document search.

Anti-Tank Rocket/Grenade Range

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	**VALUE**
Toxic chemical agents (choking, nerve, blood, blister)	☐ 25
War Gas Identification Sets	☐ 20
Radiological	☐ 15
Riot Control Agents (vomiting, tear)	☐ 5

Chemical and Radiological (select the single largest value): 0

What evidence do you have regarding chemical or radiological?

None found during site visit and document search.

TOTAL HAZARD SEVERITY VALUE (Sum of value A through E (maximum of 61): 10

Apply this value to Table 1 to determine Hazard Severity Category

TABLE 1
HAZARD SEVERITY*

DESCRIPTION	CATEGORY		HAZARD SEVERITY VALUE
CATASTROPHIC	I	☐	21 and/or greater
CRITICAL	II	☑	10 to 20
MARGINAL	III	☐	5 to 9
NEGLIGIBLE	IV	☐	1 to 4
**NONE	V	☐	0

*Apply Hazard Severity Category to Table 3
**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

Anti-Tank Rocket/Grenade Range

PART II. HAZARD PROBABILITY

The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance or explosive materials on the range/site.

AREA, EXTENT, ACCESSIBILITY OF OE HAZARD (Circle all that apply)

A. Locations of OE hazards	**VALUE**
On the surface	☑ 5
Within tanks, pipes, vessels, or other confined areas	☐ 4
Inside walls, ceilings, or other building/structure	☐ 3
Subsurface	☐ 2

Location (select the single largest value): 5

What evidence do you have regarding the location of OE?

According to Mr. Webers, the Range Control contact, and Mr. Swift, Environmental Division, UXO items have been identified in the area of the former range.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard (road, park, playground, building, etc.)	**VALUE**
Less than 1,250 feet	☑ 5
1,250 feet to 0.5 mile	☐ 4
0.5 mile to 1.0 mile	☐ 3
1.0 mile to 2.0 Miles	☐ 2
Over 2 miles	☐ 1

Distance (select the single largest value): 5

What are the nearest inhabited structures/buildings?

The Proshop for the golf course is 100 feet of the former range.

Anti-Tank Rocket/Grenade Range

C. Number(s) of building(s) within a 2-mile radius measured from the OE hazard area, not the installation boundary.

26 and over	☑ 5
16 to 25	☐ 4
11 to 15	☐ 3
6 to 10	☐ 2
1 to 5	☐ 1
0	☐ 0

Number of buildings (select the single largest value): 5

Narrative:

Recreation, office buildings, housing barracks, and Proshop within 2 miles.

D. Types of Buildings (within a 2 mile radius)	**VALUE**
Educational, child care, residential, hospitals hotels, commercial, shopping centers	☑ 5
Industrial, warehouse, etc.	☐ 4
Agricultural, forestry, etc.	☐ 3
Detention, correctional	☐ 2
No buildings	☐ 0

Types of buildings (select the single largest value): 5

Describe the types of buildings:

Recreation, office buildings, housing barracks, and Proshop within 2 miles.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance: **VALUE**

Anti-Tank Rocket/Grenade Range

No barrier nor security system	☑ 5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	☐ 4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	☐ 3
Security Guard, but no barrier.	☐ 2
Isolated site.	☐ 1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	☐ 0

Accessibility (select the single largest value): 5

Describe the site accessibility:

No Barriers, site has complete accessibility

F. Site Dynamics. **VALUE**

This deals with site conditions are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase

Expected	☐ 5
None anticipated	☑ 0

Site Dynamics (select the single largest value): 0

Desc Dynamics:

Part of the site is currently used as a golf course and the site is not subject to high erosion because of vegetative cover.

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F (maximum of 30): 25

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

TABLE 2
HAZARD PROBABILITY

DESCRIPTION	LEVEL	HAZARD PROBABILITY
FREQUENT	A ☐	27 or greater
PROBABLE	B ☑	21 to 26
OCCASIONAL	C ☐	15 to 20
REMOTE	D ☐	8 to 14
IMPROBABLE	E ☐	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT

The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is zero (0), a Hazard Probability is not calculated and a RAC score of 5 is automatically assigned to the range or site.

TABLE 3

PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	☐ 1	☐ 1	☐ 2	☐ 3	☐ 4
CRITICAL II	☐ 1	☑ 2	☐ 3	☐ 4	☐ 5
MARGINABLE III	☐ 2	☐ 3	☐ 4	☐ 4	☐ 5
NEGLIGIBLE IV	☐ 3	☐ 4	☐ 4	☐ 5	☐ 5

RISK ASSESSMENT CODE (RAC)

☐ RAC 1 High Risk - Highest priority for further action.

☑ RAC 2 Serious Risk - Priority for further action.

☐ RAC 3 Moderate Risk - Recommend further action.

☐ RAC 4 Low Risk - Recommend further action.

☐ RAC 5 Negligible Risk - Indicates that no DoD action is necessary.

Anti-Tank Rocket/Grenade Range

PART IV. NARRATIVE

Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made:

The range is given a RAC2 because UXO has been identified in the area of the former range and because the area is used for recreation.

RISK ASSESSMENT CODE WORKSHEETS

Lake Tholocco Pistol Range

Lake Tholocco Pistol Range

RISK ASSESSMENT CODE WORKSHEETS

Site Name: Lake Tholocco Pistol Range
Site Location: RUCKER
Date Completed: 02/06/02

Rater's Name: Rhonda Stone
Phone: (215)399-4265
Organization: MPI
Score: RAC 5

Explosive Relative Risk Assessment:
This risk assessment procedure was developed in accordance with Military Standard 882C and Army Regulation 385-10. The Risk Assessment Code (RAC) score will be used by DoD and the U.S. Army to assist in the prioritization and sequencing of projects. The risk assessment is based on the best available information resulting from the data collection effort of the CTT inventory. This information is used to assess the explosive relative risk involved with the CTT ranges/sites identified in this inventory. The risk assessment is composed of two factors, hazard severity and hazard probability.

PART I. HAZARD SEVERITY

Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of UXO.

TYPE OF ORDNANCE: (Circle all that apply)	VALUE
A. Conventional ordnance and ammunition:	
Medium/large caliber (20mm and larger)	☐ 10
Bombs, explosive	☐ 10
Grenades, hand or rifle, explosive	☐ 10
Landmine, explosive	☐ 10
Rockets, guided missile, explosive	☐ 10
Detonators, blasting caps, fuzes, boosters, bursters	☐ 6
Bombs, practice (w/spotting charges)	☐ 6
Grenades, practice (w/spotting charges)	☐ 4
Landmine, practice (w/spotting charges)	☐ 4
Small arms, complete round (.22 cal -.50 cal)	☐ 1
Small arms, expended	☑ 0
Practice ordnance (w/o spotting charges)	☐ 0

Conventional ordnance and ammunition (largest single value): 0

What evidence do you have regarding conventional unexploded ordnance?

According to Mr. Webers, the Range Control contact, and the 1951 Ranges and Training Areas, Camp Rucker Alabama Map, this area was used as a pistol training range.

B. The Values for Pyrotechnics (for munitions not described above): **VALUE**

Munition (containers) containing White Phosphorus (WP) or other pyrophoric material (i.e.,spontaneously flammable)	☐ 10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	☐ 6
Flares, signals, simulators, screening smokes (other than WP)	☐ 4

Pyrotechnics (select the single largest value): *0*

What evidence do you have regarding pyrotechnics?

None found during site visit and document search.

C. Bulk High Explosives (HE) (not an integral part of conventional ordnance; uncontainerized): **VALUE**

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	☐ 10
Demolition charges	☐ 10
Secondary explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	☐ 8
Military dynamite	☐ 6
Less sensitive explosives (Ammonium Nitrate, Explosive D, etc.)	☐ 3

High explosives (select the single largest value): *0*

What evidence do you have regarding bulk explosives?:

None found during site visit and document search.

D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance;

Solid or liquid propellants	☐ 6

Propellants: *0*

What evidence do you have regarding bulk propellants?

None found during site visit and document search.

Lake Tholocco Pistol Range

E. Chemical Warfare Materiel (CWM) and Radiological Weapons:	**VALUE**
Toxic chemical agents (choking, nerve, blood, blister)	☐ 25
War Gas Identification Sets	☐ 20
Radiological	☐ 15
Riot Control Agents (vomiting, tear)	☐ 5

Chemical and Radiological (select the single largest value): 0

What evidence do you have regarding chemical or radiological?

None found during site visit and document search.

TOTAL HAZARD SEVERITY VALUE (Sum of value A through E (maximum of 61): 0

Apply this value to Table 1 to determine Hazard Severity Category

TABLE 1
HAZARD SEVERITY*

DESCRIPTION	CATEGORY		HAZARD SEVERITY VALUE
CATASTROPHIC	I	☐	21 and/or greater
CRITICAL	II	☐	10 to 20
MARGINAL	III	☐	5 to 9
NEGLIGIBLE	IV	☐	1 to 4
**NONE	V	☑	0

*Apply Hazard Severity Category to Table 3
**If hazard severity value is 0, you do not need to complete Part II of this form. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. HAZARD PROBABILITY

The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance or explosive materials on the range/site.

AREA, EXTENT, ACCESSIBILITY OF OE HAZARD (Circle all that apply)

A. Locations of OE hazards	**VALUE**
On the surface	☐ 5
Within tanks, pipes, vessels, or other confined areas	☐ 4
Inside walls, ceilings, or other building/structure	☐ 3
Subsurface	☐ 2

Location (select the single largest value): 0

What evidence do you have regarding the location of OE?

Not Applicable

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard (road, park, playground, building, etc.)	**VALUE**
Less than 1,250 feet	☐ 5
1,250 feet to 0.5 mile	☐ 4
0.5 mile to 1.0 mile	☐ 3
1.0 mile to 2.0 Miles	☐ 2
Over 2 miles	☐ 1

Distance (select the single largest value): 0

What are the nearest inhabited structures/buildings?

Not Applicable

C. Number(s) of building(s) within a 2-mile radius measured from the OE hazard area, not the installation boundary.

26 and over	☐ 5
16 to 25	☐ 4
11 to 15	☐ 3
6 to 10	☐ 2
1 to 5	☐ 1
0	☐ 0

Number of buildings (select the single largest value): 0

Narrative:
Not Applicable

D. Types of Buildings (within a 2 mile radius)	**VALUE**
Educational, child care, residential, hospitals hotels, commercial, shopping centers	☐ 5
Industrial, warehouse, etc.	☐ 4
Agricultural, forestry, etc.	☐ 3
Detention, correctional	☐ 2
No buildings	☐ 0

Types of buildings (select the single largest value): 0

Describe the types of buildings:
Not Applicable

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance: **VALUE**

No barrier nor security system ☐ 5

Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing. ☐ 4

A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site. ☐ 3

Security Guard, but no barrier. ☐ 2

Isolated site. ☐ 1

A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area). ☐ 0

Accessibility (select the single largest value): 0

Describe the site accessibility:

Not Applicable

F. Site Dynamics. **VALUE**

This deals with site conditions are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase

Expected ☐ 5

None anticipated ☐ 0

Site Dynamics (select the single largest value): 0

Desc Dynamics:

Not Applicable

TOTAL HAZARD PROBABILITY VALUE (sum of largest values for A through F (maximum of 30): 0

Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

J. NOTES

The Anti-Tank Rocket/Grenade Range overlaps with an area currently part of the Phase 2 Active/Inactive inventory. The information provided in this report for the Anti-Tank Rocket/Grenade Range referes only to the part of this range that was in the non-range area and does not include any part of the Acitve/Inactive area. In addition, the two ranges were combined for this report because they had overlapping range fans and were both used for anti-tank training. After the range was closed in 1951 and was undeveoped until the golf course was constructed in 1964.

1987

The Origins of FORT RUCKER

by

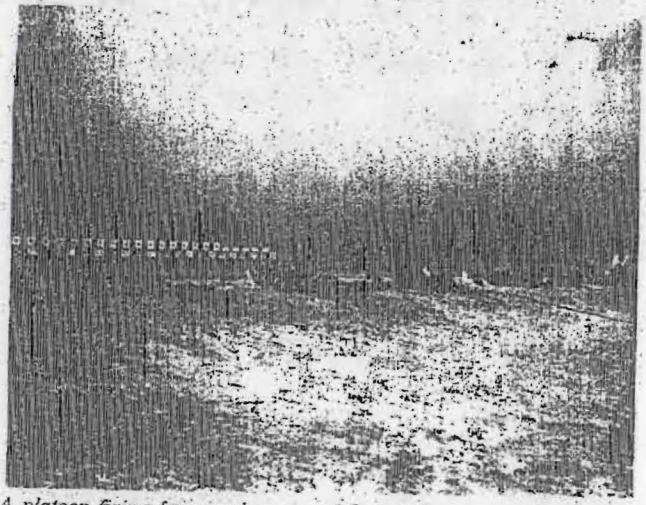
Val L. McGee

Published by

The Dale County Historical Society, Inc.
Ozark, Alabama

first change in pay for the Armed Forces in twenty years; a Private went from $21.00 per month to $42.00 per month; a Master Sergeant was raised from $125.00 per month to $138.00 per month, and a Second Lieutenant went from $1,500 per year to $1,800 per year, and similar raises were made for the other military ranks.

In downtown Ozark, the Chamber of Commerce and the business community were busily trying to get ready for the expected sudden influx of 30,000 soldiers. Mr. Walter Brackin was showing the way; he already had the Dale Movie Theater on the north side of the square, and the Ozark Theater on the south side, but he promptly built the Claire Theater just west of the square across from the old Ford place, with seats for 1,000 customers, to be operated by his daughter, Etta Claire. Also, Messrs. Arnie Brown and Bill Brown built a new Greyhound

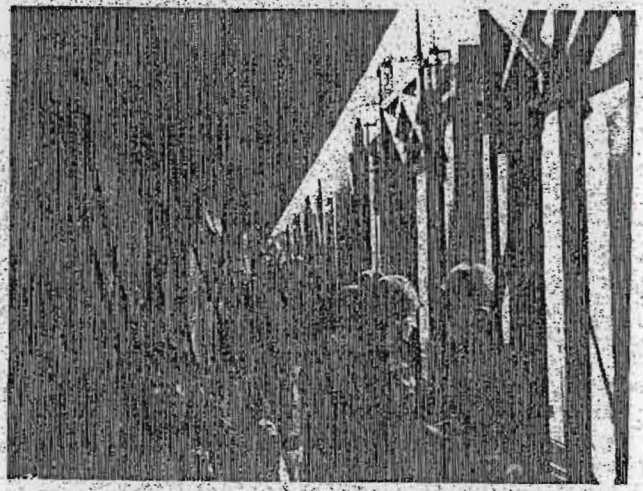


A platoon firing for record on one of the small arms ranges at Camp Rucker, January 1944. A bullseye counts five points, and the outer rings have values down to two. Soldiers call a complete miss a "Maggie's drawers" because the men working in the pit show a miss by waving a small red flag across the face of the target.

"Ready on the firing line!" Each man has a coach who supervises the firing techniques. Camp Rucker, January, 1944.

Bus Station on South Merrick Avenue which was reported to be the largest Greyhound station between Montgomery and Tallahassee, Florida, which had garage space for eight large buses, and in which the Greyhound Company set up a division office, in anticipation of the tens of thousands of bus passengers to be generated by the impending camp opening.

But the most important Ozark preparations for the imminent deluge of soldiers were items of work requested by the Army itself. Highway U.S. 231 was the main traffic artery into the Wiregrass, and at the northeast corner of the Ozark courthouse square was the turn to the southwest which would move the traveler toward Camp Rucker; this was the route over which most of the expected 30,000 new Dale County residents would be coming. Therefore, the Army asked the local authorities to provide a Soldiers' Information Station at this intersection of the Courthouse Square and U.S. Highway 231. The Ozark city fathers and Chamber of Commerce responded with alacrity and considerable imagination; they built a magic [illegible]



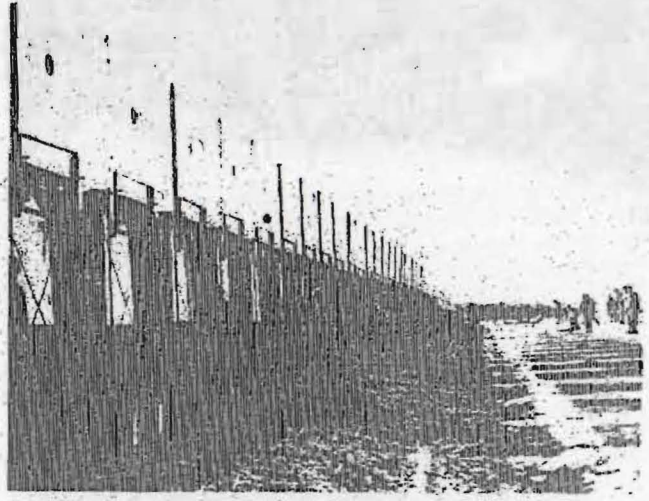
The target pit at a small arms range Camp Rucker, January 1944. There are two men for each target; one on the field telephone to keep up with when to lower the target and mark it; the other man lowers the target to mark it and score it, and then raises it again so the firer can shoot again. The concrete target pit is safe, but the men all wear steel helmets.

ture right on the southeast corner of the courthouse lawn! This key facility had a lobby, restrooms, and lounge with telephones for use by the incoming soldiers. And during April, 1942, with the gigantic Army camp nearing the occupancy stage, the carpenters on this Soldiers' Information Station were matching the frenzied activity on post, trying to get the facility on the courthouse lawn ready for the flood of soldiers.

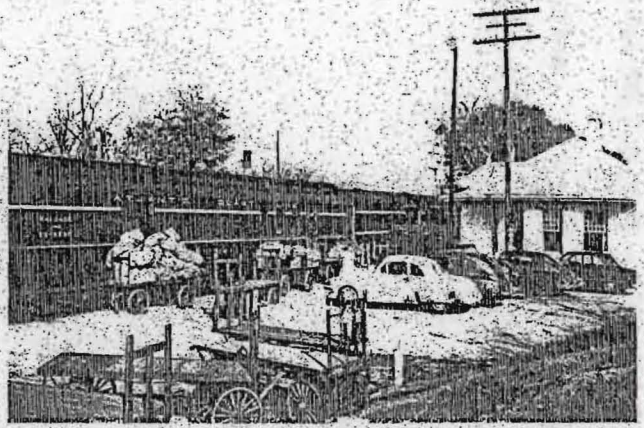
A second item of work suggested by the Army was the fixing up of the big Community House which had been built as a National Youth Administration project during the late thirties, using lumber from the old farm houses torn down out on the Bear Farm. The Army provided $25,000.00 and the city used it to put in a central heating system, new furnishings, and equipment for the big swimming pool so that this fine recreation facility could be ready for the soldiers. The City of Ozark hired a

professional recreation staff and dozens of local men and women provided a volunteer corps which made the depression-born Community House into a first-class club for entertaining soldiers for the entire four years of World War II.

The J. A. Jones Construction Company, the general contractor, and its several major sub-contracting companies, had some cold and wet weather during the spring of 1942, but the sandy soil was easy to work with, and the warmth of the Gulf coastal plain permitted most construction operations to go on every day. Therefore, it began to appear that the construction crews were going to make their 120-day time limitation, and the supervising U.S. Army Engineers began to coordinate the transfer of the post facilities to the Army. There was not a selected day when the contractor had an over-all inspection and turned the entire camp over to the military; on the contrary, the officers and key enlisted cadre sent to open and operate the post were coming in piecemeal, generally during the month of April, 1942, and at



Small arms range, Camp Rucker, January 1944. The men being tested go down and look at the targets after all firing is completed.



Ozark passenger station, Atlantic Coast Line Railroad, 1952. Thousands of soldiers arrived at this station, most of them coming on individual orders. However, some units were sent to Camp Rucker and the unit would form on Broad Street, one block south of the railway station, and march with a band, and with flags flying, right through Ozark and out to Camp Rucker.

School at Fort Sill, Oklahoma, had for two years been making studies of how to avoid the congestion which was building up on that busy post which also contained the gigantic Artillery School. Twenty-one sites were considered as possible locations for the aviation school, but with the enthusiastic encouragement from Congressman George Andrews, and Alabama Senators Hill and Sparkman, and Third Army officials, Camp Rucker had been selected. The July 20, 1954, announcement, which made banner headlines all over the Wiregrass counties, indicated that the school, commanded by Brigadier General Carl I. Hutton, would begin moving from Fort Sill to Camp Rucker right away, would begin its first class at Camp Rucker about October 1, 1954, and would complete the entire move to the big Alabama post by June 30, 1955.

The central office of Riley Bus Lines, located right back of the Greyhound Bus Depot. Ike Riley had the local franchise to Camp Rucker, to Columbus, and many other Wiregrass cities.

The rejoicing citizens of the Wiregrass did not much care why the Army Aviation School had selected Camp Rucker — they were just relieved and delighted that they were coming — but the official announcement gave the following reasons for the choice:

1. Existence of required facilities to support the school, including an air field with three 5,000 feet runways.
2. Adequate ordnance areas.
3. Buildings suitable for conversion to helicopter hangars.
4. Artillery range and government-owned land available for tactical exercises.
5. Suitable weather for instructional flying.
6. Nearness to Infantry School at Fort Benning.
7. Located in low density air traffic area.

April 15, 1942

A.G. FILE COPY

OFFICE OF THE CHIEF OF STAFF
HQ ARMY GROUND FORCES
ARMY WAR COLLEGE
WASHINGTON, D. C.
April 15, 1942

Noted C.L.H.

BRIGADIER GENERAL G V FRANKE
COMMAND AND GENERAL STAFF SCHOOL
FORT LEAVENWORTH KANSAS

REURTEL REGARDING ADDITIONAL LAND AT CAMP TUCKER COPRA REQUEST FROM THIS HEADQUARTERS HAS BEEN SUBMITTED THAT AN ADDITIONAL EIGHT THOUSAND ACRES BE ACQUIRED ADJACENT TO THE CANTONMENT AREA WHICH WOULD BE SUFFICIENT TO ACCOMMODATE SMALL ARMS FIRING RANGES AND TRAINING AIDS END COPRA

McNAIR

AGF

OFFICIAL:

(Signed) R. A. Hewitt
R. A. HEWITT,
Major, G. S. C.,
Secretary General Staff

By Radio

REC'D SIGNAL CENTER ACT

8

007112

RG 337, Hq. Army Ground Forces
E. 55, Gen. Corr., 1942-48
Box 1121

278

DRAFT

RADIOGRAM

BRIGADIER GENERAL C V FRANKE
COMMAND AND GENERAL STAFF SCHOOL
FORT LEAVENWORTH KANSAS

REURTEL REGARDING ADDITIONAL LAND AT CAMP RUCKER COMMA REQUEST FROM THIS HEADQUARTERS HAS BEEN SUBMITTED THAT AN ADDITIONAL EIGHT THOUSAND ACRES BE ACQUIRED ADJACENT TO THE CANTONMENT AREA WHICH WOULD BE SUFFICIENT TO ACCOMMODATE SMALL ARMS FIRING RANGES AND TRAINING AIDS END GNGSE

McNAIR

AGF

OFFICIAL:

007112

HEADQUARTERS ARMY GROUND FORCES

MEMO SLIP

File No.
Subject: Training Aids, Camp Rucker

From	To	Date	Memoranda - Use full width if lengthy
G-3	C/S	4-14-42	Our Construction Division is sending the paper concerning the purchase of an additional 8,000 acres of land at Camp Rucker to our Adjutant General, for dispatch to the Chief of Engineers, with an indorsement recommending purchase of the land. L.D.B.

For inter-office use only - please use reverse side

AGF-Form No. 2

(49)

January 30, 1943

280

RESTRICTED

HEADQUARTERS ARMY GROUND FORCES

MEMO SLIP

FEB 18 '43 AM 32
C01495

RECEIVED
ENG. SEC. A.G.F.

File No. 684 (R)- GNGCT/042h2 (1-30-43)
Subject: Tng Aids, Cp Maxey, Texas.

From	To	Date	Memoranda-Use full width if lengthy
(1) G-3	Gn Engr C/S AG	2-15-43	1. Recommend approval of 1st Indorsement. 2. Informal reports from the Fourth Serv Comd are to the effect that rifle ranges are idle for sufficient periods that with a staggering in use, many more units could be accommodated. In particular, Camp Rucker, with a capacity of a division plus again as many non-divisional troops, has operated readily with 150 rifle range tgts. Post authorities believe that 150 tgts will accommodate a div and twice as many non-div troops. This is the problem which will confront Cp Maxey upon its expansion. 3. a. Based on an experience figure that an average of 8 men per tgt can be qualified each week in B course, 1200 men can be qualified ea week on a 150 tgt range. Roughly, making comparisons for other courses to be fired by a div, it is estimated that a div should readily complete all its firing with a 12 week requirement of range facilities. It can complete the intensive rifle marksmanship tng in 7 weeks at which time, it could share the range with other units on a 50-50 basis and meet its MTP schedule. b. Miscellaneous trps firing mostly the "C" course should be able to qualify 10 men per tgt per week. For 30,000 misc trps at 1500 men per week would require 20 weeks. c. With an expected year assignment of units to a camp in this country, 32 of 52 weeks would be required to fire all units at Cp Maxey. d. It is believed that sufficient leeway exists to make adjustments so that all units will be able to progress satisfactorily in their marksmanship tng. 4. Col. Haskell inspected the access roads at Camp Maxey, Jan. 15, 1943 and believes that a more moderate program of access road improvement than is indicated in basic communication will suffice. WARD FOR LENTZ

For inter-office use only-please use reverse side

AGF-FORM NO. 2

RESTRICTED

13

RG 337, Hq. Army Ground Forces
E. 55, Gen. Corr., 1942-48
Box 1121

May 5, 1943

COPY

HEADQUARTERS CAMP RUCKER
Office of the Commanding Officer

Camp Rucker, Alabama
May 5, 1943.

SUBJECT: Additional Training Aids

To: Commanding General, Fourth Service Command, Atlanta, Georgia

1. The Small Arms Range facilities at Camp Rucker, Alabama have been unsatisfactory in as much as we have only three (3) bays of fifty (50) targets each. The one hundred and fifty (150) targets which are available have not been adequate to take care of the requirements of one Infantry Division stationed at Camp Rucker, the Air Base Group, the Second Army Troops, and other troops now stationed at Camp Rucker. Whenever a unit is alerted and must fire immediately in order to complete its schedule on time, it seriously disrupts the program of all the other units which have been previously scheduled.

2. Request is hereby made for one hundred (100) additional Known Distance targets to be built on the east side of the present known distance range by the Area Engineer.

3. Request is also made for one range house, portable control platform, and one latrine to be located in Area 3 where it is desired to place extra .50 calibre machine gun targets. The one Anti-Tank Range in Area 11 is not sufficient to take care of all the .50 calibre and 37mm firing which must be done by the various units at this camp and those who are being sent here to fire.

/s/ Hall S. Crain, Jr.
HALL S. CRAIN, JR.
Colonel, Q.M.C.
Commanding

COPY

021963

RG 337, Hq. Army Ground Forces
E. 55, Gen. Corr., 1942-48
Box 1122

282

(5-5-43) 3rd Ind. DK:JAL:ewh

HEADQUARTERS FOURTH SERVICE COMMAND, ASF., Atlanta, Georgia, May 24, 1943.

TO: Commanding General, Army Ground Forces

1. K/D Range at Camp Rucker is in constant use and only by the most careful coordination has it been kept from being a bottle neck. Now with the 28th Division from Camp Gordon Johnston using this range, it has become definitely overcrowded.

2. Change No. 1 WD Memo. W210-8-42 states that a K/D Range of 200 targets shall be provided for a Two Division Camp.

3. In view of the foregoing information, this Headquarters recommends the construction of 50 additional Targets on the K/D Range at Camp Rucker. Construction to conform with drawing C of E 1600-115, log construction.

4. Requests contained in paragraphs 3 and 4, 2nd indorsement will be handled directly by this Headquarters.

For the Commanding General:

J. A. LOGAN,
Major, C. E.,
Unit Training Branch

Incls: 2 Estimates w/d
(#'s 2 & 3)

454

HAWKINS:cjl
Ext.389
49738

Basic: Ltr fr Hq, Cp Rucker, Ala, May 5, 1943. Subj: Att'l Tng Aids.
To: CG, 4th Serv Comd. (Copy of basic and 3d Ind in AG files)

Memo for Record:

Basic ltr states small arms rn facilities at Rucker have been unsatisfactory inasmuch as they have only 3 bays of 50 tgts ea. The 150 tgts which are available have not been adequate to care for the requirements of one Inf Div at Rucker, the Air Base Group, the Second Army Troops and other troops now at Camp Rucker. Requests 100 add'l k/d tgts built on east side of present k/d range. Requests also 1 range house, portable control platform, and one latrine to be located in area 3 where it is desired to place extra .50 cal mg tgts.

1st Ind fr Hq, 4th SC dtd May 8, 1943. To: CO, Cp Ruckar, Ala. refers to par 5 WD Memo W210-8-42. Returns request in order that it may be resubmitted in accordance with abovementioned memo.

2d Ind fr Hq, Cp Rucker, May 20. To: CG, 4th Serv Comd attaches estimate of cost.

3d Ind fr Hq, 4th Serv Comd dtd May 24, 1943. To: CG, AGF states k/d rn is in constant use and only by careful coordination has it been kept fr being a bottle neck. With 28th Div fr Cp Gordon Johnston using it, it has become overcrowded. States requests contained in par 3 and 4, 2d Ind will be handled directly by that hqs.

This action forwards to C/Engrs requesting a 25-tgt known-distance rn be constr at Rucker. Range should be of the most economical type consistent with Engineering Manual, Chapter XIX, Tng Aids. The basic request for the constr of k/d ranges in excess of that requested in par 1 above is not favorably considered.

Concurrence: Tng Br. (Col. Maertens)

CG, Second Army (Maj Bonesteel)

684 - GNGCT (5-5-43) 4th Ind. 32

HEADQUARTERS ARMY GROUND FORCES, Army War College, Washington, D. C.

JUN 1943

To: Chief of Engineers, War Department, Washington, D. C.

1. In accordance with the provisions of Change No. 1 of WD Memo W210-8-42, May 16, 1943, it is requested that a twenty-five (25) target known distance range be constructed at Camp Rucker, Alabama. This range should be of the most economical type consistent with Engineering Manual, Chapter XIX, Training Aids. The location for the range is indicated on the attached map.

2. The rated capacity of Camp Rucker is greater than 40,000.

COPY FURNISHED: Cm Engrs

Appd by Cof S AGF JUN 1943

- 3 -

GNAGS

451
21963

(4th Ind, 684 - CMOCT (5-5-43) Hq, AGF, To: C/Engrs - continued)

3. The basic request for the construction of known distance ranges in excess of that requested in paragraph 1 above, is not favorably considered.

For the COMMANDING GENERAL:

DISPATCHED
AGF
JUN 1 P M

49938

2 Incls.
#1 - Map
#2 - Cost Estimate #1
(dup)

Operations Division, AGF
MAY 29 1943
Date

456

HEADQUARTERS ARMY GROUND FORCES

32

MEMO SLIP

File No. 684-CNGCT (5-5-43)
Subject: Additional Training Aids.

	From	To	Date	Memoranda-Use full width if lengthy
(1)	G-3	C/S	5-29-43 5/31/43	1. Basic letter and 2nd requests the construction of a fifty (50) target Known Distance range at Camp Rucker. Request made by Post Commander - Estimated cost $50,333.00 2. 150 targets now available. 3. Change No. 1 to WD Memo W210-8-42, May 16, 1943 authorizes an additional 25 target range at this post because the rated troop capacity is over 40,000. 4. Proposed 4th Ind. request C/E to construct the authorized 25 target range. 5. Recommend that the proposed 4th Ind be approved for dispatch. WARD FOR LENTZ
(2)	28/8	28	6/1/43	For dispatch Appd by Chief of Staff JUN 1 1943

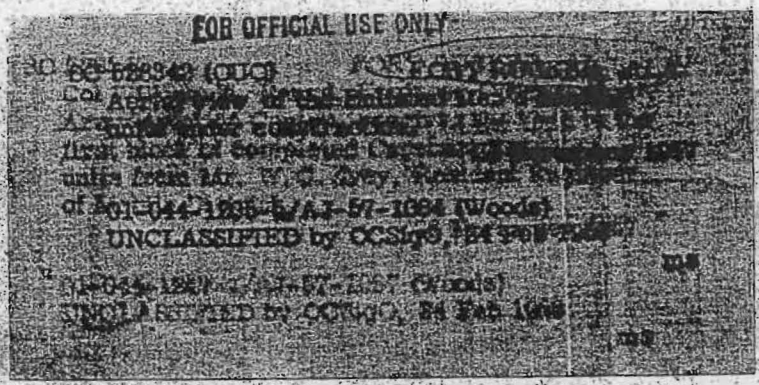
MAY 31 43 AM
021963

RECEIVED
ARMY GROUND FORCES
Office Chief of Staff

For inter-office use only-please use reverse side

AGF-FORM NO. 2

454



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May 1, 1978

M. E Release # 81-19 PREVIOUS EI IS VALID .....
NEW EI WILL BE ISSUED .....
NEW EI HAS BEEN ISSUED .....
(Issuer please initial)

MILITARY CONSTRUCTION PROJECT DATA

1. DATE	2. FISCAL YEAR	3. DEPARTMENT	4. INSTALLATION
1 May 78	1981	Army	Fort Rucker 15 DEC 1978

5. PROPOSED AUTHORIZATION	6. PRIOR AUTHORIZATION	7. CATEGORY CODE NUMBER	8. PROGRAM ELEMENT NUMBER	9. STATE/COUNTRY
$ 4,281,000	P.L.	42240		AL/USA MCE Review 1

10. PROPOSED APPROPRIATION	11. BUDGET ACCOUNT NUMBER	12. PROJECT NUMBER	13. PROJECT TITLE	MM	CM	RM
$ 4,281,000	6100	222	Ammo Storage Facilities		X	

SECTION A - DESCRIPTION OF PROJECT

14. TYPE OF CONSTRUCTION

a. PERMANENT	X
b. SEMI-PERMANENT	
c. TEMPORARY	

15. TYPE OF WORK

a. NEW FACILITY	X
b. ADDITION	
c. ALTERATION	
d. CONVERSION	
e. OTHER (specify)	

16. REPLACEMENT

17. TYPE OF DESIGN

a. STANDARD DESIGN	X
b. SPECIAL DESIGN	X
c. DRAWING NO.	See DD Form 1391c

18. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY

a. NO. OF BLDGS 16 b. NO. OF STORIES 1 c. LENGTH Varies d. WIDTH Varies
e. DESIGN CAPACITY 30,580 Lbs f. GROSS AREA 27,345 SF
g. COOLING A/C Office CAT. 5T COST ($ 13,680)

19. DESCRIPTION OF WORK TO BE DONE

Clear & grub approximately 25 acres of thinly wooded area; construct 13 ammo storage structures of concrete, metal, & earth mound types of bldgs as discussed in para 17. Construct masonry slab on grade bldgs for ammo maintenance shop (1960 SF), office bldg (1456 SF), inert storage bldg (5000 SF), and guard house (64 SF). Install 8356 LF of 7' high security fence & peripheral security lighting. Build approximately 1½ miles of electric service to the area. Construct approximately 2½ miles of 20' wide bituminous drives. Install 6" diameter looped fire protection, 1000 GPM water well & water lines to occupied bldgs. Install two ea 1000 gal septic tanks & drain fields. ~~Conduct archeological survey~~

SECTION B - COST ESTIMATES

20. PRIMARY FACILITY	U/M	QUANTITY	UNIT COST	COST ($000)
			$	$ 2068
a. Ammo Storage Structures	SF	(18,865)	86.82	(1638)
b. Office, Shop, Guard House, Storage	SF	(8,480)	VARIES	(430)
c.		( )		( )
d.				( )
21. SUPPORTING FACILITIES				$ ~~2,072~~ 2050
a. Electrical & Intrusion Alarm Sys	LS	Varies	LS	(306)
b. Water Well & Lines	LF	9,005	38.66	348
c. Sanitary Sewer & Septic Tanks	LF	800	41.25	(33)
d. Roads & Parking ✓	SY	✓41,646	12.15	(506)
e. Fencing, Gates, Ditch Closures	LF	8,356	12.21	(102)
f. Storm Drainage ✓	LF	783	62.58	(49)
g. Clearing, Grubbing, Grassing	AC	25	17,760.	(444)
h. Communications	LS	Varies	LS	(13)
i. ~~Archeological Survey~~	LS	~~Job~~	1% Job	(~~42~~)
WATER WELL approp by AF Oct 24				(229) +
22. TOTAL PROJECT COST				$ ~~4,281~~ 4098

SECTION C - BASIS OF REQUIREMENT

23. QUANTITATIVE DATA (UM SF)

a. TOTAL REQUIREMENT	27,345	
b. EXISTING SUBSTANDARD	(17,693)	
c. EXISTING ADEQUATE	0	
d. FUNDED, NOT IN INVENTORY	0	
e. ADEQUATE ASSETS (c + d)	0	
	AUTHORIZED	FUNDED
f. UNFUNDED PRIOR AUTHORIZATION	0	
g. INCLUDED IN FY ____ PROGRAM	0	0
h. DEFICIENCY (a - e - f - g)	27,345	27,345

24. RELATED PROJECTS

25. REQUIREMENT FOR PROJECT

This item is to replace the present inadequate ammo storage facility with a new one which will eliminate operational and safety problems inherent in the old facility. The presently utilized facility which will be disposed of was initially located close to ranges, however, the ranges were moved away. The explosive material must now be trucked through built-up area from eight to 15 miles distance. The new location will be less than half the distance from the ranges and no off-post populated areas will need to be transversed. The entire route will then be through Government lands. In April 1976, the DOD Explosives Safety Board approved the ammo storage site. Operating problems are caused by the narrow door widths and sloping walls of the old bunkers which severely restrict use of fork lifts. Quantity distance limits are violated at the old storage area due to changes in nearby land uses. The new bunkers will be built according to latest criteria. A PDB-1 has been furnished the Corps of Engineers. Water and electricity are being made available to the new site as part of this project. Funds are included for on-site archeological investigation; this is discussed in the environmental impact assessment previously prepared.

VSH for

NO SITING OBJECTION HOWEVER

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DDESB APPROVED? JSSG, Dahlgren

DD FORM 1391 Install heat pumps in

PROTECTIVE MARKING CANCELED UPON APPROPRIATE CONGRESSIONAL ACTION

INITIATOR

Page No. 1

Also incl VCH

R477, Ch. of Eng. E.13 WP, Military Constr. Cones. Box 4

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MM SOCT 78

1. DATE	2. FISCAL YEAR	MILITARY CONSTRUCTION PROJECT DATA (Continued)	3. DEPARTMENT	4. INSTALLATION
1 May 78	1981		Army	Fort Rucker, AL

5. PROJECT NUMBER	6. PROJECT TITLE
222	Ammo Storage Facilities

Paragraph 17.

Std Design Dwg AD 33-03-18 segregated bay 33-15-61; 35-23-07 maintenance shop or later developments if available. Special design office area.

Paragraph 23a.

27,345 SF Area of all 16 buildings in project.

Paragraph 23b.

17,693 SF Area of 20 buildings now in use in old ammo dump.

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29b

1 May 78 1981 Ammo Storage Facilities Fort Rucker, AL

1. GENERAL:

Ammunition and explosives which are used in the conduct of the missions supported by Fort Rucker are stored in a centralized special design facility operated by the Army. The ammunition and explosives stored at this facility are expended by 10 different TOE and TDA units, the helicopter gunnery training classes, NG, USAR, and ROTC units in portions of Alabama and Mississippi. During the July - December 1977 time period there was a monthly average issue of 420 tons of rockets - missiles and 300 tons of conventional ammo. Approximately 75% of the material issued is delivered to the various ranges by the personnel operating the ammo storage facility. The remainder of issue material is picked up by the units. There is an average of 31 operating personnel, plus 12 additional personnel, from the units. All material is handled under strict safety regulations as set forth in TM 9-1300-206, AR 385-64, and US Army Aviation Center Reg 700-2. In April 1976, the DOD Explosives Safety Board (DD ESB-KO) approved the new ammo storage site which is approximately 5½ miles west of the present area. A tabulation showing the proposed assignment of types of material according to compatibility groups is attached. A numbering system for the bunkers is used on the table; it is expected that this system can be followed through design and operation of the new ammo storage facility. This activity is not a "new start" as defined in AR 235-5. In World War II, the ranges and the supporting ammo dump were built in close proximity for good operational control. Subsequently, the mission was changed and new ranges were opened in another part of the reservation, however, the old ammo storage area is still in use. Problems of transporting through populated areas will be discussed later. Change of training emphasis using a longer range fan area to accommodate helicopter mounted rockets is being implemented. It is planned to increase the range impact areas by moving the firing points. The site for this new ammo storage area takes into account the expansion planned for the ranges.

2. ACCOMMODATIONS NOW IN USE:

Twenty buildings are now used as follows:

Bldg No	Bldg Design	Bldg Area	Uses
20007	Stor Hse	1,350 SF	Carpenter Shop
20019	Ammo Ofc	1,250 SF	Office
20013	Ammo Storehouse	701 SF	Storehouse
20015	Inert Storehouse	800 SF	Inert Storehouse
20024	Inert Storehouse	1,800 SF	Inert Storehouse
20016	Renovation	600 SF	Renovation Repairs
20017	Ammo Mag	1,232 SF	Igloo Storage
20026	Ammo Mag	400 SF	Igloo Storage
20025	Ammo Mag	400 SF	Igloo Storage
20029	Ammo Mag	1,232 SF	Igloo Storage
20028	Ammo Mag	1,232 SF	Igloo Storage
20032	Ammo Mag	1,232 SF	Igloo Storage
20030	Ammo Mag	1,232 SF	Igloo Storage
20035	Ammo Mag	800 SF	Igloo Storage
20034	Ammo Mag	800 SF	Igloo Storage
20033	Ammo Mag	800 SF	Igloo Storage
20038	Ammo Mag	200 SF	Igloo Storage
20037	Ammo Mag	200 SF	Igloo Storage
20036	Ammo Mag	200 SF	Igloo Storage
20031	Ammo Mag	1,232 SF	Igloo Storage
TOTAL AREA		17,693 SF	

3. ANALYSIS OF DEFICIENCY:

The original ammo storage area was constructed in 1942. It was then within one mile of the ranges, which have long since been moved away to serve the present missions. The storage area is now approximately eight miles from ranges - by the nearest route; a residential-family area and golf course stand in between. Depending on weather conditions and the type of ammo being carried, it is often necessary to truck the explosives as far as 15 miles. The ammo being moved to the ranges must be transported through congested civilian traffic, housing areas, and businesses (gas filling stations, etc.) at Ozark, AL. Location of the present ammo storage area leaves much to be desired in regard to ammo accessibility and handling, and the safety of personnel. The present area is near the golf course; in order to meet quantity-distance criteria one 100,000 pound capacity igloo can only be loaded to 35,000 pounds. The access road that passes by the area is traveled heavily due to two major helicopter airfields, the NCO Club, and the Golf Course Clubhouse. The ammo area in itself is in immediate need of renovation, as operations are seriously hindered by magazine leakage, door widths being too narrow for maneuvering fork lifts (8 out of 14 magazines have only four-foot wide doors), and security fence is penetrable due to continuous erosion of ditches under the fences. Also, there is no holding area for loaded trucks. These vehicles must be parked overnight between the igloos prior to their departure. In addition, storage space is being wasted because of the outdated existing low angling wall-ceiling concept.

4. CONSIDERATION OF ALTERNATIVE FACILITIES:

Not Applicable.

5. CRITERIA FOR PROPOSED CONSTRUCTION:

The project scope is based on amount of material projected to be stored in the magazines. The amounts of the various items to be stored are shown on the accompanying tabulation of Ammunition Explosives, Other Material, and Plan for Assignment to Magazines. Compatibility groupings are established in TM 9-1300-206 dated June 1977. All material will be positioned so that there is open space sufficient for inspection of each lot when in place. There is an increasing amount of palletized material which will be coming into the magazines, hence forklift maneuvering areas are to be provided. The magazines will be designed as per the 33-15 series of standard plans. Doors will face toward the south where there is in excess of 2,375' straight-line distance in Government owned land in order to meet Q-D criteria. Distances between other facilities, i.e., unit vehicle holding area, inert storage, maintenance shop, and receiving pad, are as shown on the site layout diagram. Buildings for office and guard house are to be designed based on operational experience. A water system is planned with hydrants throughout the area; the control of grass fires will be expedited by this. Septic tanks and sanitary drain fields will be provided with the shop and office buildings. Security lighting and security fencing will be installed in accordance with FM 19-30 and AR 190-11. An intrusion detection system is to be provided.

6. PROGRAM FOR RELATED FURNISHINGS AND EQUIPMENT:

Not Applicable.

7. DISPOSAL OF PRESENT ASSETS:

Upon completion of this project, the present ammo storage complex will be vacated and the land use redesignated as extension of recreation area.

8. SURVIVAL MEASURES:

This project is not suitable for inclusion of protective shelter.

9. SUMMARY OF ENVIRONMENTAL CONSEQUENCES:

This project is being assessed to determine the environmental consequences. The new location will lessen the amount of mileage traveled between storage area and ranges, so an appreciable beneficial effect on the environment is expected. Temporary adverse conditions which result from construction operations will be avoided or lessened wherever possible by requiring the construction to be phased and/or carried on in a manner least destructive to the environment.

10. EVALUATION OF FLOOD HAZARD:

This facility is not listed in an area known to be subject to flooding.

11. ECONOMIC SAVINGS:

Not applicable.

12. UTILITY SUPPORT:

The project contains an extension of electrical services from the nearest point which is approximately 1.8 miles. A new water well is in the project. Telephone service already runs along Fawkner Road immediately beside the site for the office.

13. PROTECTION OF CULTURAL ENVIRONMENT:

A cursory observation of the site has been made by an archeologist and it is suspected that some Indian artifacts might be present. Funds are being included for an archeological survey to insure that there is no adverse effect from this project.

14. PROJECT DEVELOPMENT BROCHURE:

Project Development Brochure (PDB-1), dated 3 Dec 76, has been prepared and a copy furnished the Mobile District Engineer Office and Headquarters, TRADOC.

15. ENERGY REQUIREMENTS:

It is expected that there will be a net energy savings resulting from the operation of the new facility. Most of the energy savings will result from less gasoline used in 2-1/2 ton trucks running between the point of origin, ammo dump, and ranges. It is estimated that 120 trips per month are made, and there will be a monthly savings of 330 gallons of gasoline used due to less mileage traveled - especially while loaded. There will also be some energy savings resulting from heating/cooling of permanent type structures versus temporary structures used for the office and maintenance shop. Other utility requirements, i.e., water, lighting, and sewage will be comparable to those now experienced.

16. PROVISION FOR THE HANDICAPPED:

The physically handicapped will be provided for in accordance with PL 90-480.

JAMES C. SMITH
Major General, USA
Commanding

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TYPE MAGAZINE	MAGAZINE NUMBER	ITEM	NUMBER ROUNDS	COMPATIBILITY GROUP	NET EXPLOSIVE WEIGHT LBS.	QUANTITY DISTANCE CLASS	INHABITED BUILDING DIST (FT)	NUMBER PERSONS
15'X54'-4" SEGREGATED BAYS	1	MINES, HAND GRENADE	100	G	600	1.1	355	2
	1	CHEMICAL GRENADES RIOT CS & CSI	2,089	G	N/A	1.4	100	2
	1	CHEMICAL RIOT AGENT CS & CSI	6 DRUMS	G	N/A	1.4	100	2
	1	BLAST CAPS, DETONATORS, PRIMERS	2,944	D	150	1.1	235	-
	1	CARTRIDGES, ACTUATED EJECT, SEAT	250	C	10	1.4	100	4
25'X80' STRADLEY	2	SMALL ARMS AMMO & PILFERAGE ITEMS 7.62 MM 2GA, 45 CAL, 22 CAL & 38 CAL.	1,543,000	S	N/A	1.4	100	16
25'X80' STRADLEY	3	CHEMICAL GRENADES SMOKE POTS	6,840	G	5,463	1.3	160	2
	3	PYROTECHNICS-EXCLUSIVE OF CLASS 7	10,200	G	2,490	1.4	115	2
	3	FUZES & PRIMERS PD M557, MK 2A4, MTSQ	6,540	B	1,768	1.1	1,800	2
25'X60' STRADLEY	4	105 MM HE CARTRIDGE	600	E	3,003	1.1(1.2)	800	6
25'X60' STRADLEY	5	105 MM BLANK & 75 MM BLANK CART.	1,077	C	485	1.3	800	6
	5	155 MM PROPELLING CHARGES	1,510	C	3,000	1.3	115	4
25'X80' STRADLEY	6	40 MM HE M384 CARTRIDGE & 20 MM	50,000	E	6,250	(04)1.2	800	4
25'X46' STEEL ARCH	7	155 MM PROJ. HE	1,510	E	16,900	(04)1.2	1,090	4
25'X60' STRADLEY	8	105 MM ILLUM. CARTRIDGE	1,600	G	3,200	(08)1.2	800	6
	8	155 MM PROJ. ILLUM.	98	G	370	1.3	75	6
	8	PYROTECHNICS (CLASS 7) SIMULATORS, ATOMIC SIMULATORS H/G M116A1, GUNFLASH M115A2	8,967	G	2,465	(04)1.2	580	2
20'X20' STEEL ARCH	9	DEMOLITIONS, BLOCK C-4 DET. CORD CRATERING CHARGES, SHAPED CHARGES	6,862	D-2	10,000	1.1	1,235	4

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TABULATION OF AMMUNITION EXPLOSIVES, OTHER MATERIAL AND PLAN FOR ASSIGNMENT TO MAGAZINES (cont'd)

TYPE MAGAZINE	MAGAZINE NUMBER	ITEM	NUMBER ROUNDS	COMPATIBILITY GROUP	NET EXPLOSIVE WEIGHT, LBS	QUANTITY DISTANCE CLASS	INHABITED BUILDING DIST (FT)	NUMBER PERSONS
25'X80' STRADLEY	10	2.75 ROCKETS HE	5,542	E	30,580	(12)1.2	1,310	6
25'X80' STRADLEY	11	2.75 ROCKET INERT WARHEAD	2,500	C	15,000	1.3	190	6
	11	4.2 MM HE MORTAR ROUND	800	E	6,800	1.1	390	6
25'X80' STRADLEY	12	MISSILE SS-11, & TOW	560	E	14,850	1.1	835	6

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BUDGETARY ESTIMATE	FISCAL YEAR: 1981	DATE PREPARED: 1 May 78	PAGE 1 OF 4
NAME AND LOCATION OF INSTALLATION: Fort Rucker, Alabama	TYPE OF CONSTRUCTION: Permanent	BASIS OF ESTIMATE:	
PROJECT NUMBER: 222	DESCRIPTION OF FACILITY: Ammunition Storage Facilities		

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTALS ($000)
1. Building Construction				
a. 1-8 Bay Segregated Magazine				
General Construction	815	SF	85.57	69.7
Electrical	815	SF	5.49	4.5
Subtotal	815	SF	91.06	74.0
b. 6-Stradley Type Magazine				
General Const. Including Earth Mounding (25' x 80')	12,000	SF	84.87	1018.4
Electrical	12,000	SF	7.33	88.0
Subtotal	12,000	SF	92.20	1106.0
c. 3-Stradley Type Magazine				
General Const. Including Earth Mounding (25' x 60')	4,500	SF	84.87	381.9
Electrical	4,500	SF	7.33	33.0
Subtotal	4,500	SF	92.20	415.0
d. 1-Steel Arch Magazine				
General Const Including Earth Mounding (25' x 46')	1,150	SF	81.97	94.3
Electrical	1,150	SF	7.83	9.0
Subtotal	1,150	SF	89.80	103.0
e. 1-Steel Arch Magazine				
General Const. Including Earth Mounding (20' x 20')	400	SF	81.97	32.8
Electrical	400	SF	7.83	3.1
Subtotal	400	SF	89.80	36.0

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTALS ($000)
f. Inert Storage Building				
General Construction	5,000	SF	29.65	148.4
Fire Protection	5,000	SF	2.25	11.3
Electrical	5,000	SF	4.12	20.6
Subtotal	5,000	SF	36.02	180.0
g. Ammo Maint Shop				
General Construction	1,960	SF	68.54	134.3
Plumbing	1,960	SF	3.65	7.2
Heating & Ventilation	1,960	SF	3.26	6.4
Electrical	1,960	SF	21.00	41.2
Subtotal	1,960	SF	96.45	189.0
h. Ammo Office Bldg				
General Construction	1,456	SF	50.45	73.5
Plumbing	1,456	SF	2.26	3.3
Air Conditioning 5T	1,456	SF	9.60	14.0
Heating & Ventilating	1,456	SF	2.12	3.1
Electrical Work	1,456	SF	4.82	7.0
Subtotal	1,456	SF	69.25	101.0
i. Guard House				
General Construction	64	SF	44.69	2.9
Plumbing	64	SF	21.23	1.4
Electrical	64	SF	13.83	.9
Subtotal	64	SF	79.75	5.0
Total Building Cost	27,345	SF	80.78	2209.0

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BUDGETARY ESTIMATE

FISCAL YEAR: 1981 | DATE PREPARED: 1 May 78 | PAGE 2 OF 4

NAME AND LOCATION OF INSTALLATION: Fort Rucker, Alabama

TYPE OF CONSTRUCTION: Permanent

BASIS OF ESTIMATE:

PROJECT NUMBER: 222

DESCRIPTION OF FACILITY: Ammunition Storage Facilities

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTALS ($000)
2. Supporting Facilities				
a. Electric Service				
Transformers	202.5	KVA	34.06	6.9
Motor Generators-Diesel	150	KW	467.40	70.1
Power Poles 40/5	85	EA	264.48	22.5
Power Poles 30/5	2	EA	191.52	.4
Steel X Arms	5	EA	69.08	.3
Tri Mount & Cluster Bracket	1	EA	183.54	.2
Ground Assemblies	60	EA	91.49	5.5
Guy Assemblies	16	EA	99.61	1.6
Dead Ends	96	EA	17.28	1.7
Metal Standoff Pins	46	EA	77.25	3.6
Pole Top Pins	35	EA	26.41	.9
Fuzed Cut-Outs 15KV	7	EA	65.14	.5
Lightning Arresters 9KV	7	EA	50.81	.4
Junction Boxes & Weather Heads	42	EA	106.94	4.5
Floodlights 1500W HP Sodium	46	EA	941.64	43.3
" 1500W Quartz	46	EA	105.72	4.9
" Size 00	46	EA	160.74	7.4
" Wall Mount Fixt.	12	EA	66.12	.8
Switch 2P. 225A. 480V	3	EA	322.62	1.0
Circuit Bkr 50A 480V	12	EA	379.62	4.6
Photo Electric Controls	3	EA	42.56	.1
Conduit 1½" PVC	7000	LF	1.09	7.6
Conduit 1½" Steel	100	LF	3.01	.3
Conduit ½" Steel	1000	LF	1.84	1.8
Trench & Backfill	10000	LF	.36	3.6
Conductor #4 ASCR	46000	LF	.21	9.7
Conductor #1/0 RHW	18000	LF	1.53	27.5
Conductor #6	9000	LF	.54	4.9
Conductor #10	3000	LF	.30	.9
Right-of-way Clearing	7900	LF	.31	2.4
Fire Alarm System	8	Sta.	726.18	5.8
Subtotal				246.0
b. Intrusion Alarm System				
Secure Access Switches	14	EA	133.38	1.9
Magnetic Door Switches	50	EA	174.42	8.7
Security Screen @ Openings	75	EA	228.00	17.1
Monitor Panel 14 Zone	1	EA	14350.32	14.4
Door Flexible Cord	50	EA	52.85	2.6
Junction Box, Exp. Proof	125	EA	38.68	4.8
Box, Weather-Proof	14	EA	145.92	2.0
3/4" Conduit	1400	LF	1.63	2.3
4 Conduit Cable	1400	LF	.93	1.3
Tamper Switches	140	EA	32.54	4.6
Subtotal				60.0

Cost of IDS is OPA funded not MCA

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BUDGETARY ESTIMATE

FISCAL YEAR:	DATE PREPARED:	PAGE 3 OF 4	
1981	1 May 78		

NAME AND LOCATION OF INSTALLATION: Fort Rucker, Alabama

TYPE OF CONSTRUCTION: Permanent

BASIS OF ESTIMATE:

PROJECT NUMBER: 222

DESCRIPTION OF FACILITY: Ammunition Storage Facilities

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTALS ($000)
c. Water Lines:				
6" Water Line-Cem. ASD	6800	LF	$ 10.35	$ 70.4
3" Water Line-Galv. Iron	825	LF	10.31	8.5
2" Water Line- " "	1350	LF	7.09	9.6
6" Valve & Box	10	EA	543.78	5.4
2" Service Stop & Box	3	EA	141.36	.4
Fire Hydrants	13	EA	889.20	11.6
Water Well - 20 GPM	1	EA	20,470.98	20.4
Storage Reservoir-500M Gal	1	EA	258,604.44	258.6
Well Pump House & Equip	1	EA	90,938.94	90.9
1000 GPM Water Pump	1	EA	101,278.74	101.3
SUBTOTAL				577.0
d. Sanitary Sewers:				
8" Sanitary Sewer Line	300	LF	$ 15.85	$ 4.8
6" " " "	500	LF	14.19	7.1
Manhole	2	EA	984.96	2.0
Septic Tank & Field	2	EA	9605.64	19.2
SUBTOTAL				$ 33.0
e. Roads & Parking:				
Flex. Paving-2"AC+8½" Stab. Acc. Base	34925	SY	$ 10.29	$ 359.4
Rigid Paving-6" Reinf. Zone + 6" Stab.Acc.Base	6721	SY	$ 21.26	$ 142.9
Precast Bumpers	33	EA	$ 32.92	$ 1.1
Parking Stripes 3"	1150	LF	.35	.4
Traffic Stripe 4"	4280	LF	.43	1.8
SUBTOTAL				$ 506.0
f. Fencing:				
Security Fence FE-6 7'	8356	LF	$ 11.46	$ 95.8
40' Doub. Sw. Gate	1	EA	2004.12	2.0
Ditch Closures	4	EA	1002.06	4.0
SUBTOTAL				$ 102.0
g. Storm Drainage:				
15" Storm Drain Pipe	57	LF	$ 14.32	$ .8
18" " " "	57	LF	17.18	1.0
24" " " "	238	LF	25.78	6.1
27" " " "	123	LF	37.22	4.6
36" " " "	198	LF	52.96	10.5
42" " " "	110	LF	64.42	7.1
Conc. Headwalls	43	CY	429.78	18.5
SUBTOTAL				$ 49.0

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Lake Tholocco Pistol Range

TABLE 2
HAZARD PROBABILITY

DESCRIPTION	LEVEL	HAZARD PROBABILITY
FREQUENT	A ☐	27 or greater
PROBABLE	B ☐	21 to 26
OCCASIONAL	C ☐	15 to 20
REMOTE	D ☐	8 to 14
IMPROBABLE	E ☐	less than 8

*Apply Hazard Probability Level to Table 3.

PART III. RISK ASSESSMENT

The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values. If the Hazard Severity value is zero (0), a Hazard Probability is not calculated and a RAC score of 5 is automatically assigned to the range or site.

TABLE 3

PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	☐ 1	☐ 1	☐ 2	☐ 3	☐ 4
CRITICAL II	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
MARGINABLE III	☐ 2	☐ 3	☐ 4	☐ 4	☐ 5
NEGLIGIBLE IV	☐ 3	☐ 4	☐ 4	☐ 5	☐ 5

RISK ASSESSMENT CODE (RAC)

☐ RAC 1 High Risk - Highest priority for further action.

☐ RAC 2 Serious Risk - Priority for further action.

☐ RAC 3 Moderate Risk - Recommend further action.

☐ RAC 4 Low Risk - Recommend further action.

☑ RAC 5 Negligible Risk - Indicates that no DoD action is necessary.

PART IV. NARRATIVE

Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made:

The range is given a RAC5 because it was used for small arms training only.

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H. DIGITAL FILES

Compact discs are attached to this section of the report[1] which contain the Phase 3 inventory electronic ARID, GIS, and map files. The compact discs also include the Phase 2 inventory electronic GIS files.

[1] Digital files are not included in the Draft Report.

I. DOCUMENT LOG

Reports

Installation Assessment of Fort Rucker, Alabama, Report No 305; Environmental Science and Engineering, Inc., February 1982

Val L. McGee, The Origins of Fort Rucker, Dale County Historical Society, 1987

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Maps

Fort Rucker Military Installation Map, United States Government Printing Office, 2001

Ranges and Training Areas, Camp Rucker Alabama, Post Utilities Office, June 26, 1951

Range Area, Ozark Triangular Division Camp, Camp Rucker Alabama, U.S. Engineer Office, July 15, 1945

Interviews

Mr. Jim Swift, Environmental Division
Mr. Ken Eisele, Chief, Environmental Division
Mr. Michael Maxwell, Chief, Master Planning
Mr. Joe Weber, Range Control
Dr. Kitchens, Post Historian
Mr. James Willains, Aviation Historian
Mr. Blaine King, Judge Advocate General
Mr. Ron Leatherwood, Head, Master Planning
Mr. Dan Spillings, Fort GIS Technician
Ms. Beverly Wharf, Technical Library

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BUDGETARY ESTIMATE | FISCAL YEAR: 1981 | DATE PREPARED: 1 May 78 | PAGE 4 OF 4

NAME AND LOCATION OF INSTALLATION: Ft Rucker, AL | TYPE OF CONSTRUCTION: Permanent | BASIS OF ESTIMATE:

PROJECT NUMBER: 222 | DESCRIPTION OF FACILITY: Ammunition Storage Facilities

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTALS ($000)
h. Site Improvement:				
Clearing & Grubbing	25	A	$1145.70	$ 28.6
Clearing	10	A	858.42	8.6
Unclassified Excav.	109500	CY	2.86	313.2
Embankment	60008	CY	1.05	63.0
Grassing (Seeding)	15	A	2004.12	30.1
SUBTOTAL				$ 444.0
i. Communications:				
12 Pr. #19 DB Conductor	5000	LF	$ 2.05	$ 10.3
2" Conduit @ Road Xing	250	LF	3.92	1.0
3/4" Conduit	250	LF	1.50	.4
Outlet Boxes	10	EA	10.15	.1
Junction Boxes	5	EA	145.92	.7
SUBTOTAL				$ 13.0
j. Archeological Survey of Area				
1% of Project Cost			LS	$ 42.0

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTALS ($000)
Total estimated Cost (exluding design but including reserve for contingencies & supervision & administration)				$4281.0

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FINAL

U.S. ARMY CLOSED, TRANSFERRING and TRANSFERRED RANGE/SITE INVENTORY

for

FORT RUCKER, AL

03 October 2003

Prepared for

U.S. Army Environmental Center
and
U.S. Army Corps of Engineers,
Baltimore District

Prepared by

Malcolm Pirnie, Inc.
300 East Lombard Street, Suite 610
Baltimore, MD 21202

ABBREVIATIONS / ACRONYMS

AEC	Army Environmental Center
A/I	Active/Inactive
APG	Aberdeen Proving Grounds
ARID	Army Range Inventory Database
ARNG	Army National Guard
ARS	Advance Range Survey
ASR	Archive Search Report
BRAC	Base Realignment and Closure
CADD	Computer Aided Drafting and Design
CTC	Cost to Complete
CTT	Closed/Transferring/Transferred
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DMM	Discarded Military Munitions
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DOE	Department of Energy
DSERTS	Defense Site Environmental Restoration Tracking System
EOD	Explosive Ordnance Disposal
FFID	Federal Facility Identification
FUDS	Formerly Used Defense Site
FY	Fiscal Year
GIS	Geographic Information System
IR	Installation Restoration
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LPA	Limited Public Access
LTM	Long Term Monitoring
MACOM	Major Command
MC	Munitions Constituents
MMRP	Military Munitions Response Program
MR	Munitions Response
N/A	Not Applicable
NGB	National Guard Bureau
NPA	No Public Access
OB	Open Burn
OD	Open Detonation
PA	Preliminary Assessment
PM	Project Manager
POC	Point of Contact
QA	Quality Assurance
QC	Quality Control
RAC	Risk Assessment Code
RAO	Remedial Action (Operations)
RC	Response Complete
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
RIP	Remedy in Place

ABBREVIATIONS / ACRONYMS

RMIS	Restoration Management Information System
RPA	Restricted Public Access
SI	Site Inspection
STARC	State Area Command
TIC	Technical Information Center
UPA	Unrestricted Public Access
U.S.	United States
USACE	United States Army Corps of Engineers
USARC	United States Army Reserve Command
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
UXO	Unexploded Ordnance
WMM	Waste Military Munitions

Site Specific Acronyms

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EXECUTIVE SUMMARY

Purpose of the Closed, Transferring, and Transferred Inventory

To meet immediate, short-term, and long-term needs, the United States (U.S.) Army is conducting its range inventory in three phases. The first phase (Phase 1) involved a data call issued to each U.S. Army Major Command (MACOM) requesting general information about ranges on their installations. This phase was also referred to as the Advance Range Survey (ARS). The ARS allowed the Army to meet its immediate needs; however, a more detailed inventory was necessary. The Army decided to divide the detailed follow-on inventory into two parts, an active and inactive (A/I) inventory (Phase 2) and a closed, transferring, and transferred (CTT) inventory (Phase 3).

The results of the Phase 2 inventory for the installation were documented in an A/I range inventory binder submitted to the Army Environmental Center (AEC), the respective MACOM, and the installation. The Phase 2 binder contains maps that delineate the A/I range boundaries. The remainder of the property inside the installation's boundary is designated as non-A/I property by default. If the Phase 2 inventory was conducted at an installation, the data was provided to the Phase 3 team prior to starting the data collection effort.

This Phase 3 inventory began as an inventory of just Army CTT ranges. However, as a result of the congressional requirements outlined in the Defense Authorization Act of 2002 (Public law 107-107) and resultant changes to the Defense Environmental Restoration Program (DERP), the Phase 3 Inventory is a comprehensive history of both CTT ranges and other CTT sites with unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC). All locations previously or currently owned, leased or possessed by the Department of Defense (DoD) (except those currently classified as A/I ranges or permitted military munitions treatment and/or disposal facilities) are included in this inventory. The U.S. Army Corps of Engineers (USACE) is the predominant executor of the Phase 3 inventory. The inventory specifically focused on the non-A/I areas as defined in Phase 2 and areas around the installation that may have been used in the past for munitions-related testing, training, or disposal.

Specific requirements of the Phase 3 inventory include: 1) mapping the CTT ranges and sites with UXO, DMM,or MC; 2) collecting and preparing data to be uploaded into the Army Range Inventory Database (ARID); 3) conducting an assessment of explosives safety risk using the Risk Assessment Code (RAC) methodology for each CTT range or site with UXO or DMM identified in the inventory; and 4) determining which sites on the inventory potentially qualify for the Military Munitions Response Program (MMRP).

The data collection portion of the CTT inventory at Fort Rucker was conducted on February 6th and 7th, 2002. While on site, the data collection team reviewed historical records and interviewed installation personnel concerning potential CTT

ranges, disposal areas, and other UXO, DMM, or MC sites. This report summarizes the CTT inventory conducted at Fort Rucker and presents the results.

Purpose of the Range Inventory Report

The purpose of this report is to present the results of the Phase 3 CTT inventory. The report includes individual CTT map(s) for the installation, a copy of the data tables that will be submitted electronically to AEC for uploading into the ARID, completed RAC worksheets for all CTT ranges and sites with UXO or DMM, DERP eligibility determination, and identification of which ranges/sites potentially qualify for the MMRP. Although the inventory did not require exhaustive archive searches to be performed, it did require historical research to identify sites subject to this inventory, locations, periods of use, the types of munitions used, and other specific information regarding the site. The majority of this data was obtained by reviewing installation records and interviewing personnel at, or involved with, the installation. Although the data presented in this report is believed to be accurate, it has not been verified by field sampling.

Summary of Results

Fort Rucker currently occupies 61,712 acres of which 59,029.5 acres are classified as A/I range (from Phase 2). The Phase 3 inventory identified two closed ranges totaling 54.9 acres within the installation's boundaries. No transferred or transferring ranges were identified. A closed range/site is an area that is no longer used, either as a range or for ordnance disposal, but is still owned by the Army (see definitions in Tab B). The first of the two ranges identified comprised two units, an anti-tank rocket range and an anti-tank grenade range, located directly adjacent to one another with range fans that overlap. This range is on the post's golf course. The second range is a former pistol range near the Lake Tholocco recreation area.

As part of the inventory, the data collection team performed an assessment of explosives safety risk using the RAC process for each range and site with UXO and DMM in the inventory. The RAC process requires the completion of a worksheet that consists of a series of questions regarding the area. Based on the results of the worksheet, a relative overall score (RAC score) for each area is assigned. The RAC score is an estimate of the relative explosives safety risk, which is reported as a number from 1 (high explosives safety risk) to 5 (negligible explosives safety risk).

The results of the Phase 3 inventory for this installation are summarized in Table ES-1 below.

Table ES-1: CTT Range and Site

Installation Name	Range / Site Name	Classification	Total Area (Acres)	Munitions Constituents	RAC [1] Score	DERP Eligibility
RUCKER	ANTI-TANK ROCKET/GRENADE RANGE	CLOSED	54	Unknown	2	MR
Munitions Type(s)						
GROUND ROCKETS, RIFLE GRENADES (SMOKE, WP, INCENDIARY)						
GROUND ROCKETS, RIFLE GRENADES, LIVE						
GROUND ROCKETS, RIFLE GRENADES, PRACTICE						
RUCKER	LAKE THOLOCCO PISTOL RANGE	CLOSED	0.9	Unknown	5	MR
Munitions Type(s)						
SMALL ARMS						

[1] "0" indicates that the site is a Munitions Constituent (MC) site and therefore, RAC scores have not been prepared.

Note: A TD at the end of the Range/Site name indicates a Transferred portion of a site. If a site extends past the installation boundary and is therefore identified as transferred, that transferred portion is given the same name as the site within the installation boundary and a "TD" is added to the end to indicate that it has been identified as transferred.

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A. INTRODUCTION

The United States (U.S.) Army is in the process of inventorying all of its past and current ranges to support its Range Sustainment Program and the Military Munitions Response Program (MMRP). The Army is conducting the inventory in three phases. The first and second phases only address properties meeting the definition of a range. The third and final phase is an inventory of closed, transferring and transferred (CTT) ranges and sites with unexploded ordnance (UXO), discarded military munitions (DMM), and munitions constituents (MC). Both ranges and other sites with explosive hazards, such as UXO or munitions disposal areas, are included.

This report documents the results of the CTT Range and Site inventory for Fort Rucker located in Dale County, Alabama.

Background

To meet immediate, short-term, and long-term needs, the Army is conducting its range inventory program 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 Department of Defense's (DoD) preparation of Senate Report 106-50.

The Phase 1 inventory for Fort Rucker was completed in November 2000. The point of contact (POC) listed in the ARS database for the survey is Mr. Joe Webers, Range Officer. The ARS identified no CTT ranges for the Fort Rucker installation.

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 Army divided the detailed follow-on inventory into two phases. The Phase 2 inventory addressed active and inactive (A/I) ranges (operational ranges), while Phase 3 covers CTT ranges and sites with UXO, DMM, or MC.

The Phase 2 inventory for Fort Rucker was conducted in the spring of 2001 by AEC. The results were documented in an A/I range inventory binder that was submitted to Fort Rucker and its major command, Training and Doctrine Command (TRADOC). The Phase 2 binder contains maps that delineate the A/I range boundaries. The remainder of the property inside the installation's boundary is designated as non-A/I property by default. As part of the effort, the inventory data was electronically uploaded into the Army Range Inventory Database (ARID) maintained by AEC. The Phase 2 maps and relevant data were provided to the Phase 3 team prior to their visit to Fort Rucker, and were used to aid the Phase 3 CTT data collection. The results from the Phase 2 inventory (A/I areas and acreage totals) are included on the Phase 3

maps and described in the report, where applicable, to provide the reader with a snapshot of the entire range area associated with Fort Rucker. The reader should refer to the Phase 2 range binder for specifics on the A/I Range Inventory.

This Phase 3 inventory includes all CTT ranges and UXO, DMM, and MC sites that are currently or have been owned, leased, or operated by the Army or DoD. Properties currently classified as A/I ranges or permitted military munitions treatment and/or disposal facilities are excluded from the Phase 3 inventory. Closed ranges and sites are no longer in use, but are still located on Army property. Transferred ranges and sites are no longer in use and are located on property that is no longer under military control. Transferred ranges that qualify for the Formerly Used Defense Site (FUDS) program are not included in the Phase 3 inventory. However, transferred sites that qualify for FUDS, but are not on the FUDS docket, and transferred sites that do not qualify for FUDS (transferred after 1986) are included in this inventory. A range or site is referred to as "transferring" if it is no longer used and is proposed for imminent release from military control.

A site visit to Fort Rucker was made on February 6 and 7, 2002. While on site, the data collection team reviewed historical records and interviewed knowledgeable installation personnel. The Phase 3 inventory is specifically focused on the non-A/I range areas, as defined in the Phase 2 inventory, and on areas surrounding the installation that may have been used in the past for munitions-related disposal, testing, or training.

The inventory itself represents a summary or "snap shot" in time of the areas associated with the U.S. Army's munitions disposal, training, and testing and should be updated as the Army changes how it uses training ranges or gathers additional data over time.

Project Drivers

There are several drivers for the Phase 3 inventory, including the Defense Environmental Restoration Program (DERP), as amended by the Defense Authorization Act of 2002 (Public Law 107-107, signed into law January 2002); federal financial accounting standards; and DoD guidance. The most important driver is the DERP. DERP requires that an "inventory of defense sites that are known or suspected to contain UXO, DMM, or MC" be conducted and completed by May 31, 2003. The revised Management Guidance for the DERP (September, 2001) created the MMRP and outlines the specific program requirements for the CTT inventory. Federal financial accounting standards require DoD to estimate the cost of cleaning up sites under the MMRP and report this cost in its annual financial statements. A complete inventory of CTT ranges and other sites with UXO, DMM and MC will ensure that future financial reporting estimates are defensible and supported by accurate data.

Report Objectives

The objective of this report is to present the results of the CTT inventory for this installation. Although this assignment did not require that an exhaustive archive search be performed, it did require historic research to identify CTT ranges and sites subject to this inventory, and the locations, periods of use, and associated types of UXO, DMM, or MC. The majority of this data was obtained by reviewing installation records and interviewing personnel at, or involved with, the installation. Although the data presented in this report is believed to be accurate, it has not been verified by field sampling.

Project Participants

AEC is the Program Manager for the Army's CTT inventory. AEC provides overall management and guidance, identifies significant issues, develops and maintains the Army Range Inventory Database (ARID), defines achievable schedules and milestones, coordinates with relevant U.S. Army organizations, and reports on the inventory's status. The Project Manager (PM) for AEC is Ms. Mary Ellen Maly.

The U.S. Army Corps of Engineers (USACE) is the executing organization for Phase 3 and was responsible for conducting the record searches; gathering, compiling, and validating data; and submitting the validated data to AEC in the specified file formats. USACE Baltimore District was responsible for completing the Phase 3 inventory for this installation. The PM for USACE Baltimore is Ms. Ann Wood.

Malcolm Pirnie, Inc., under contract with the USACE Baltimore District, provided personnel to help the USACE collect and analyze inventory data and to document the results. The data collection team leader for the Fort Rucker CTT inventory was Mr. Frank Czajkowski.

Fort Rucker personnel were contacted and interviewed as part of the CTT inventory. The Fort Rucker primary POC for the Phase 3 inventory was Mr. Kenneth D. Eisele, Chief of the Environmental Division.

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B. DEFINITIONS AND DATA REQUIREMENTS

Before the results of the inventory can be presented, it is helpful for the reader to have an understanding of the definitions and data requirements associated with the inventory. This section defines the terms used in this report and the data requirements established by the Army.

Inventory Definitions

The following definitions are applicable to the Army's Range Inventory Program.

Defense Site: Locations that are or were owned by, leased to, or otherwise possessed or used by DoD. Does not include: operational ranges, operating storage or manufacturing facilities or facilities that are or were permitted for the treatment or disposal of military munitions.

Military Munitions: All ammunition products and components produced or used by or for the DoD or the U.S. Armed Services for national defense and security, including military munitions under the control of the DoD, the U.S. Coast Guard, the U.S. Department of Energy (DOE), and National Guard personnel. The term military munitions includes: confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes and incendiaries used by DoD components, including bulk explosives and chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, and mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components thereof. Military munitions do not include wholly inert items, improvised explosive devices, and nuclear weapons, nuclear devices, and nuclear components thereof. However, the term does include nonnuclear components of nuclear devices, managed under DOE's nuclear weapons program, after all required sanitization operations under the Atomic Energy Act of 1954, as amended, have been completed.

Discarded Military Munitions (DMM): Military munitions that have been abandoned without proper disposal or removed from storage in a military magazine or other storage facility for the purpose of disposal. Does not include: UXO or military munitions that are being held for use or planned disposal or that have been disposed of properly.

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.
Munitions Constituents (MC):	Any materials that originate from UXO, DMM or other military munitions, including explosive and non-explosive materials, and emission, degradation or breakdown elements of such ordnance or military munitions.
Military Range:	A designated land or water area set aside, managed and used to conduct research on, develop, test, and evaluate military munitions and explosives, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, and buffer zones with restricted access and exclusionary areas.
Active Range:	A military range that is currently in service and is being regularly used for range activities. For the purposes of the inventory, "in service" is defined as currently in operation, construction, maintenance, renovation, or reconfiguration to meet current Army training and/or test requirements. An active range qualifies as an operational range.
Inactive Range:	A military range that is not currently being used, but that is still considered by the Army to be a potential range area, and that has not been put to a new use that is incompatible with range activities. An inactive range qualifies as an operational range.
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 DoD component. Closed ranges cannot occupy an area that has been identified as an A/I range. Closed ranges are those areas of land that used to be operational, are still owned by the Army, but are now used for non-range purposes.
Transferred Range:	A military range that is no longer under military control and had been leased, transferred, or returned by DoD to another entity, including Federal entities. This includes a military range that is no longer under military control, but that was once used by the Army. This includes use 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.

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Transferring Range:	A military range that is proposed to be leased, transferred, or returned by the DoD to another entity, including federal entities. This includes a military range that is used 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. A range will not be considered a "transferring range" until the transfer is imminent.
Operational Range:	A military range that is currently in service and is being regularly used for range activities, or a military range that is not currently used, but that is still considered by the Military to be a potential range area, and that has not been put to a new use that is incompatible with range activities. Active and inactive ranges qualify as operational ranges.
Base Realignment and Closure (BRAC):	A DoD program that focuses on compliance and cleanup efforts at military installations undergoing closure or realignment, as authorized by Congress in four rounds of base closures for 1988, 1991, 1993, and 1995. A BRAC parcel is eligible for the MMRP if the release occurred prior to September 30, 2002; the release is not an operational range, FUDS, active munitions demilitarization facility, or active waste military munitions (WMM) treatment or disposal unit that operated after September 30, 2002; and the site was not identified or included in the Restoration Management Information System (RMIS) prior to September 30, 2002.
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 property is eligible for the FUDS 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.
Restoration Management Information System (RMIS) Site:	A site included in the DoD's RMIS database. Includes any building, structure, impoundment, landfill, storage container, or other site or area where a hazardous substance was or has come to be located. Installations and ranges may have more than one RMIS site. The RMIS is used to track DoD sites under the DERP.
DSERTS Site:	A site included in the Army's Defense Site Environmental Restoration Tracking System (DSERTS) database. DSERTS is the database the Army uses to track Installation Restoration Program (IRP) sites under DERP.

Inventory Data Requirements

The goal of the inventory was to identify locations, periods of use, and types of munitions used on CTT ranges and sites with UXO, DMM or MC associated with the installation. Specific inventory data requirements included: 1) mapping out the CTT ranges and sites with UXO, DMM and MC, 2) collecting and preparing data to be uploaded into the ARID, 3) conducting an assessment of explosives safety risk using the Risk Assessment Code (RAC) methodology for each CTT range and UXO and DMM site identified in the inventory, and 4) determining which sites in the inventory qualify for the MMRP. Data requirements for range and site maps, ARID, and the RAC methodology are described below.

Range and Site Map Requirements

A CTT range and site map (or multiple maps depending on the specific installation) was generated for the CTT inventory of the installation. The map shows all the ranges and sites associated with the installation, including the A/I range areas (from Phase 2); closed, transferred, and transferring ranges and sites; and the non-range, UXO, DMM, and MC sites. The range and site map is provided in section E. Based on data collected and site conditions, multiple maps may be included in section E. An electronic version (.pdf file) of the map has been provided as an upload to ARID.

ARID Data Requirements

The CTT inventory data is driven by the requirements of ARID. The ARID Upload Instructions (14 January 2003) describe the minimum data elements required for completing the range inventory. According to the instructions, the following files are required for the inventory:

- Points of Contact
- Installation
- Range
- Munitions
- Ownership
- Land Use Restrictions and Access Controls
- Range Demographics
- Map
- RMIS Site Information
- DSERTS Site Information

A printed copy of each file submitted to ARID is provided in Section F.

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Risk Assessment Code Methodology

The inventory team was required to perform an explosives safety risk assessment on each CTT range and UXO or DMM site identified during the inventory using the RAC methodology. RAC scores are not calculated for MC only sites. The RAC methodology is a process that the USACE designed to evaluate the relative explosives safety risk associated with past ordnance-related disposal, testing or training. The RAC score assists in prioritizing and sequencing projects. The RAC process is described in Appendix B of USACE Engineering Pamphlet 1110-1-18, Ordnance and Explosive Response (24 April 2000) and referenced in the updated management guidance for the DERP. The analysis involves a worksheet that, when completed, assigns a relative score (RAC score) to the sites. The RAC score is a number ranging from 1 (highest explosives safety risk) to 5 (negligible explosives safety risk). A summary of the calculated RAC scores and the completed RAC worksheets are included in Tab G.

DERP Eligibility Determination

The inventory team was required to determine the DERP eligibility of each range and site included in the inventory. This was done to ensure that ranges/sites are not double counted if already included under the IRP. It is also performed to ensure only ranges with UXO, DMM, or MC that meet the requirements identified in the DERP Management Guidance, September 01, are included in the MMRP. Results of the DERP eligibility determination include IRP, MMRP, or other (not eligible). To make this determination the following must be considered (when applicable):

- Whether or not the site has a DSERTS Site ID,
- Whether or not the current DSERTS cost to complete (CTC) includes a response to all UXO, DMM, and MC,
- Whether or not the DSERTS site has a BRAC UXO flag, and
- Whether or not the DSERTS site is listed as response complete (RC) because of ineligibility of funding due to UXO or munitions, where applicable.

After determining whether or not the ranges and/or sites (including their associated UXO, DMM, and MC aspects) are currently covered under the IRP, it must be determined if the range/site is eligible for the MMRP. If the range/site is not currently covered under IRP and not eligible for the MMRP, it should be classified as "other." As appropriate based on the eligibility determination, RMIS range ID and RMIS site ID numbers are then assigned.

C. INSTALLATION SUMMARY

This section provides a brief summary of the history of the installation and a summary of the data collection portion of the CTT inventory, including the types of records reviewed and personnel contacted.

Installation Overview and Description

Fort Rucker's history began on May 1, 1942 as the Ozark Triangular Division Camp in response to military escalation following Pearl Harbor. The camp was constructed on 27,997 acres, which was purchased from the State of Alabama. In June 1943, the facility was renamed Camp Rucker, in honor of General Edmund Winchester Rucker. Until 1946, Camp Rucker served as an infantry training ground and housed artillery, tank, anti-aircraft, medical, and quartermaster troops. Following World War II, Camp Rucker was placed on inactive, standby status until August 9, 1950, after the outbreak of hostilities with Korea. Additional property acquisitions occurred between 1943 and 1955. The installlation currently occupies 61,712 acres. Camp Rucker was officially designated the U.S. Army Aviation Center (USAAVNC) in March 1955. It was renamed Fort Rucker in October 1955. In 1973, Fort Rucker became the center for all U.S. Army aviation flight training and since then, has continued its present mission to maintain and operate facilities and provide services and material to support the rotary and fixed-wing pilot for Army aviation, basic rotary-wing training for Air Force student pilots, aviation enlisted specialists, and related test activities.

Contractor Team Composition

The CTT range inventory contractor team (CTT team) for Fort Rucker was staffed by Malcolm Pirnie, Inc. The CTT Team Leader for Fort Rucker was Mr. Frank Czajkowski. Additional team members included Ms. Rhonda Stone and Ms. Leigh Blake as researchers, Mr. Svend Egholm as Geographic Information System (GIS) Specialist, and Mr. Conrad Bernier as the Quality Assurance/Quality Control (QA/QC) Manager.

Installation Points of Contact (POCs)

The primary CTT Range Inventory POC for Fort Rucker was Mr. Ken Eisele, Chief of the Environmental Division. Other Fort Rucke. personnel who assisted in the inventory included Mr. Jim Swift, Environmental; Mr. Michael Maxwell, Community Planning; Mr. Joe Webers, Range Control; Dr. Kitchens, Base Historian; Mr. James Willains, National Aviation Museum; Mr. Blaine King, Judge Advocate General; Mr. Ron Leatherwood, Master Planning; Mr. Dan Spillings, GIS; and Ms. Beverly Wharf, Technical Library.

Nature of Data Collection and Coordination

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Each installation is unique in terms of the amount and quality of data available regarding CTT ranges and sites with UXO, DMM, and MC, as well as the depth of experience and knowledge of the personnel available for interviews. The data collection team attempts to contact as many applicable offices and review as many record repositories as possible.

Specifically, the following offices were contacted at Fort Rucker: Environmental; Community Planning; Range Control; Post Historian; and Aviation.

Summary of Critical Data Sources

Certain data sources (records and interviews) proved to be of particular use and interest to the data collection team for developing the CTT inventory at Fort Rucker. The data collection team, along with the assistance of Mr. Ken Eisele, Mr. Joe Webers, and Mr. Michael Maxwell identified two CTT ranges outside of the active/inactive range areas identified as part of the Phase 2 inventory using historical maps. Specifically, Mr. Joe Webers provided the range inventory team with historical maps dating back to 1945, several of which identified two CTT ranges near the current golf course. Additionally, Mr. Webers provided details on the former pistol range near the recreation area at Lake Tholocco. Mr. Maxwell also provided historical maps.

D. INSTALLATION CTT RANGE AND SITE DATA

This section presents information on the CTT ranges and sites with UXO, DMM or MC on or associated with the installation. It includes a summary of the total range and site area in acres, a summary of each individual CTT range and site, a table listing the details of each CTT range and site, a table with ownership and accessibility information, and a table illustrating the DERP eligibility determination.

Summary of CTT Range and UXO, DMM and MC Sites

The following is a summary of the range area at Fort Rucker:
A/I Range Area - 59,029.5 acres
CTT Range Area - 54.9 acres
Total Range Area (A/I and CTT combined) - 59,084.4 acres

Table D-1: Ownership Summary Table

INSTALLATION NAME	RANGE / SITE NAME	OWNER	CTT ACREAGE
RUCKER	ANTI-TANK ROCKET/GRENADE RANGE	DOD	54
RUCKER	LAKE THOLOCCO PISTOL RANGE	DOD	0.9
		Total Acreage	**54.9**

E. RANGE AND SITE MAPS

Individual CTT range and site map(s) were generated for the purposes of the Phase 3 inventory of this installation. The individual CTT range and site map(s) show all the range and site areas associated with the installation, including the A/I range areas (from Phase 2); closed, transferring, and transferred sites; and the non-range, UXO, DMM, or MC areas. An electronic version (.pdf file) of Figure E-1 has been provided as an upload to ARID. The individual CTT map(s) for the installation are included in this section.

F. ARID DATA FILES

This section contains a printout of the ARID data files submitted to AEC for the Phase 3 CTT Inventory for this installation. The files were set up according to the guidelines in the ARID Upload Instructions (14 January 2003). The following files are included:

- Points of Contact
- Installation
- Range
- Munitions
- Ownership
- Land Use Restriction and Access Controls
- Range Demographics
- RMIS Site Information
- DSERTS Site Information

POC Table

10/03/2003

INSTALLATION NAME	FFID	LAST NAME	FIRST NAME	POC TITLE	POC ORG
RUCKER	AL213720776	EISELE	KENNETH	CHIEF, ENVIRONMENTAL DIVISION	DIRECTORATE OF PUBLIC WORKS

POC TYPE: CTT

PHONE	ADDRESS
PHONE 334-255-9588	ATZQ-DPW-EN (BLDG 1453)
DSN 558-9588	
FAX 334-255-2058	
EMAIL EISELEK@RUCKER.ARMY.MIL	FORT RUCKER, AL 36362
	UNITED STATES

Installation Table

10/03/2003

INSTALLATION NAME	FFID	MACOM	MSC	PARENT INSTALLATION	A/I RANGE	CTT RANGE	BRAC ROUND	DERA FLAG	FUDS FLAG
RUCKER	AL213720776	TRADOC			Y	Y	N/A	N	N

Range Table

10/03/2003

RMIS RANGE ID: FTRU-001-R

INSTALLATION NAME	FFID	RANGE/SITE NAME	STATUS	SEVERITY SCORE	PROBABILITY SCORE	RAC SCORE
RUCKER	AL213720776	ANTI-TANK ROCKET/GRENADE RANGE	CLOSED	II	B	2

RANGE DESCRIPTION

The Anti-Tank Rocket/Grenade Range is located in the cantonment area partially within the boundaries of the installation's golf course. The area is actually two ranges whose fans overlap. The range was identified on a range area map dated 1945. Munitions used at the range included ground rockets and rifle grenades. According to installation personnel, UXO has been identified in the surface soil in the woods just off the golf course area. No investigation or remediation of this area has been performed.

CTT TOTAL ACRES	MMR ACRES IDENTIFIED	MMR ACRES SUSPECTED	MMR ACRES NOT SUSPECTED
54	0	54	0

UTM ZONE	UTM DATUM	UTM X	UTM Y	CONSTRUCTION DATE	RIP RC DATE
16	NAD83	624377.67784	3470013.546	01/01/42	

COMMENT

TOPOGRAPHY	VEGETATION	SOIL TYPE
GENTLY ROLLING	LOW GRASS AND FEW SHRUBS	SAND-SILT/SAND-CLAY

		START YEAR
CURRENT USE 1	RECREATIONAL	1964
CURRENT USE 2	N/A	
CURRENT USE 3	N/A	

		START YEAR	END YEAR
HISTORIC USE 1	RIFLE GRENADE/ANTI-TANK ROCKET	1942	1951
HISTORIC USE 2	OTHER	1951	1964
HISTORIC USE 3	N/A		

DRXTH-ES-IA-81305

INSTALLATION ASSESSMENT OF FORT RUCKER, ALA.
REPORT NO. 305

B.N. McMaster, J.D. Bonds, C.D. Hendry, J.B. Holly, J.H. Wiese, D.G. Williamson, C.F. Jones, and K.A. Civitarese

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
P.O. Box ESE
Gainesville, Fla. 32602

February 1982

Prepared for:

ERIALS AGENCY

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1.4 INSTALLATION HISTORY

1.4.1 GENERAL HISTORY

FTR was activated on May 1, 1942, as the Ozark Triangular Division Camp, in response to U.S. military escalation following Pearl Harbor. The camp was constructed on 11,330 hectares (ha) of land, purchased from the State of Alabama, adjoining the Pea River Cooperative Land Use Area, a 12,140-ha tract of Federal land acquired by the Army in the 1930s. In June of 1943, the facility was renamed Camp Rucker, in honor of General Edmund Winchester Rucker, an Alabaman veteran of the Civil War and the Mexican Campaign.

In 1942, an area of nearly 525 ha, approximately 8 kilometers (km) from the reservation, was purchased as an airfield for the transport of troops and material. It was originally named the Ozark Army Airfield but was subsequently renamed Cairns Army Airfield. Since 1954, it has been the site of Army Aviation School flight training.

Until 1946, Camp Rucker served as an infantry training ground and housed artillery, tank, anti-aircraft, medical, and quartermaster troops. Following VE Day in May 1945, the camp became an Infantry Replacement Training Center and later an Infantry Advanced Replacement Training Center.

Since its inception, FTR has experienced fluctuations in activity levels, primarily in response to U.S. military involvement. The decreasing need for combat troops immediately following World War II precipitated the placement of Camp Rucker on inactive, standby status until Aug. 9, 1950, when the outbreak of hostilities with Korea caused its reactivation as an infantry training area. Following the end of the Korean Conflict, FTR was once again placed on standby; however, this period was brief, lasting only from June to August 1954.

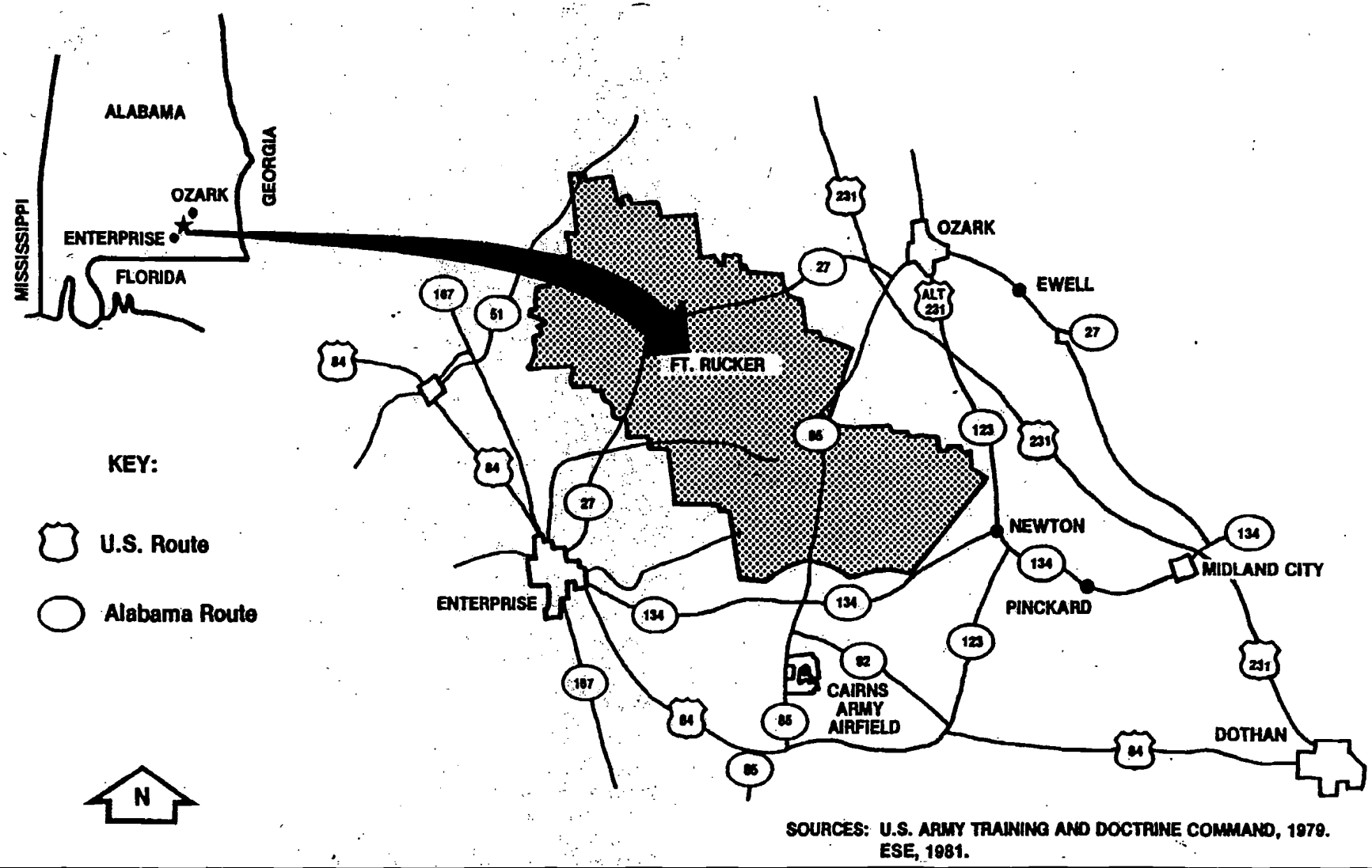
The successful utilization of helicopters in Korea had caused revolutionary advancements in Army aviation, and a pressing need for

continued testing and training in the maintenance and operation of rotary-wing aircraft became apparent. The Army formulated plans to establish an aviation center and school to meet the need, and FTR was selected as the site. Plans to relocate the existing Army Aviation School from Ft. Sill, Okla., were announced, and on Aug. 17, 1954, an advanced contingent from the Army Aviation School arrived at Camp Rucker. In March of 1955, Camp Rucker was officially designated as the U.S. Army Aviation Center (USAAVNC). In October of the same year, it became a permanent U.S. military fort and, consequently, was renamed FTR.

The years 1960 to 1969 were characterized by the acceleration of combat activities in Vietnam, paralleled by greater use of air power and increasing demands for trained aviators. FTR responded to the challenge by intensifying training and expanding its facilities. In 1962, construction was completed on Shell Field. Located 18 km from FTR and measuring approximately 100 ha, Shell Field was originally used as a fixed-wing airfield but redesignated as a heliport in 1965. No Army Aviation School training currently takes place at this facility.

Ten additional off-post airfields measuring approximately 494 ha were acquired during this period of military build-up; nine of these are currently used as training sites for the Army Aviation School. The remainder of the total area of 25,265 ha is attributable to leases and easements.

In 1973, FTR became the center for all U.S. Army aviation flight training and since then has continued its mission to "maintain and operate facilities and provide services and material to support the rotary- and fixed-wing pilot for Army aviation, basic rotary-wing training for Air Force student pilots, aviation enlisted specialists, and related test activities" [U.S. Department of Defense (DOD), 1974; USAAVNC and FTR, 1980a)].



SOURCES: U.S. ARMY TRAINING AND DOCTRINE COMMAND, 1979.
ESE, 1981.

Figure 1.5-1
LOCATION OF FT. RUCKER AND VICINITY

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

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1.5 ENVIRONMENTAL SETTING

1.5.1 LOCATION

FTR is located in southeast Alabama (Fig. 1.5-1). The main cantonment area is located in Dale County, with additional real estate located in surrounding counties. The total area of the installation is 25,265 ha. FTR property is 23,397 ha in area, and the remaining 1,868 ha is comprised of airfields, stagefields and tactical sites, USARC facilities, and leased land for use as rotary-wing pads and fixed-wing airstrips. The installation is in an area of primarily farm land, with the nearest civilian communities being Daleville, Enterprise, and Ozark, Ala. Dothan, Ala., with a population of 40,000, is the largest population center within a 50-km radius of the installation.

1.5.2 METEOROLOGY

Due to its geographic position, topography, and prevailing winds, FTR's frost-free period is approximately 257 days and extends from early March to mid-November. The annual average of maximum daily air temperatures is 24.9 degrees Celsius (°C). The precipitation is well-distributed throughout the year and averages 134.5 centimeters per year (cm/yr). The average annual wind is from the east-southeast at 11.3 kilometers per hour (km/hr). Table 1.5-1 summarizes the monthly climatological data for FTR (modified from TRADOC, 1979).

1.5.3 GEOGRAPHY

Physiography

Much of the topography of FTR is characterized by moderately rolling land with elevations between 60 and 90 meters (m). Elevations on the installation range from a minimum of 44 m at the creek beds to a maximum of 130 m on the ridges or hills in the center and toward the northwest portion of the installation. Wide hill tops break rapidly from ridge crests down to ravines with grades of 5 to 15 percent. The largest hills generally run north and south, with the side ridges running east and west. A few swampy areas and some washed gullies are located near the outer edges of the cantonment area.

Table 1.5-1. Monthly Summaries of Climatological Data for FIR for the Period 1954-70

Month	Temperature (°C)				Precipitation (cm)					Wind			Visibilit
	Mean Max	Mean Min	Extreme Max	Extreme Min	Mean	Greatest	Least	Max 24 Hrs	Snowfall	Mean Wind Direction	Mean Wind Speed (km/hr)	Max Wind Speed Recorded (km/hr)	Percentag VFR (%)
JAN	14.8	3.3	27.4	-13.4	10.7	20.1	4.1	10.2	Trace	N	13.3	74	83.3
FEB	17.8	6.2	29.7	-9.0	14.0	20.0	4.6	11.3	Trace	N	12.4	85	83.8
MAR	20.8	8.7	31.9	-4.5	13.0	20.1	1.6	11.7	Trace	S	14.8	118	85.8
APR	25.7	13.4	33.0	1.7	13.3	21.7	4.3	11.4	0	S	13.1	96	90.9
MAY	30.2	17.9	37.0	7.3	7.8	13.9	0.1	9.1	0	E	10.6	94	92.9
JUN	31.6	21.6	38.6	11.2	11.9	23.1	4.5	9.9	0	SE	9.8	93	93.9
JUL	32.4	22.3	36.4	17.9	13.3	22.0	6.3	7.1	0	W	8.7	93	94.6
AUG	32.6	22.0	38.6	15.7	11.5	32.9	4.5	10.9	0	E	8.9	96	94.9
SEP	30.2	19.9	37.0	9.5	14.8	24.4	3.3	21.3	0	ENE	10.0	131	89.9
OCT	25.5	13.6	33.6	1.1	7.5	27.2	0.0	10.6	0	ENE	10.0	131	91.2
NOV	20.7	8.2	30.2	-5.6	6.2	14.2	0.3	5.8	0	N	10.9	83	89.0
DEC	16.2	4.5	26.9	-14.0	10.5	23.1	2.1	14.1	Trace	NNW	13.5	70	87.9
Annual Mean	24.9	13.4	38.6	-14.0	134.5	N/A	N/A	21.3	Trace	ESE	11.3	131	89.8

*Percentage of month allowing Visual Flight Rules (VFR), 304.8 m ceiling with 4.83 km horizontal visibility.

N/A = Not available.

Source: Modified from TRADOC, 1979.

Surface Hydrology

The installation is dissected by numerous small streams which drain southerly into Claybank and Bowles Creeks. These two creeks, as well as Brooking Mill Creek, Gin Branch Creek, and two unnamed creeks, ultimately drain into the Choctawhatchee River. There are four man-made lakes on FTR. Lake Tholocco, with a surface area of approximately 260 ha, is located 5 km northwest of the cantonment area and has four recreation areas around its shore. Beaver Lake, approximately 7 ha in surface area, is a fishing lake located 2 km east of the main cantonment area. Buckhorn Lake, located 4 km east of the cantonment area, is a 9-ha fishing lake. Ech Lake, 4 ha in area, is situated 5 km northwest of the cantonment area. Fig. 1.5-2 shows the location of the major streams and lakes on FTR.

1.5.4 GEOHYDROLOGY

Geologic Setting

The State of Alabama is divided into two large geologic provinces, the Appalachian Province and the Coastal Plain. The Appalachian Province, which dominates the northern part of the state, is separated from the southern Coastal Plain by an irregular area known as the Fall Line. The Coastal Plain, of which the FTR Reservation is a part, is composed of a thick sequence of rocks and sediments which both dip and thicken toward the Gulf of Mexico (south). With the exception of local alluvial deposits, the age of outcropping Coastal Plain formations increases as one progresses from the coast to the Fall Line.

Geologic formations outcropping in the FTR area range from Eocene to Recent age. These formations, illustrated in Fig. 1.5-3, generally consist of gravel, sand, and clay. The oldest sediments of the reservation are exposures of the Tallahatta and Hatchetigbee Formations of Eocene age which have been exposed in the lower parts of stream valleys. Sediments generally become younger as distance above the stream valleys increases. Pre-Pleistocene age sediments in order of oldest to youngest are: (1) the Tallahatta and Hatchetigbee Formations, (2) the Lisbon

Formation, and (3) Eocene age residuum. The Eocene residuum exists as erosional remnants on the tops of hills. The youngest sediments are the high terrace deposits and alluvium of Pleistocene and Recent origins, which were formed along stream and river valleys by various fluvial processes.

The upper part of the geologic section in the FTR area, which is of interest to the study of the hydrology, ranges in age from Cretaceous to Recent. The sediments comprising these formations are marine and terrestrial deposits of gravel, sand, clay, limestone, and various mixtures of these. The sediments may be generally characterized as both layered and heterogeneous. The geologic formations, ranging from the Ripley Formation to the presently forming alluvium deposits of the stream valleys, are described in Table 1.5-2.

The formations dip to the south at a rate of 1.9 to 3.8 m/km. The surface of the Clayton Formation, which forms the top of the major aquifer in the area, ranges from about mean sea level (MSL) at the northern extent of the installation to about 61 m below MSL at the southern boundary (Turner, et al., 1965; Newton, et al., 1968).

Soils

As illustrated in Fig. 1.5-4, the two major soil associations found on FTR are the Lakeland-Eustis Association and the Shubata-Cuthbert Association. Soils of the former occur on ridgetops and steep side slopes and are somewhat excessively drained, deep, sandy soils. Soils of the Lakeland, Eustis, Norfolk, Ruston, and Cuthbert series make up 90 percent of the Lakeland-Eustis Association; the remaining soils consist of poorly drained alluvium along drainways. Cuthbert and Lakeland series occur on steeper slopes. The Shubata-Cuthbert Association contains soils of the Shubata, Cuthbert, Boswell, Eustis, and Ruston series. Generally, these soils are moderately well drained to somewhat poorly drained, occupying highly dissected ridgetops and

Vegetation

The FTR area was originally covered by pure stands of longleaf, loblolly, and shortleaf pines or mixed stands of pines and hardwoods. Following the harvest of these forests, a secondary growth of pines and hardwoods invaded cut-over areas, and today a mixture of southern pines (including tracts of planted slash pine) and hardwood covers most of the reservation. Pine-dominated forest is found primarily on upland, well-drained sites, and contains loblolly (Pinus taeda), shortleaf (P. echinata), and longleaf pines (P. palustris). Mixed pine-hardwood forest covers lower slopes and alluvial bottoms and contains slash pine (Pinus elliottii), spruce pine (P. glabra), post oak (Quercus stellata), turkey oak (Q. laevis), southern red oak (Q. falcata), laurel oak (Q. hemisphaerica), and other oak species. Along with hickories (Carya tomentosa, C. glabra) and dogwood (Cornus florida), the oak-pine forest provides an abundance of wildlife food and cover. Stream bottom areas, drainages, and lakeshores are dominated by sweetbay (Magnolia virginiana), southern magnolia (M. grandifolia), tupelo (Nyssa sylvatica), yellow poplar (Liriodendron tulipifera), and sweetgum (Liquidambar styraciflua) along with other hardwoods and shrubs (Ilex spp., Rhus spp., Rubus spp.).

A total of 17,161 ha of the FTR reservation is under forest management (USAAVNC and FTR, 1980). Woodlands are managed under a multiple use, sustained yield forestry program, which includes harvest of saw timber and pulpwood, reforestation, prescribed burning, and fire protection. Prescribed burning is used intermittently, primarily around the northern impact area to control range fires by reducing available fuel. Other land management practices include erosion control and reforestation of landfill sites.

Wildlife

A variety of on-site vegetation communities, which differ in age, structure, and composition, provide excellent wildlife habitats and

2.1.4 MATERIEL PROOF AND SURVEILLANCE TESTS

Testing

The testing of various turbine engines and parts by Northrup, testing of aircraft and aircraft engines by USAAVNC, munition test firing on the Matteson Range, and overhaul and inspection of returned ammunition comprise the primary materiel proof and surveillance test activities at FTR. Reportedly, there is no current materiel proof and surveillance testing at FTR.

Ranges

Weapons and artillery training at FTR is conducted on a series of ranges surrounding a single, dedicated impact area north of U.S. Highway 27. Combined, these ranges and impact areas cover 10,784.44 ha (46.1 percent) of the reservation. Although a number of ranges were located on the southeastern and central sections during the period 1943 to 1954, all currently active ranges are located north of U.S. Highway 27.

At present, the range area of FTR contains 28 ranges and firing points (USAAVNC and FTR, 1980a), all firing into a common impact area. This total includes 4 ranges used primarily for air-to-surface training, 12 ranges/firing points for artillery training, 10 ranges for small arms qualification, and 2 ranges for tank training. Ranges and firing points located north of U.S. Highway 27 are listed in the July 1980 USAAVNC Regulation No. 385-1 (USAAVNC and FTR, 1980b), along with principal direction of fire, azimuth at firing line, and other information. A description of the test ranges is found in App. C.

A number of additional firing ranges were used for infantry troop weapons and artillery training prior to 1955. These ranges were located in the central and southeastern sections of the reservation. Most of the artillery and tank ranges were located in the central section, i.e.,

in an area bounded by U.S. Highway 27 in the north, Lake Tholocco in the east, and Fawkner Rd. in the south. Most artillery firing was directed northwards, i.e., toward the dedicated impact area. A large number of small arms and rifle ranges were located on the southeastern section of the reservation, i.e., in the area surrounding Hanchey Army Airfield. These ranges fired into the associated small arms impact areas. Artillery and small arms ranges used for infantry training between 1942 and 1945 are found in Table C-1 (App. C). Most of these ranges were closed following FTR's change in mission from infantry training to aviation training.

2.1.5 TRAINING AREAS AND ACTIVITIES

During World War II, FTR served as the training camp for the 81st, 35th, 98th, and 66th Infantry Divisions. Shortly thereafter, the camp became an Infantry Advanced Training Center. After a 4.5-year hiatus following deactivation in February 1946, FTR became the training camp for the 47th Infantry Division until May 1954.

Since March 1955, FTR has been the site of the USAAVNC, whose mission includes training and instruction in fixed-wing and helicopter flight training, aircraft repair and maintenance, and related programs.

The boundaries of the FTR USAAVNC flight training area are delineated by Logan, Ala., in the northwest; Cuthbert, Ga., in the northeast; Bainbridge, Ga., in the southeast; Marianna, Fla., in the south; Deerland, Fla., in the southwest; and Brooklyn, Ala., in the west. A detailed description of the flight training area is furnished in Supplement 1 to Army Regulation (AR) 95-1.

Weapons training, EOD training, artillery training, and air-to-ground weapon training are conducted in the combined range area of FTR. This

range area is composed of 28 ranges all firing into a common impact area. The five types of weapon training include:

1. Air-to-Surface Training: Four ranges are used to conduct training by means of the following aerial gunnery weapons: AGM 22 missiles; TOW missiles; 20-mm, 30-mm, and 40-mm cannons; 7.62-mm machine guns; and .50-cal machine guns.
2. Artillery Training: Twelve ranges/firing points are used to fire 105-mm and 155-mm Howitzers for Aerial Observer Training, Unit Proficiency Training, and Night Illumination Missions. U.S. Army Reserves (see below) fire 106-mm recoilless rifles and 31-mm and 4.2-inch (in) mortars during annual training.
3. Small Arms Qualification: Ten ranges are used to conduct qualifications testing for M-16 rifles, .38-cal and .45-cal pistols, M-60 and .50-cal machine guns, and M-79 and M203 grenade launchers.
4. Tank Training: Two ranges are used to conduct training for main tank gunnery (subcaliber) and tank machine guns.
5. Demolition Training and Explosive Ordnance Disposal (EOD) Work: This type training is conducted in the range area, primarily on Training Area 8B.

The calibers of weapons used in ground-to-ground weapons training are summarized in Table C-2. Air-to-ground firing is comprised of weapons and weapon systems firing from helicopters. All ground-to-ground and air-to-ground firing is directed into a dedicated impact area which, along with the surrounding ranges, covers 10,784.44 ha on the northern section of FTR.

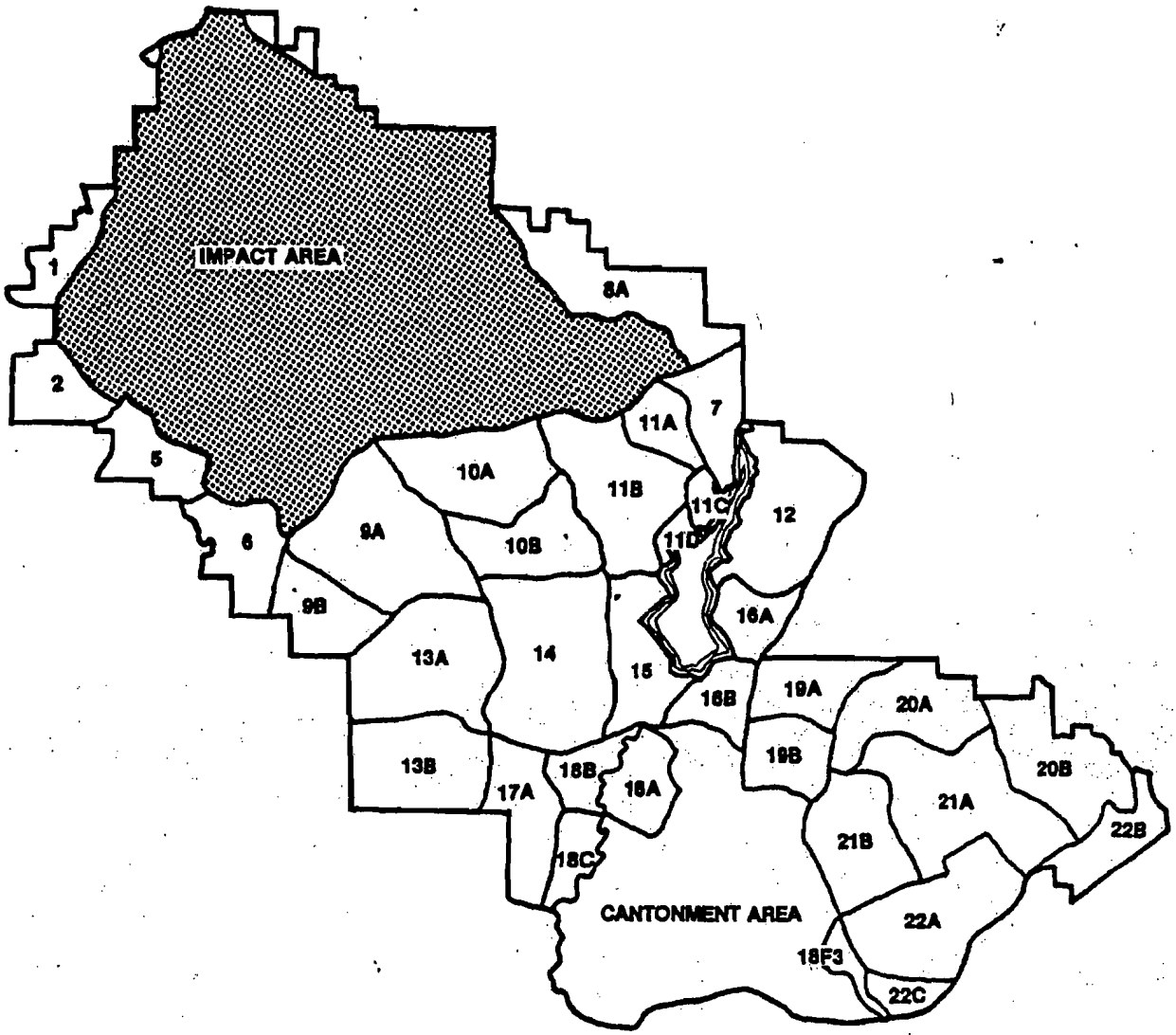
The FTR reservation supports 10 Table of Organization and Equipment (TOE) units with training areas for conducting squad- through battalion-level field training exercises. In addition to TOE units, FTR training areas are used by Army Reserve and National Guard units for weekend (IDT) and annual training (AT). The degree of usage of training

areas varies from year to year. During AT79, for example, FTR hosted 50 units for annual training. National Guard and Army Reserve units training on the FTR reservation include:

Armored Battalions	Support Battalions
Engineer Battalions	Maintenance Battalions
Transport Battalions	Field Service Companies
Aviation Battalions	Supply Companies
Infantry Units	Military Police (MP) Company
Field Artillery Units	Medical Companies

The areas used most heavily for weekend, annual, and regular Army training include 9B; 10A,B; 11A,B; 16A; 19A,B; 20A,B; and 21A. The least used areas include 5; 7; 8; 11C,D; 13A,B; 14; 15; and 16B.

Regular Army training at FTR includes command post exercises (CPX), field training exercises (FTX), and Army readiness training exercises (ARTEP). Nuclear, biological, chemical (NBC) training (formerly referred to as CBR training) is included in the FTX training, and is restricted to training areas 9A and B, 21A, 20B, and an area known as the "gas chamber" southwest of Beaver Lake. Training sites cover 934 ha of the FTR reservation. The locations of the training areas are shown in Fig. 2.1-1. Numerous basefields, stagefields, and TAC fields are located on or near FTR and are used by the USAAVNC for flight training, maneuvers training, navigation training, and aircraft maintenance training. Basefields, stagefields, and TAC fields used by the FTR USAAVNC are listed in Table 2.1-1 and are described in detail in the March 1980 Annual Installation Survey (USAAVNC and FTR, 1980a). Basefields, stagefields, and TAC areas comprise 1,559 ha (3,853 ac). Acreages for each of the FTR training areas are listed in Table C-3; acreages for FTR and additional USAAVNC training and staging areas are shown in Table C-4. In addition, there are a large number of small fixed-wing road strips, rotary-wing Auto-rotation areas, and tactical land strips totalling more than 200 training areas.



SOURCES: U.S. ARMY AVIATION CENTER AND FT. RUCKER, 1980a. ESE, 1981.

Figure 2.1-1
FT. RUCKER TRAINING AREAS
(Refer to Text Section 2.1.5 for Site Identification)

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

garbage. The operation consists of dumping refuse in trenches and covering it with soil. At present, the Army does not intend to extend the lease agreement after the present landfill reaches capacity. This landfill will be discussed further in Sec. 3.1.15.

Contaminated Waste

Waste materials at FTR, which have been identified as hazardous wastes (EPA, 1980a), are shown in Table 2.2-3. These wastes include those produced by all lessee industrial operations at FTR. All wastes are collected by DPDO and disposed of by a contractor registered with the EPA. The wastes are disposed of in an EPA-approved hazardous waste landfill. FTR meets RCRA requirements in the handling and disposal of these wastes.

2.2.3 DEMOLITION AND BURNING GROUND AREAS

Demolition Areas

Disposal of ordnance and other explosive materiel is accomplished by detonation at two locations: (1) 8-Bravo EOD Range, and (2) Hover Point. The location of these demolition areas is shown in Fig. 2.2-3. The 8-Bravo Range is used for destruction of unserviceable ammunition (small arms, 2.75-in rockets, miscellaneous aircraft explosives, cartridge-actuated devices, and assorted HE munitions). Approximately 150 kg is destroyed with each detonation, using C-4 explosives. This occurs approximately six times per year. Approximately eight "blow-holes" are evident at this site. The Hover Point demolition area has been utilized in the past when 8-Bravo Range was inaccessible due to road conditions or training operations.

The 46th Engineers also practice dynamite demolition activities on these ranges.

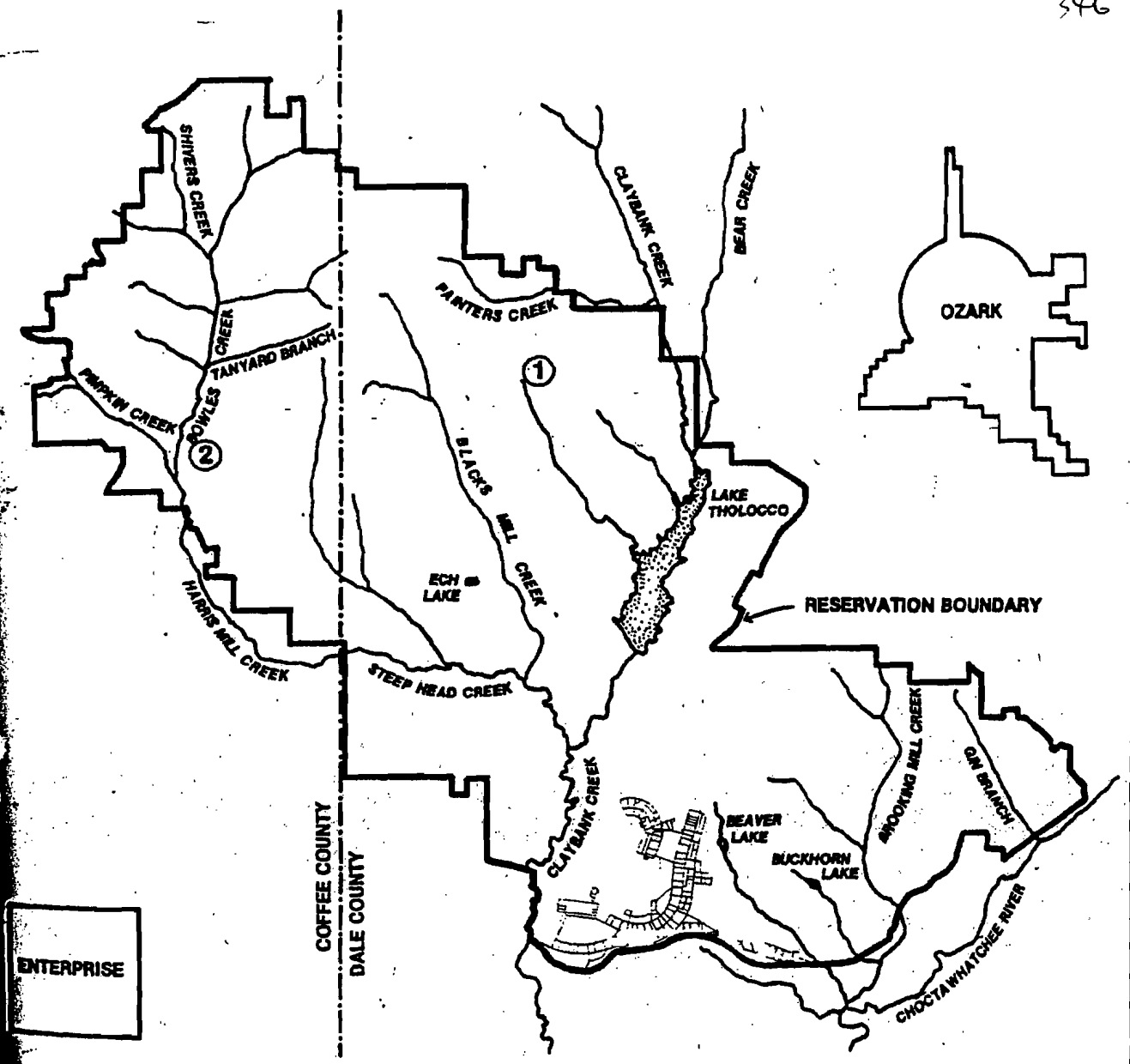
Burning Areas

The major burning area is located at the 8-Bravo EOD range. Riot control agents, for which the shelf-date has expired, are burned at this

Table 2.2-3. Hazardous Wastes Generated by FTR Installation Operations

Operation/Process	Reportable Hazardous Wastes	Kilograms Generated Monthly	EPA Waste No.
Degreasing/Solvent	Trichlorethylene	553.39	F002
Aircraft Repair Cleaning	Carbon Remover	614.62	D002
Stripper	Magnus 63	32.13	D002
Battery Shop	Sulfuric Acid/Lead	68.04	D002/ D004
Laboratory	Methanol (10% strength)	30.00	F005
Painting	Paint Residue	2.27	F017
Property Disposal	DDT (1360.79 kg) on hand for a one-time disposal	—	U061
Total Kilograms		1,300.45	

Source: ESE, 1981.



igure 2.2-3
OCATION OF DEMOLITION AND URNING GROUND AREAS ON FT. RUCKER

Prepared for:
U.S. Army Toxic and Hazardous Materials Agency
Aberdeen Proving Ground, Maryland

range. Included in these compounds are CS and DM vomiting agents (diphenylaminochloroarsine). Approximately 2 kg active DM per month has been destroyed. The last riot control agents were destroyed in July 1980. The destruction technique consists of: (1) removing fuses from the grenade canisters, (2) dumping the grenades into a "blowhole," (3) placing wood in the blowhole, (4) soaking the wood and grenades with diesel fuel, and (5) igniting the items to be destroyed. This method is the local installation EOD procedure established for the disposal of these agents and is based on the diesel fuel ignition temperature exceeding the decomposition temperature of CS and DM.

Future plans call for the destruction of approximately 10 kg of DM during 1981. All parties participating in the interservice agreement were contacted, and this is the total weight of items which will reach shelf life expiration date during 1981.

Considering that DM contains arsenic (As) compounds and that other munitions compounds (e.g., powder containing 2,4-Dinitrotoluene, a suspected carcinogen) were destroyed in this area, this disposal procedure may be a problem, since the soils may be contaminated with these substances. At the time of the site visit, the burning ground/demolition areas were not listed, as required under the Hazardous Waste Management Regulations (HWMR). FTR reportedly submitted a permit application (July 14, 1981), which included burning ground/demolition areas. Further discussion can be found in Sec. 3.2.11 (EPA, 1980e).

2.2.4 DEMILITARIZATION

No demilitarization activities have been reported at FTR.

2.3 WATER QUALITY

2.3.1 SURFACE WATER

FTR is dissected by numerous creeks and streams and contains four man-made lakes. A description of these water bodies is given in Sec. 1.5.3.

fuel oil and disposed by burning in a steam boiler. Hazardous waste petrochemicals are drummed, transferred to DPDO, and subsequently contract hauled to the EPA-approved hazardous waste landfill at Livingston, Ala. Oily rags generated in the print shop operation are contract-hauled and cleaned off the installation.

3.1.8 LABORATORY OPERATIONS

Laboratory operations at FTR consist of fuel analysis laboratories, a photographic laboratory, classroom chemical laboratories, and the chemical analysis laboratory at the STP. Dilute chemical wastes from all these sources are disposed in the sanitary sewer system. Ag is reclaimed before disposal of photographic wastes. Hazardous wastes from all laboratory sources are transferred to DPDO for disposal. These wastes are contract hauled to the EPA-approved hazardous waste landfill at Livingston, Ala.

3.1.9 MATERIEL PROOF AND SURVEILLANCE TESTING AND RANGES

No materiel proof and surveillance testing occurs at FTR. There are 28 firing positions on various ranges in the impact area north of U.S. Highway 27. The primary range for air-to-ground firing is Matteson Range. Matteson Range is littered with unexploded ordnance (UXO). Other areas in the dedicated impact area contain UXO.

3.1.10 TRAINING AREAS

The main mission of FTR is the training of rotary-wing aircraft pilots. Training fields exist both on and off the installation. Troop training by the Alabama National Guard and the Army Reserve also occurs on the installation. Troop training occurs primarily in the southern portion of the installation (south of State Highway 27).

All weapons firing for troop training occurs at the various ranges north of State Highway 27. Weapons firing in this area is directed toward the center of the dedicated impact area. Air-to-ground weapons training also occurs in the dedicated impact area. A training facility using

riot control agent CS exists on the southern end of the installation near Beaver Lake. This area is known as the "gas chamber." EOD training occurs at 8-Bravo Range and Hover Point on Matteson Range.

3.1.11 TOXIC/HAZARDOUS MATERIALS (HANDLING AND STORAGE)

No record was found of the manufacture, storage, or use of lethal chemical or biological agents or radiological munitions at FTR. Riot control agent CS has been used during training operations. Riot control agent CS and DM vomiting agents have been stored and are disposed of at the burning ground at FTR.

Pesticides have been used at FTR and are stored at four locations. These locations include: the DPDO area, the Golf Course, the Entomology Section of DFAE, and the Land Management Branch of DFAE.

Transformers and capacitors containing PCBs are still in use at FTR. When no longer operational, these items are removed from service and replaced.

3.1.12 POL HANDLING AND STORAGE

Underground holding tanks of 500- and 1,000-gal capacity are located around maintenance facilities for storing used motor oil. These tanks were used previously above ground before being converted to underground tanks, and their age is unknown. These tanks have never been leak checked to assess their integrity. Underground POL storage tanks will be discussed further in Sec. 3.2.1.

POL, contaminated with salt water, is stored in nine 5,000-gal truck tank trailers and six 10,000-gal railroad tank cars. These storage vehicles are located at the southern boundary of the installation near Bldg. 7201. At the time of the site visit, this area was neither bermed

Some unauthorized dumping was noted at the landfill behind the old hospital area boiler and in the former construction debris landfill.

The Records Search Team determined that oil pits existed in at least two other former landfills. It was also determined that ash from past operation of a sanitary waste incinerator was buried in the landfill immediately southwest of the land management area of DFAE. No records were found to indicate the disposal of toxic or hazardous wastes in any landfills.

3.1.16 CONTAMINATED WASTES

Infectious wastes are destroyed in the contaminated waste incinerator located at the Lyster Army Hospital (Bldg. 301).

Very small quantities of radiological wastes, consisting mainly of radioactive calibration devices, are stored in Bldg. 1314. The Aeromedical Laboratory has an NRC license for the use of C-14.

In the past, sludge from the main STP has been spread along roadways and in a pecan orchard adjacent to the Golf Course. The EP toxicity test has been performed on samples of this sludge. The results indicate that this waste would not be considered hazardous, based on heavy metal concentrations. The results, with respect to pesticide concentrations, have not been obtained, although a sample was submitted for analysis in August 1980.

3.1.17 DEMOLITION AND BURNING GROUND AREAS

The demolition and burning ground areas at FTR are Hover Point and 8-Bravo EOD Range. The Hover Point area is used only when the 8-Bravo Range is inaccessible. The main range for demolition, 8-Bravo, is used approximately six times per year for the destruction of 150-kg batches of explosive ordnance. The demolition is conducted above ground, using C-4 as the detonating charge.

The 8-Bravo Range is also used to burn outdated CS and DM vomiting agent. These items are obtained primarily from Tyndall, Maxwell, and Eglin Air Force Bases through an interservice agreement whereby FTR is responsible for their destruction. These agents are mixed with diesel fuel and ignited. This disposal method is approved by EOD. The Records Search Team determined that a quantity of 2 kg per month is being destroyed. The State of Alabama has permitted the burning ground at FTR. FTR had not filed for interim status as defined by the May 19, 1980 HWMR (EPA, 1980e) at the time of the site visit. FTR reportedly has submitted the required application for a permit (July 14, 1981). Burning ground/demolition areas are discussed further in Sec. 3.2.11.

3.1.18 WATER QUALITY

Limited surface water quality data exist for FTR. These data are from Lake Tholocco and are high in P and N, indicating eutrophication. The primary source of these elements, fertilizers from farming operations and animal wastes from hog and cattle raising, are located upstream and off the installation. High coliform counts in the lake have also caused the area to be closed for recreational swimming; the latest closing occurred in the spring of 1980.

The only existing groundwater data pertain to the drinking water wells on the installation. These data were generated during December 1978 and indicate that the drinking water meets the NIPDWR.

3.1.19 AIR QUALITY

FTR is a part of the Southeastern Alabama AQCR, under the auspices of AAPCC. This region is considered an attainment area. The only air permits required by AAPCC for FTR are for two JP-4 tanks and a gasoline tank.

1980). The Army would have to bear any expense of monitoring landfill operations to assure the exclusion of toxic and hazardous wastes;

2. The Army could be held responsible for any monitoring or clean-up operations for closed lessee landfills, unless specifically absolved of these responsibilities by the terms of the lease;
3. The possibility exists, even if explicit terms are included in any future lease arrangement holding the municipality responsible for monitoring or cleanup operations, that FTR and the Army would still have the ultimate responsibility for these operations if the municipality is unwilling or unable to fulfill them.

3.2.9 LANDFILLS

Twelve landfills were identified on FTR. Many of these landfills are located adjacent to the southern boundary of the installation. Oil and grease was reported to have been buried in some landfills. The on-site search did not disclose any information which would indicate the burial of toxic and hazardous substances in these landfills. All of these landfills are located in red clay soils, with little potential for migration into the ground water. These landfills are not considered to be a problem.

3.2.11 BURNING GROUND/DEMOLITION AREAS

Burning ground/demolition areas in use at FTR are located at 8-Bravo Range and Hover Point. These areas are not listed in the FTR Interim Status Permit Application. The ash and residue (potentially containing arsenic and 2,4-DNT) produced in these areas may be classified as hazardous (EPA, 1980e). Residues generated in the disposal procedures need to be analyzed to determine the hazardous status of these areas (DARCOM, 1980). FTR reportedly will be visited by USAEHA in January or February 1982 to collect and analyze samples from these areas.

APPENDIX C

1. Subcaliber Tank Range One: This area is used as a small arms range for firing subcaliber weapons at a variety of targets.
2. TCQC Range: This range is used for small arms firing for subcaliber (M-16), 50-caliber (cal), and 7.62-millimeter (mm) guns.
3. Field Fire (Center) Range: This is a small arms range for firing M-16 rifles. It contains 35 firing points and pop-up silhouette targets at 50 m, 150 m, and 300 m. As per the March 1980 Installation Survey, this range is not usable at this time due to nonavailability of target mechanisms.
4. Zero Range: This is a small arms range used for firing M-16 rifles at paper targets at 25 m.
5. Light Anti-Tank Weapon (LAW) Range: LAW and M-60 were tested at this small arms range. Targets included 5 concrete bunkers and 5 dump trucks at approximately 150 m downrange. This range was closed when Longstreet Stagefield became operational.
6. Record Range: This area serves as a small arms range for firing M-16 rifles from 12 firing points at 84 targets at 50, 100, 150, 200, 250, 300, and 350 m. It was inoperational as of March 1980 due to nonavailability of target mechanisms; however, it was re-opened in late 1980.
7. Longstreet Range: This range is used for aerial gunnery. It closed in March of 1980; however, it was open as of late 1980. Most northern ranges closed as a result of its reactivation.
8. Test Board Range: This range is used for aerial gunnery. It opens only upon prior coordination with Range Officer. It is presently closed.
9. FP Longstreet: This area served as an artillery range; it closed as of March 1980.

10. NBC Range: This area was used for simulated nuclear, biological, chemical training. It closed as of March 1980.
11. Machine Gun Range: Machine gun qualification occurs here, using light and heavy machine guns. It was under construction as of March 1980.
12. Hammond Range: This range is used for aerial gunnery. It closed as of March 1980.
13. 500- to 1,000-Inch (in) Range: This area is used for weapons familiarization/qualification training involving M-16 and small bore calibers. Fifty targets are set at 500 and 1,000 in.
14. Known Distance (KD) Range: This area provides space for marksmanship training using M-14 and M-16 rifles. It includes 15 firing points, with firing lines at 100, 200, 300, 400, 500, and 600 m; 15 targets of Type E silhouettes are used.
15. Pistol Range: Qualification firing occurs here, using .22-cal, .38-cal, and .45-cal pistols fired from 25 firing points at bulls-eye paper.
16. Grenade Launcher Range: Qualification firing of M203 and M79 occurs here from 4 firing points at 6 concrete bunkers.
17. Demolition/Explosive Ordnance Disposal (EOD) Range: This area is used for demolition training.
18. Matteson Range: This area is used primarily for aerial gunnery using the following weapons: 20-mm, 30-mm, 40-mm, 7.62-mm, 2.75 FFAR, TOW missile, aerial flares, 105-mm Howitzer, 90-mm recoiless rifle; 106-mm coiless rifle. Matteson Range is an aerial gunnery range designated for instruction firing, test firing, and special demonstrations.
19. Blacksmill Range: This area serves primarily as an aerial gunnery range designed for instruction firing, test firing, and special demonstrations. Weapons fired include: 20-mm, 30-mm, 40-mm, 7.62-mm, 2.75 FFAR, and aerial flares. Ground weapons and certain special munitions may be fired from this range upon approval.

20. Lake Tholocco Pistol Range: This is a small arms range used for firing pistols of .45 cal or smaller. No magnum and/or super-type ammunition, except .22-cal magnum, are fired. Targets at 25 m and 50 m are used.

21. Hand Grenade Range: Formerly used for fragmentation and practice grenades, this range is now closed.

22. Artillery Ranges: These are used for firing 105-mm Howitzer High Explosive (HE) and illumination rounds from several firing points. Firing Point 11 is used for OH58 training for artillery adjustments. Firing Points 10, 12, and 14 are used for unit training.

23. Door Gunner Range: This range is used for machine gun training from helicopters; firing 7.62-mm machine guns at Train Fire River. In addition, M-14, M-16 rifles and 7.62-mm machine guns are fired from 3 towers.

24. Skeet Range: This area is used strictly for recreational firing of shotguns. It is not used for training (USAAVNC and FTR, 1980b).

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Table C-1. Former Test Ranges on FTR

1. KD Range;
2. Rifle Transition Range No. 1, No. 2;
3. Infiltration Course IFL No. 1, No. 2;
4. Pistol Range;
5. Landscape Range;
6. 1,000-In Range;
7. Auto-Rifle Field Firing Range;
8. Anti-Tank Rocket Range No. 1, No. 2;
9. Anti-Tank Grenade Range No. 1;
10. Rifle Field Firing Range No. 1, No. 2, No. 3;
11. Machine Gun Transition Range No. 1, No. 2;
12. Village Combat Course;
13. Close Combat Range;
14. Grenade Course No. 1, No. 2;
15. Machine Gun Field Firing Range;
16. Sub-Machine Gun Range;
17. Machine Gun Technique of Fire Range;
18. Flame Thrower Range; and
19. Anti-Tank 1,000-In. Range.

Source: ESE, 1981.

Table C-2. Calibers of Weapons Fired on FTR Ranges

Ground-to-Ground Firing	Air-to-Ground Firing
.22-cal Rifle	7.62-mm Doorgun
.38- and .45-cal Pistol	7.62-mm Minigun
7.62-mm and 5.56-mm Rifle	40-mm Grenade Launcher
7.62-mm and .50 mm-Machine Gun	20-mm Cannon
40-mm Grenade Launcher	2.75-in Aerial Rocket
66-mm LAW	30-mm Cannon
81-mm and 4.2-in Mortar	SS-11 Wire Guided Missile
105-mm Howitzer	TOW Missile
106-mm Recoiless Rifle	MK65 Flare
155-mm Howitzer	
Explosive Ordnance Demolition	

Source: TRADOC, 1979.

Table C-3. List of FTR Training Areas by Acreage

Area Number	Acres	Area Number	Acres
1	428	14	2,175
2	1,461	15	780
3	1,511	16A	731
4	342	16B	554
5	982	17A	906
6	1,008	17B	529
7	605	18A	479
8A	1,622	18B	454
8B	705	18C	—
9A	1,788	18F	—
9B	731	19A	695
10A	1,269	19B	669
10B	1,008	20A	1,098
11A	629	20B	1,334
11B	1,360	21A	2,105
11C	202	21B	1,179
11D	151	22A	1,738
12	1,572	22B	654
13A	1,562	22C	503
13B	1,259		
		Total with 17B and 22C	36,778 Ac
		Total without 17B and 22C	35,746 Ac

Source: USAAVNC and FTR, 1980a.

Table C-4. Sizes of FTR and Additional USAAVNC Training and Staging Areas

Area	Acres
FTR	
Reservation	57,769
Cairns Airfield	1,297
Shell Field	246
Toth Field	125
Skelley Field	161
TAC Runkle	235
TAC X	111
Allen Field	114
Goldberg Field	99
Hunt Field	134
Highbluff Field	96
High Fall Field	40
Louisville Field	105
TOTAL	60,532

Source: USAAVNC and FTR, 1980a.

Appendix C: Interview Records

Interview and Document Review Log

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0052
Date:	02/11/04
Interviewer/Reviewer:	Al Larkins and Michael Garnes, Malcolm Pirnie, Inc.
Person Interviewed:	Ms. Marlene Reseckler, Real Property

Discussion/Document Reviewed:

Notes from interview with Ms. Reseckler:

-Worked at the installation for 25 years and has never known of the ranges northeast of the cantonment area.

-Provided information for the opening of the Golf Course (1951) and construction of the additional 9 holes (1993).

-Facility cards for the ranges are not available because the Army destroyed numerous documents for the "camp" because it was not thought to remain open after WWII.

-No Information for the Lake Tholocco Pistol Range.

Interview and Document Review Log

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0052
Date:	02/11/04
Interviewer/Reviewer:	Al Larkins and Michael Garnes, Malcolm Pirnie, Inc.
Person Interviewed:	Mr. Mike Maxwell, Chief of Master Planning

Discussion/Document Reviewed:

Notes from interview with Mr. Maxwell:

-Interested in the base history, Mr. Maxwell has collected historic drawings and aerials.

-Familiar with the existence of the ranges northeast of the cantonment area.

-Most targeting was to the center of a circle of ranges including rifle grenades and small arms.

-Does not recall any EOD incidents occurring at Fort Rucker.

Interview and Document Review Log

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0052
Date:	02/10/04
Interviewer/Reviewer:	Al Larkins and Michael Garnes, Malcolm Pirnie, Inc.
Person Interviewed:	Mr. Joe Weber, the Range Control Officer

Discussion/Document Reviewed:

Notes from interview with Mr. Weber:

-Has access to the EOD incident reports and would be familiar of an ordnance discovery on the installation.

-No record of any ordnance incidents at the installation; however recalls the finding near the former Anti-Tank Rocket/Grenade Range. The ordnance was detonated in place and determined to have originated from a borrow area for soil.

-Mr. Weber was familiar with the Lake Tholocco Pistol Range and had indicated that its closing was a result of safety issues.

Interview and Document Review Log

Version 1

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0050
Date:	26 February 2004
Interviewer/Reviewer:	John Nocera, Malcolm Pirnie, Inc
Person Interviewed:	James M. (Joe) Abbott, USACE, Mobile District 109 St Joseph Street, Mobile, AL 36628 (251) 690-3510

Discussion/Document Reviewed:

Met with Ed Blocher of Mobile District Real Estate Division and he recommended that I speak with Joe Abbott and he could direct me to real estate maps for Fort Rucker. Joe Abbott directed me to their map drawers and helped me find documents on Fort Rucker. Real estate maps reviewed included property acquisition maps for Fort Rucker as well as a number of "Stage Field" around Fort Rucker that were used for helicopter and fixed wing training (e.g., touch and go). It is important to note that these Stage Fields and other training areas are not shown on the Phase II or Phase III inventory maps. Additional discussion may be warranted to determine if these should be considered Active/Inactive or Closed, Transferred, or Transferring and if they need to be shown on the maps.

Below is a summary of documents reviewed and copied onto CD in electronic format (both as Microsoft viewable format and .dgn microstation format):

- Real Estate, Fort Rucker – Drawing No. 1204-3, Sheet 1 of 2, dated 2-07-44 (note that this was such a large drawing they cut it into 2 (East half and West half)
- Real Estate, Fort Rucker Ridge Line Sites 1-8 – Drawing No. MDA-162, sheet 1 of 2, dated 6-14-68
- Real Estate, Fort Rucker – Cairns US Army Airfield (south of Ft Rucker) – Drawing No. 1153, dated 6-02-44
- Real Estate, Fort Rucker – Auxiliary Field No 3 – Drawing No. MDA-109, sheet 1 of 1, dated 11-22-60

Interview and Document Review Log

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0052
Date:	02/10/04
Interviewer/Reviewer:	Al Larkins and Michael Garnes, Malcolm Pirnie, Inc.
Person Interviewed:	Mr. Jim Swift, Installation Restoration Program Manager, Environmental

Discussion/Document Reviewed:

Notes from interview with Mr. Swift:

-Provided documentation for SWMUs located near the Anti-Tank Rocket/Grenade Range.

-Recommended installation personnel for more data.

-No Information for the Lake Tholocco Pistol Range.

Interview and Document Review Log

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0052
Date:	02/11/04
Interviewer/Reviewer:	Al Larkins and Michael Garnes, Malcolm Pirnie, Inc.
Person Interviewed:	Mr. Steven Maxham, Fort Rucker Museum

Discussion/Document Reviewed:

Notes from interview with Mr. Maxham:

-Works at Fort Rucker Museum and provided many historic photographs and aerials.

-Not familiar with the existence of the ranges northeast of the cantonment area.

-Lake Tholocco emergency spillway had broken twice causing the entire lake to empty, unknown bearing on the Pistol Range.

-Does not recall any EOD incidents occurring at Fort Rucker.

Interview and Document Review Log

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0052
Date:	02/11/04
Interviewer/Reviewer:	Al Larkins and Michael Garnes, Malcolm Pirnie, Inc.
Person Interviewed:	Mr. Delarie Parmer, Chief of Fort Rucker's Natural Resources Branch

Discussion/Document Reviewed:

Notes from interview with Mr. Parmer:

-Worked at the installation for 20 years and has never known of the ranges northeast of the cantonment area.

-Recalls an EOD incident near the Anti-Tank Rocket/Grenade Range during timber sale.

-Provided the Integrated Natural Resources Management Plan.

-No additional information for the Lake Tholocco Pistol Range.

Interview and Document Review Log

Version 1

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0050
Date:	26 February 2004
Interviewer/Reviewer:	John Nocera, Malcolm Pirnie, Inc.
Person Interviewed:	William Woodall, USACE Mobile District HTRW Section Chief 109 St Joseph Street, Mobile, AL 36628 (251) 694-4364

Discussion/Document Reviewed:

Met with Bill Woodall to discuss documents/information that Mobile District may have on Fort Rucker with regard to Fort Rucker, AL MMRP Site Inspection. Bill informed me that they did not have any documents, maps or other printed information on Fort Rucker other than a few reports that would also be at Fort Rucker. Bob Beacham was the former Mobile District Project Manager assigned to Fort Rucker. He left the Corp about 6 months ago and they have not re-assigned a new PM since the Corps does little to no work at Rucker any longer. I asked it there was a room or cubicle where there may be some documents or maps and he said there was not.

Note that I did meet with real estate division and they did have some real estate maps discussed in on another log sheet.

Interview and Document Review Log

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	0052
Date:	02/11/04
Interviewer/Reviewer:	Al Larkins and Michael Garnes, Malcolm Pirnie, Inc.
Person Interviewed:	Mr. Joe Adams, Southern Star Newspaper Editor

Discussion/Document Reviewed:

Notes from interview with Mr. Adams:

-Has taken interest in the history of Fort Rucker.

-Not familiar with the existence of the ranges at Fort Rucker.

-Does not recall any EOD incidents occurring at Fort Rucker.

Interview and Document Review Log

Project:	Military Munitions Response Program - Site Inspection
Site:	Fort Rucker, Alabama
Contract No.:	DACA31-00-D-0043
Delivery Order:	[redacted]
Date:	02/10/04
Interviewer/Reviewer:	Al Larkins and Michael Garnes, Malcolm Pirnie, Inc.
Person Interviewed:	Mr. Ron Leatherwood, Head of Master Planning

Discussion/Document Reviewed:

Notes from interview with Mr. Leatherwood:

-Not familiar with the sites and had only known of the Lake Tholocco Pistol Range.

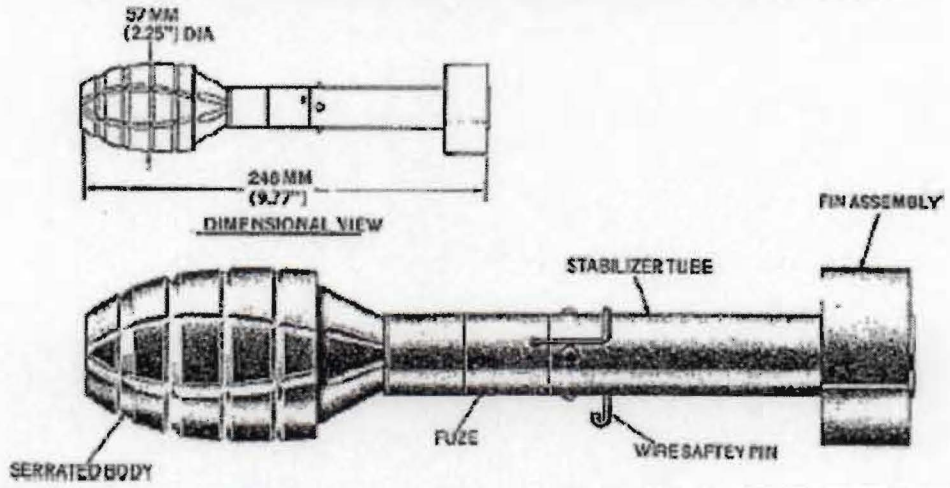
-Provided access to the map vault, which contains some historical drawings of the installation.

-Utility locations were obtained to identify underground services near site locations.

Appendix D: Ordnance Data Sheets

Ordnance Technical Data Sheet

U.S. GRENADE, RIFLE, FRAGMENTATION, M17



Nomenclature:	M17, Rifle, Fragmentation Grenade		
Ordnance Family:	Grenade		
DODIC:	N/A obsolete		
Filler:	Pentolite*		
Filler weight:	113.4 g (4 oz)		
Item weight:	667 g (1.47 lbs)		
Diameter:	57 mm (2.244in)		
Length:	248 mm (9.764 in)		
Maximum Range:	200 m (218.7 yds)		
Fragmentation Distance:	500 feet	**Fuze:**	Impact inertia, base detonating

Usage: These are rifle-projected grenades that contain a simple impact inertia, base detonating fuze.

Description: The painting and markings for each grenade are olive drab or black with yellow markings. The body is a two piece cylindrical body joined by a rolled crimp rib. The nose end is rounded, base end is tapered.

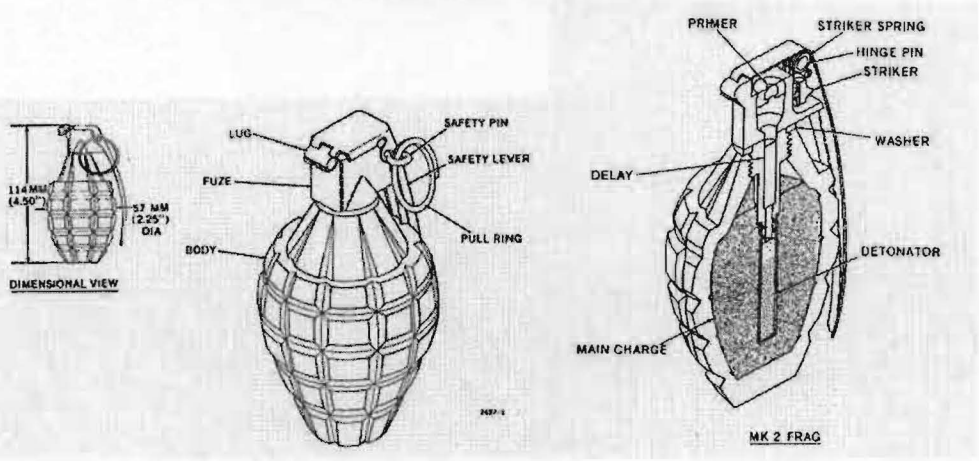
* Pentolites are castable explosive mixtures containing PETN, and TNT. The most commonly used blend consists of 50/50 PETN/TNT, but other blends such as 75/25, 40/60, 30/70 and 10/90 have been occasionally employed. During WWII cast Pentolite was used as the main charge in hand and anti-tank grenades and as a pressed charge in some detonators. Currently it still finds limited use in boosters and primer charges in commercial blasting.

Reference: ORDATA Online, FM 3-23.30

Range Identification and Preliminary Assessment
Fort Rucker
Fort Rucker, AL

Ordnance Technical Data Sheet

MK 2 Hand Grenade



Nomenclature:	MK 2 Grenade, Hand Anti-personnel
Ordnance Family:	Grenade
DODIC:	N/A obsolete
Filler:	Flaked TNT*
Filler weight:	± 56.70 g (2 oz)
Item weight:	589.68 g (1.3 lbs)
Diameter:	57 mm (2.244in)
Length:	114 mm (4.88in)
Maximum Range:	10 m (10.44 yds)
Fragmentation Distance:	1,597 feet
Fuze:	M204 A2 or A2 Fuze

Usage: Fragmentation (frag), antipersonnel, delay-detonating hand grenade.

Description: The Mk 2 grenade is painted olive drab, with a yellow band around the top of the fuze well. Slang name is "Pineapple" because of its shape and external serrations.

*TNT also known as 2,4,6 Trinitrotoluene. It has a color of yellow to yellowish brown, depending on purity. A main-charge explosive used as a filler for high-explosive shells, bombs, depth charges, large coastal mines, rockets, and as a demolition charge. Employed as a booster in pressed granular form. When flaked, may be used in small-caliber shells and projectiles, and in fragmentation hand grenades.

Reference: ORDATA Online, FM 3-23.30

Munitions Technical Data Sheet
Small Arms Ammunition

SMALL-ARMS AMMUNITION

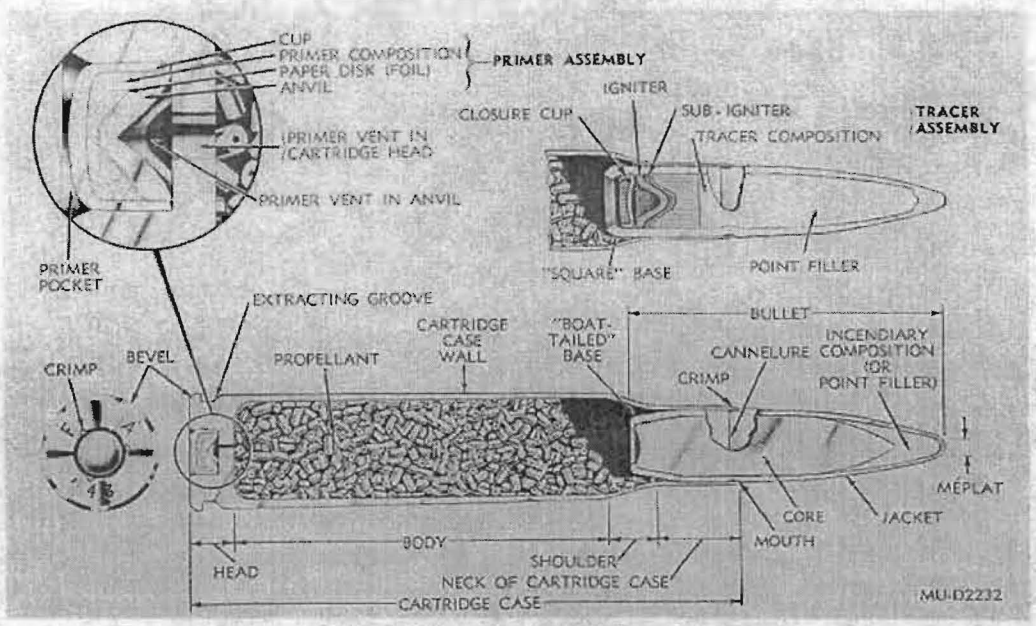


Figure 1. Typical cartridge (sectional)

General. Small-arms ammunition, as used herein, describes a cartridge or families of cartridges intended for use in various types of hand-held or mounted weapons through 30 millimeter. Within a caliber designation, these weapons may include one or more of the following: rifles (except recoilless), carbines, pistols, revolvers, machineguns and shotguns. For purposes of this publication, small-arms ammunition may be grouped as cartridges intended primarily for combat or training purposes (API, HEI, tracer or ball); for training purposes only (blank or dummy); or for special purposes (rifle grenade or spotter-tracer). Refer to TM 9-1306-200 for more detailed information on small-arms ammunition.

Cartridges. In general, a small-arms cartridge is identified as an assembly of a cartridge case, primer, a quantity of propellant within the cartridge case, and a bullet or projectile. Blank and rifle grenade cartridges are sealed with paper closure disks in lieu of bullets. Dummy cartridges are composed of a cartridge case and a bullet. Some dummy cartridges contain inert granular materials to simulate the weight and balance of live cartridges. A typical cartridge and the terminology of its components are shown in figure 1.

Case. Although steel, aluminum, zinc and plastic materials have been used experimentally, brass, a composition of 70 percent copper and 30 percent zinc, is the most commonly used material for cartridge cases. Steel, as well as brass, is an approved material for caliber .45 cartridge cases. Brass, paper and plastic are used for 12 gage shotshell bodies. Aluminum is used for military-type .410 gage shotshell bodies. Configurations of cartridges and bullets are illustrated in figures 2 through 11.

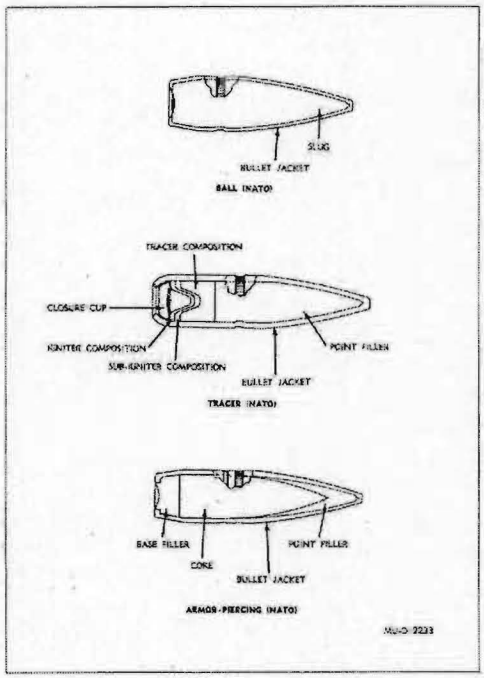


Figure 2. 7.62 mm bullets (sectional)

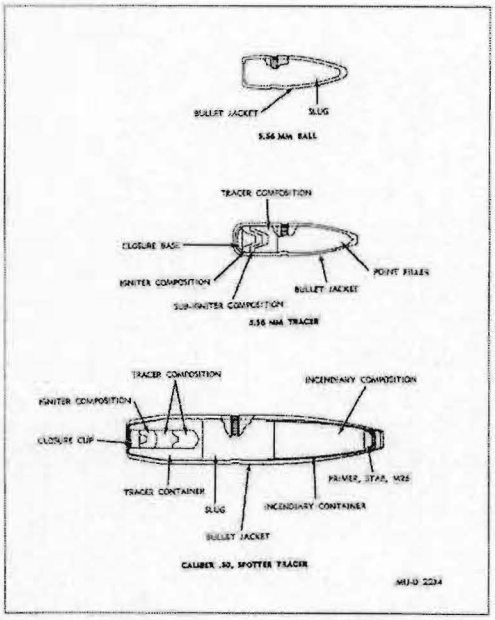


Figure 3. 5.56mm and caliber .50 spotter tracer bullets (sectioned)

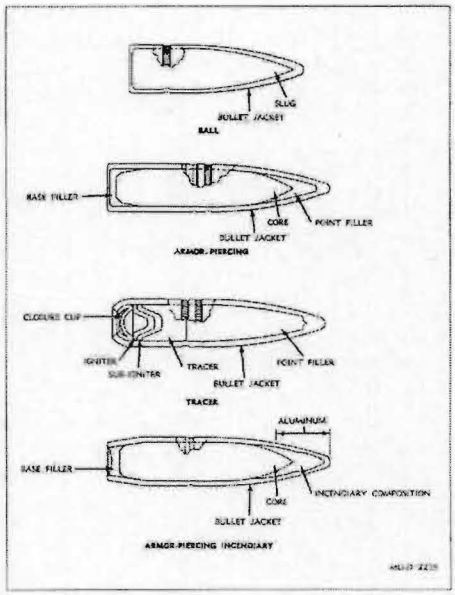


Figure 4. Caliber .50 bullets (sectional)

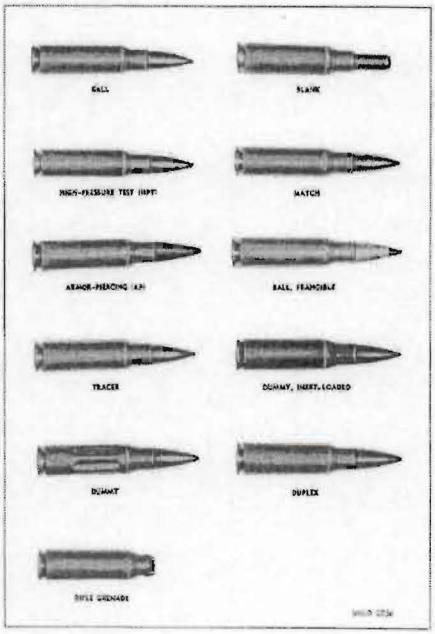


Figure 5. 7.62mm cartridges

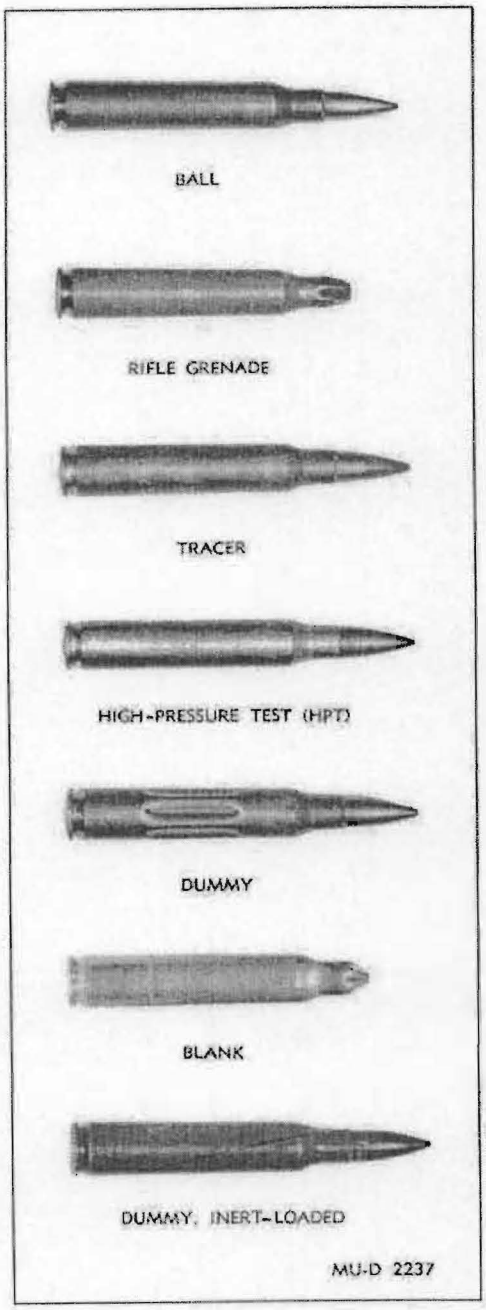


Figure 6. 5.56mm cartridges

Propellant. Cartridges are loaded with varying weights of propellant. This is to impart sufficient velocity (within safe pressures) to the projectile to obtain the required ballistic performance. These propellants are either of the single-base (nitrocellulose) or double-base (nitrocellulose and nitroglycerine) type. The propellant grain configuration may be cylindrical with a single, lengthwise perforation, spheroid (ball) or flake. Most propellants are coated with a deterrent (to assist in controlling the rate of combustion) and with a final coating of graphite (to facilitate flow of propellant and eliminate static electricity in loading cartridges).

Primer. Small-arms cartridges contain either a percussion or electric primer. The percussion primer consists of a brass or gilding metal cup that contains a pellet of sensitive explosive material secured by a paper disk and a brass anvil. The electric primer consists of an electrode button in contact with the priming composition, a primer cup assembly and insulator. A blow from the firing pin of the weapon on the center of the percussion primer cup base compresses the primer composition between the cup and the anvil. This causes the composition to explode. The function of the electric primer is accomplished by a firing pin with electrical potential, which contacts the electrode button. This allows current to flow through the energy-sensitive priming composition to the grounded primer cup and cartridge case, exploding the priming composition. Holes or vents in the anvil or closure cup allow the flame to pass through the primer vent in the cartridge case and ignite the propellant. Rimfire ammunition, such as the caliber .22 cartridge, does not contain a primer assembly. Instead, the primer composition is spun into the rim of the cartridge case and the propellant is in intimate contact with the composition. On firing, the firing pin strikes the rim of the cartridge case, compressing the primer composition and initiating its explosion.

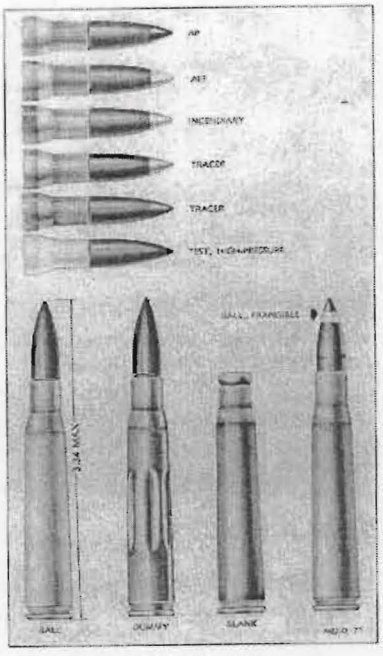


Figure 7. Caliber .30 cartridges

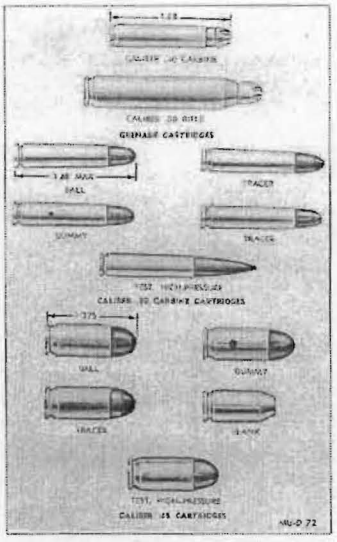


Figure 8. Caliber .30 carbine and caliber .45 cartridges

Bullet. With few exceptions, bullets through caliber .50 are assemblies of a jacket and a lead or steel core. They may contain other components or chemicals which provide the terminal ballistic characteristics of the bullet type. The bullet jacket may be either gilding metal, gilding-metal clad steel, or copper plated steel. Caliber .50 and 7.62mm frangible bullets are molded of powdered lead and a friable plastic which pulverizes into dust upon impact with the target. The pellets used in the shotgun shells are spheres of lead alloys varying from 0.08 inch to 0.33 inch in diameter.

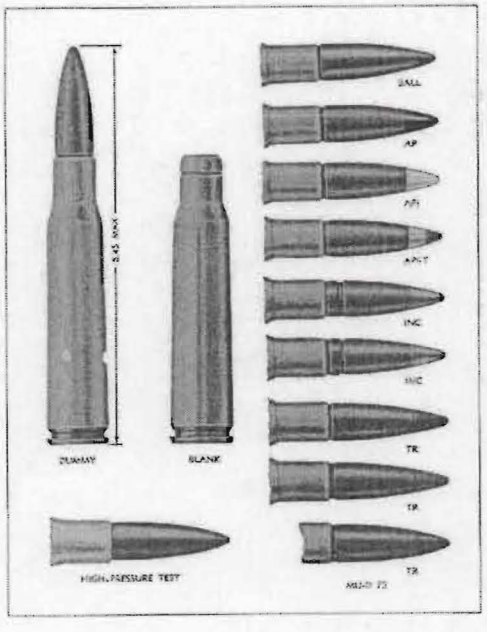


Figure 9. Caliber .50 cartridges

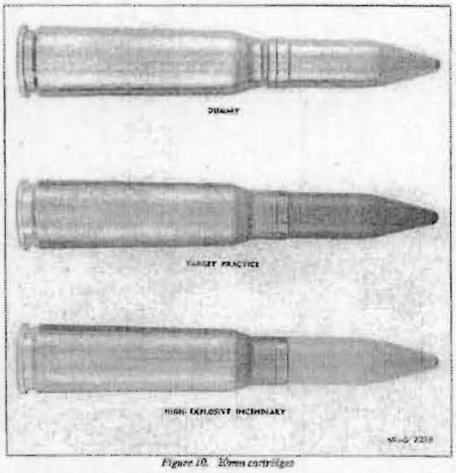
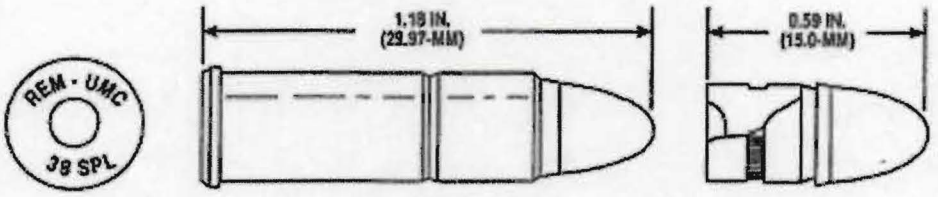


Figure 10. 20mm cartridges

Ball Cartridge. The ball cartridge is intended for use in rifles, carbines, pistols, revolvers and/or machineguns against personnel and unarmored targets. The bullet, so designed for general purpose combat and training requirements, normally consists of a metal jacket and a lead slug. Caliber .50 ball bullet and 7.62-mm, Ball M59 bullet contain soft steel cores.

Tracer Cartridge. By means of a trail of flame and smoke, the tracer cartridge is intended to permit visible observation of the bullet's in-flight path or trajectory and the point of impact. It is used primarily to observe the line of fire. It may also be used to pinpoint enemy targets to ignite flammable materials and for signaling purposes. The tracer element consists of a compressed, flammable, pyrotechnic composition in the base of the bullet. This composition is ignited by the propellant when the cartridge is fired. In flight, the bullet emits a bright flame which is visible to the gunner. Trace burnout occurs at a range between 400 and 1,600 yards, depending upon the caliber of ammunition.

Munitions Technical Data Sheet
.38 Caliber Small Arms



Nomenclature:	.38 Caliber Small Arms Ammunition
Ordnance Family:	Small Arms
DODIC:	A408
Filler:	Single or Double Base Powder
Filler weight:	.311 gm (4.8 gr)
Item weight:	12.7 gm (196 gr)
Projectile Weight:	3.92 gm (60.5 gr)
Diameter:	.38 Caliber
Length:	1.18 in. (29.97mm)

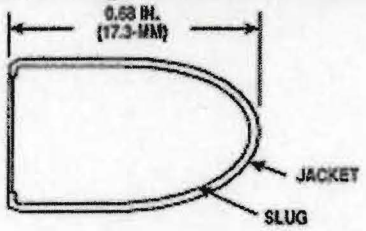
Usage: Caliber .38 weapons. The cartridge is for CONUS-guard or security use in caliber .38 weapons.

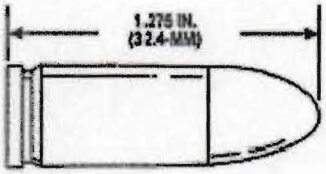
Description: BALL Cartridge. A plain bullet tip identifies the cartridge.

Reference: TM 43-0001-27

Munitions Technical Data Sheet

Cartridge Ball .45 caliber M1911





Nomenclature:	Cartridge Ball .45 caliber M1911
Ordnance Family:	Small Arms
DODIC:	1305-A480 (NSN) 1305008922526
Filler:	propellant SR 7970
Filler weight:	7 gr (.2469 oz)
Item weight:	332 gr (11.32 oz)
Diameter:	11.43 mm (.45 in)
Length:	32.4 mm (1.275 in)
Effective Range:	1463 m (1600 yds)
Fuze:	Percussion

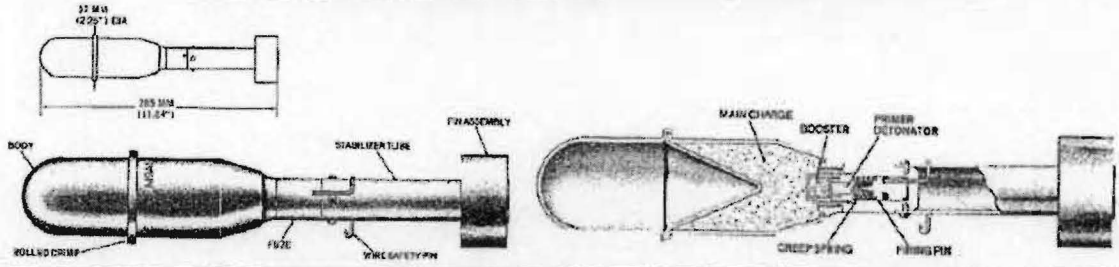
Usage: Submachine Gun, Caliber .45 M3A1 and Pistol Caliber .45, M1911A1. The cartridge is intended for use against personnel.

Description: BALL Cartridge. Identified by plane bullet tip.

Reference: Army Technical TM-0001-27.

Ordnance Technical Data Sheet

U.S. GRENADE, RIFLE, HEAT, M9A1 & M9A2



Nomenclature:	M9A1, RIFLE,HEAT Grenade		
Ordnance Family:	Grenade		
DODIC:	N/A obsolete		
Filler:	Pentolite*		
Filler weight:	113.4 g (4 oz)		
Item weight:	558 g (1.23 lbs)		
Diameter:	57 mm (2.244in)		
Length:	285 mm (11.22 in)		
Maximum Range:	10 m (10.44 yds)		
Fragmentation Distance:	1,597 feet	**Fuze:**	Impact inertia, base detonating

Usage: These are rifle-projected grenades that contain a simple impact inertia, base detonating fuze.

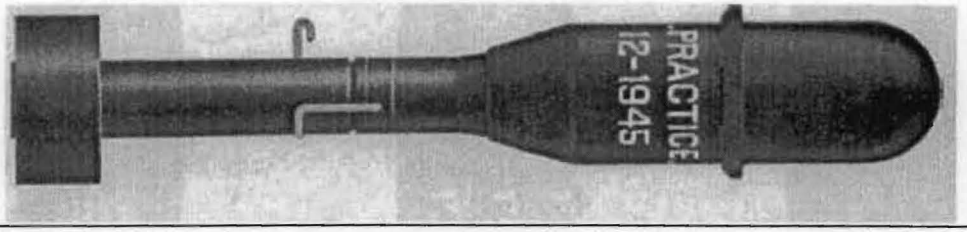
Description: The painting and markings for each grenade are olive drab or black with yellow markings. The body is a two piece cylindrical body joined by a rolled crimp rib. The nose end is rounded, base end is tapered.

* Pentolites are castable explosive mixtures containing PETN, and TNT. The most commonly used blend consists of 50/50 PETN/TNT, but other blends such as 75/25, 40/60, 30/70 and 10/90 have been occasionally employed. During WWII cast Pentolite was used as the main charge in hand and anti-tank grenades and as a pressed charge in some detonators. Currently it still finds limited use in boosters and primer charges in commercial blasting.

Reference: ORDATA Online, FM 3-23.30

Ordnance Technical Data Sheet

U.S. GRENADE, PRACTICE, RIFLE, MII(2)A2 & MII(2)A3



Nomenclature: MII A2, RIFLE, Practice Grenade
Ordnance Family: Grenade
DODIC: N/A obsolete
Filler: None
Filler weight: 113.4 g (4 oz)
Item weight: 558 g (1.23 lbs)
Diameter: 57 mm (2.244in)
Length: 285 mm (11.22 in)
Maximum Range: 10 m (10.44 yds)
Fragmentation Distance: Not Applicable**Fuze:** Impact inertia, base detonating

Usage: This grenade simulates the Anti-Tank Grenade M9A1. The grenade is so constructed that the fin and the ogive assemblies, which are most liable to damage in use, may be replaced and the grenade used repeatedly. It is for training in marksmanship. The grenade is painted black. The body is sheet metal.

Description: The grenade is so constructed that the fin and the ogive assemblies, which are most liable to damage in use, may be replaced and the grenade used repeatedly. It is for training in marksmanship. The grenade is painted black. The body is sheet metal.

Reference: ORDATA Online, FM 3-23.30

Appendix E: Stakeholder Draft HRR Comments

#	Section	COMMENT	RESPONSE TO COMMENT
1	Section 1-1	First sentence is awkward. Change to, "The purpose of the HRR is to perform a limited-scope records search to document historical and other known information for MMRP sites at Fort Rucker. The HRR will supplement the inventory information and support the Technical Project Planning designed to facilitate decisions on those areas where more information is needed to determine the next steps in the CERCLA process.	Change has been made as suggested.
2	Section 1.2	Delete reference to "Draft DoD Directive." As a draft document, the directive is not a driver.	Change has been made as suggested.
3	Page 4-3, lines 7-8: Section 2.2, page 2-2	"Anti-Tank Rocker/Grenade Range." Last sentence of first paragraph is awkward. Change to "Range fans and other ranges extend into an area identified as the operational range area, which is to the east of the site and is not included in this HRR. However, these ranges may become closed under decision of the Army and subsequently included in the SI process."	Change has been made as suggested.
4	Section 3.2.5, "Interviews."	Please indicate how long Jim Swift has worked at Fort Rucker. All other interview contacts are noted for length of service.	Change has been made as suggested.
5	Section 3.3	"Phase 3 Army Range Inventory Results." First sentence. Change "CTT ranges" to "CTT ranges/sites."	Change has been made as suggested.
6	Section 4.2, "MMRP Site Findings."	Second sentence. "As a result of this research, the Anti-Tank Rocket/Grenade Range was shown to contain a large number of ranges previously not recognized during the Phase 3 Inventory."	Change has been made as suggested.
7	Section 4.2, Page 4-3	In several instances in this section and in other sections of this HRR, the term "other than operational" is used. If the property was a former range and not a burial site with Discarded Military Munitions, these properties should be referenced as "other than operational ranges." Please make changes throughout, as appropriate.	Word changes have been made through out document.
8	Section 4.2.2, Page 4-6	First full paragraph. Since this section is addressing both the	Change has been made

#	Section	COMMENT	RESPONSE TO COMMENT
		Infiltration/Grenade Range and the Anti-Tank Rocket/Grenade Range, clarify the third sentence to, "The Infiltration/Grenade Range is approximately 1087 acres..."	as suggested.
9	Section 5.1.3.7, Page 5-7, "Demographics/Zoning."	Change "The largest industry in Dale County is retail trade..."	Change has been made as suggested.
10	Table 5-1	Although the ATG No. 1 and Unnamed Range have the same Potential Munitions and Primary Release Mechanisms, they have different Potential MEC. Please correct to make consistent.	Change has been made; the Potential MEC is now consistent between the two ranges.
11	Section 5.1.5.5	Second paragraph identifies MC at IFL No. 2. This paragraph should be moved to the appropriate section in 5.2 "Infiltration Grenade Range.	Change has been made as suggested.
12	Section 5.1.6.1	When this section discusses pathways, the term "open" and "complete" pathways seemed to be used interchangeably. Do they have the same meaning?	Change has been made to clarify terms.
13	Figure 5-2, Page 5-15	This is a very informative flow chart. Why is there an incomplete pathway for trespassers where intrusive activities are occurring in areas with MEC in the subsurface? It seems that this pathway would be partially complete. Is this pathway considered incomplete since the installation is fenced, guards restrict access, and the perimeter is patrolled? Additionally the discussions for Infiltration/Grenade Range use the term "potentially incomplete" versus "incomplete" for the Anti-Tank Rocket/Grenade Range for trespassers. What is the difference?	It is assumed that trespassers will not conduct any type of intrusive activities.

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MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS & CONSULTANTS

July 12, 2004

Mr. Stephen Woods

U.S. Army Corps of Engineers, Baltimore District
10 South Howard St.
CENAB-EN-HM (Attn: S. Woods RM 10000-B)
Baltimore, MD 21201

Re: Final Historical Records Review, Fort Rucker, AL
FFID: AL213720776
Military Munitions Response Program - Site Inspection
Contract DACA31-00-D-0043

Dear Mr. Evans:

Malcolm Pirnie is pleased to provide to the Baltimore District the **Final Historical Records Review (HRR)** for Fort Rucker, Alabama. In total 13 copies of the Final Report have been provided.

Comments on the Stakeholder Draft HRR submitted by the Army Corps of Engineers Baltimore District, and the Army Environmental Center have been incorporated into the Final Report. Responses to comments were entered into Dr. Checks through the ProjNet web page.

Please call me at 410-230-9966 if you have any questions or comments.

Very truly yours,

Al Larkins
MALCOLM PIRNIE, INC.
Deputy Project Manager

CC:
Jim Swift, Fort Rucker (4 copies)
Thomas Symalla, AEC (2 copies)
Mark Harrison, ADEM (2 copies)
US Army IMA (1 copies)
Brad McGowan, USACE OE-CX (2 copies)