



DEPARTMENT OF THE ARMY  
US ARMY INSTALLATION MANAGEMENT COMMAND  
HEADQUARTERS, UNITED STATES ARMY GARRISON  
4551 LLEWELLYN AVENUE, SUITE 5000  
FORT GEORGE G. MEADE, MARYLAND 20755-5000

May 20, 2014

Environmental Division

Mr. John Burchette (3HS11)  
NPL/BRAC/Federal Facilities Branch  
U.S. Environmental Protection Agency  
1650 Arch Street  
Philadelphia, PA 19103-2029

Dear Mr. Burchette:

This letter serves as notification that the May 2014 *Remedial Action Report for Former Mortar Range Munitions Response Area (Report)* has been finalized. The Report has been revised based on comments received from the United States Environmental Protection Agency (USEPA) on December 23, 2013, and January 27, 2014. Maryland Department of the Environment (MDE) responded with no comments on the Draft Report on November 20, 2013. Copies of the Report have been furnished to Mick Butler (Fort George G. Meade), Francis Coulters (U.S. Army Environmental Command), Dr. Elisabeth Green (MDE), Jeffrey Williams (Department of Defense), and the Fort George G. Meade Restoration Advisory Board.

If you have any questions, please feel free to contact Ms. Denise Tegtmeyer at (301) 677-9559 or me at (301) 677-7999.

Sincerely,

A handwritten signature in black ink, appearing to read "G. B. Knight".

George B. Knight, P.G.  
Acting Program Manager, Installation Restoration  
Program  
Directorate of Public Works-Environmental  
Division

Enclosure

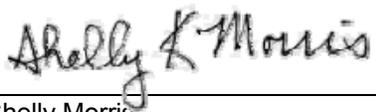


# FINAL Remedial Action Report

Former Mortar  
Range Munitions  
Response Area  
Fort George G.  
Meade, Maryland

May 2014





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Shelly Morris  
Phase Manager



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Tim Llewellyn  
Project Manager

## Final Remedial Action Report

Former Mortar Range Munitions  
Response Area  
Fort George G. Meade, Maryland

Prepared for:  
U.S. Army

Prepared by:  
ARCADIS U.S., Inc.  
300 E. Lombard St.  
Suite 1510  
Baltimore, Maryland 21202  
Tel: 410-230-0680  
Fax: 410-230-0491

Date:  
May 2014

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### Table of Acronyms and Abbreviations

AR	Army Regulation
ARCADIS	ARCADIS U.S., Inc.
Army	United States Army
cal	caliber
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (1980)
DoD	U.S. Department of Defense
EC	Engineering Control
EOD	Explosive Ordnance Disposal
FGGM	Fort George G. Meade
GIS	Geographical Information System
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
IC	Institutional Control
IRP	Installation Restoration Program
LTM	Long-Term Management
LUC	Land Use Control
MD	Maryland
MDE	Maryland Department of the Environment
MEC	Munitions and Explosives of Concern
MPPEH	Material Potentially Presenting an Explosive Hazard
MRA	Munitions Response Area
MRS	Munitions Response Site
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
RA	Remedial Action
RAO	Remedial Action Objective
RAR	Remedial Action Report
RD	Remedial Design
RI	Remedial Investigation
RIP	Response-In-Place
ROD	Record of Decision
SI	Site Inspection
U.S.	United States
USEPA	U.S. Environmental Protection Agency
UXO	Unexploded Ordnance

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### Executive Summary

This Remedial Action Report summarizes the response action implemented to address munitions and explosives of concern hazards at the former Mortar Range Munitions Response Area (MRA). The Record of Decision (ROD) authorizing this response action was signed on September 27, 2012. The selected response actions in the ROD included:

- Removal and disposal of a pit containing several thousand expended 0.22-caliber (cal) short cartridge casings; and
- Implementation of land use controls with long-term management (LTM).

Subsequent to the ROD, a Remedial Design Report (RD) (ARCADIS, 2013) to implement the selected response action was prepared and approved by United States Environmental Protection Agency and the Maryland Department of the Environment.

ARCADIS U.S., Inc. mobilized to the site on July 16, 2013, to remove and dispose of the 0.22- cal casing pit. However, regrading to the site has been conducted since the casing pit was initially discovered in 2008, and the casing pit is no longer present. The field effort to confirm casing removal was concluded the same day. Sixteen signs were hung throughout the undeveloped areas of the MRA on July 17, 2013, July 18, 2013, and August 1, 2013. With the exception of the casings pit, there were no major deviations from the RD.

Institutional controls implemented at the site include updates to the Master Plan prohibiting residential land use, maintenance of the Geographical Information System database, access restrictions, and revisions of the dig permit process. An educational program was also developed for potential future site workers, users, and emergency responders at the MRA.

LTM requires engineering controls (signage) to be maintained and preclude residential use of Site.

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### 1. Introduction

ARCADIS U.S., Inc. (ARCADIS) has been retained by the United States (U.S.) Army Environmental Command to support the Installation Restoration Program (IRP) and Military Munitions Response Program activities at Fort George G. Meade (FGGM), located in Anne Arundel County, Maryland (MD). This work is being conducted under a Performance Based Contract associated with the environmental restoration program at FGGM. The full scope of services for this contract is defined in Contract W91ZLK-05-D-0015, Task 0005.

The Record of Decision (ROD) for the former Mortar Range Munitions Response Area (MRA), signed September 27, 2012, states that the selected remedy for the former Mortar Range MRA is the enforcement of land use controls (LUCs) with long-term management (LTM) to address munitions and explosives of concern (MEC) hazards at the former Mortar Range MRA. The ROD addresses both the Mortar Area and the Training Area Munitions Response Sites (MRSs) that make up the former Mortar Range MRA. LUCs are defined broadly as legal measures that limit human exposure by restricting activity on, use of, and access to properties with residual contamination. The LTM includes annual inspections of the MRA and surface sweeps to ensure that no MEC/ Material Potentially Posing an Explosive Hazard (MPPEH) or munitions debris has been exposed through erosion or frost heave. These annual inspections are used during the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) five-year review process to verify and document that the remedy remains protective.

As stated in the ROD, the selected response action for the Mortar Range MRA includes preliminary maintenance activities, which were comprised of excavation and disposal of a pit containing several thousand expended 0.22-caliber (cal) short cartridge. The maintenance activities are followed by the implementation LUCs to ensure protectiveness of the response action. These LUCs include a combination of institutional and engineering controls supplemented with LTM.

This Remedial Action Report (RAR) presents a description of the LUCs and LTM that were implemented in accordance with the Remedial Design (RD) (ARCADIS, 2013) submitted in April 2013. The location of the former Mortar Range MRA is provided in **Figure 1-1**.

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Report**

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**1.1 Report Organization**

In addition to this introduction, this report consists of the following sections:

- Section 2, Site Background;
- Section 3, Remedy Implementation Activities;
- Section 4, Chronology of Events;
- Section 5, LUC Inspections, Reporting, and Enforcement;
- Section 6, Summary of Costs;
- Section 7, Observations and Lessons Learned;
- Section 8, Contact Information; and,
- Section 9, References.

**1.2 Report Approval and Support Agency Acceptance**



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Brian P. Foley  
Colonel, Signal Corps, Commanding

8 May 14

Date



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Paul Leonard, Office Director  
Office of Federal Facility Remediation and Site Assessment  
United States Environmental Protection Agency, Region III

MAY 16, 2014

Date

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## 2. Site Background

### 2.1 Installation Overview

FGGM is located in Anne Arundel County, MD, almost midway between the cities of Baltimore, MD, and Washington, District of Columbia. FGGM lies approximately four miles east of Interstate 95 and immediately east of the Baltimore-Washington Parkway (MD Route 295), between MD Routes 175 and 32 (**Figure 1-1**). FGGM is located near the communities of Odenton, Laurel, Columbia, and Jessup. Following implementation of the requirements of the 1988 Base Realignment and Closure Act, the installation covers approximately 5,100 acres. The current installation boundaries encompass the area previously referred to as the cantonment area, which is used for administrative, recreational, and housing facilities. FGGM currently contains approximately 65.5 miles of paved roads, 3.3 miles of secondary roads, and about 1,300 buildings.

### 2.2 Site Location and History

The former Mortar Range MRA is a former range and training area located in the west-central portion of FGGM (**Figure 1-1**). The former Mortar Range MRA (FGGM-003-R) is comprised of the 62-acre Mortar Area (FGGM-003-R-01) and the 260-acre Training Area (FGGM-003-R-02) MRSs.

Based on the 2007 Site Inspection (SI) Report, the site was used as a practice/training mortar range beginning in the early 1920s (Malcolm Pimie, 2007). Based on the 2011 Remedial Investigation (RI), training was assumed to have ended in the 1940s based on munitions debris found during the RI (ARCADIS/Malcolm Pimie, 2011).

During the RI field activities, no MEC (except small arms ammunition not presenting a unique explosive hazard) were found on the MRA. However, a variety of munitions debris from 60 and 81 millimeter training mortar rounds, 3-inch Stokes training mortar rounds, a training landmine, flares, practice grenades, a dummy grenade, discarded small arms ammunition, and casings from expended small arms ammunition were found. The training mortar rounds, identified during the RI MEC field activities, were concentrated in an area corresponding to the original location of the former Mortar Range shown on maps from the 1920s. An analysis of historical aerial photographs, performed during the RI, confirmed the Mortar Area MRS boundary. Additionally, a number of training areas within the former Mortar Range MRA were observed and the former Mortar Range MRA boundary was determined to extend east to Taylor Avenue beyond the boundary established during the SI. As a result of these

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findings, the boundary was revised and the overall acreage of the former Mortar Range MRA was increased from a total of 291 acres to 322 acres. Based on the evidence of two distinct historical uses as a general troop training area and a training range, the former Mortar Range MRA (FGGM-003-R) was divided into the 62-acre Mortar Area (FGGM-003-R-01) and the 260-acre Training Area (FGGM-003-R-02) MRSSs.

### **2.3 Site Conditions**

The majority of the former Mortar Range MRA had been used as a golf course since 1956. The northwestern portion of the site is a secure United States (U.S.) Department of Defense (DoD) facility and is developed with buildings and associated paved surfaces (i.e., roadways, parking lots, and walkways). As of early 2012, construction of additional DoD buildings began on the majority of the area that had been the golf course, which is no longer in use.

Based on discussions at the June 12, 2008, Technical Project Planning meeting and subsequent planning by the DoD, no future residential development is planned within the MRA boundary. Based on the 2011 Real Property Master Plan Update, the MRA is projected for future professional and industrial use (Atkins, 2011). Construction as part of DoD expansion is currently underway for the majority of the MRA and its surroundings. The majority of the area has since been cleared and re-graded. A portion of the area will also be retained for open space and a forested area.

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### 3. Remedy Implementation Activities

#### 3.1 ROD Requirements

Potential risks associated with MEC/MPPEH that, based on previous investigations, may be present on the former Mortar Range MRA. The selected remedial action, LUCs with LTM, is designed to provide protection to human health and the environment. Existing LUCs, including Institutional Controls (ICs) and Engineering Control (ECs), at the sites will be maintained and enhanced. ICs are administrative measures put in place to restrict human activity, in order to control future land use. ECs which include a variety of engineered, constructed barriers, to restrict human activity in order to control future land use, will also be maintained. The LUCs are incorporated into the Master Plan and included in the Installation Geographical Information System (GIS) database.

The LTM process has been added as part of the LUCs. Annual inspections are performed to confirm that the land use of the site has not changed, the signage is still in place and to confirm through instrument-assisted surface sweeps that no MEC/MPPEH or munitions debris has been exposed through erosion or frost heave.

A pit, containing several thousand expended 0.22-cal short cartridge casings, was identified on the Training Area MRS during the RI fieldwork. The expended 0.22-cal short cartridge casings were left in place per the direction of the U.S. Army Corps of Engineers Ordnance and Explosive Safety Specialist. The casings do not pose an explosive hazard, and adjacent soil samples were evaluated during the munitions constituents investigation portion of the RI and showed no impact to soils. The casings were to be recovered and recycled prior to the implementation of the selected Remedial Action (RA) for the Training Area MRS. This was to be done as a preliminary maintenance activity to prepare the MRS for the LUC program.

Consistent with CERCLA guidance, and for the purpose of comparison, the cost estimate for this RA has been prepared to assume that LUCs with LTM, including annual certification, would be maintained for 30 years.

Remedial Action Objectives (RAOs) are based on human health and environmental factors, which are considered in the formulation and development of Response Actions. Such objectives are developed based on the criteria outlined in Section 300.430(e) (2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Section 121 of CERCLA.

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The RAO for the former Mortar Range MRA is based on the continued management of safety hazards associated with the potential for MEC/MPPEH that may be within the MRA. The RAO for the site is:

*Control and minimize the potential for direct physical contact of receptors with possible MEC at the surface and within the subsurface.*

Due to the nature of MEC, there will always be a residual risk of exposure regardless of the response action.

### 3.2 Remedy Description

The selected response action for the former Mortar Range MRA was designed to control and minimize the potential for direct physical contact of receptors with possible MEC at the surface and within the subsurface. The LUCs and Remedy Implementation Actions included the following:

- a. Updates to Installation Master Plan;
- b. Maintenance of the FGGM GIS Database;
- c. Access restrictions;
- d. Revisions of the dig permit process to require on-call construction support;
- e. Installation and maintenance of signage;
- f. Education programs for site users regarding the potential presence of MEC/MPPEH;
- g. Annual site inspections and surface sweeps;
- h. Compliance reporting;
- i. CERCLA Five-Year Reviews; and,
- j. United States Environmental Protection Agency (USEPA) /Maryland Department of the Environment (MDE) Notifications.

### 3.3 Preliminary Maintenance Activities

A pit containing several thousand expended 0.22- cal short cartridge casings was identified on the Training Area MRS during the 2008 RI fieldwork. Prior to the implementation of LUCs, the expended 0.22-cal short cartridge casings were to be recovered and recycled as scrap metal or disposed of properly. However, the site has

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undergone extensive earthwork and grading, since the 2008 RI fieldwork, as part of the site preparation for construction planned in late 2013.

ARCADIS mobilized to the site on May 20, 2013, and performed a ground penetrating radar (GPR) survey of a 10,000 square foot area surrounding the original coordinates of the pit. The intent of the GPR survey was to identify any utilities in the excavation area as part of the full utility clearance performed and to confirm the pit location prior excavation. An area of soil disturbance, 19-foot by 9-foot and approximately 5 feet below ground surface, was observed directly adjacent to the original pit coordinates. The disturbance was assumed to be the pit.

On July 16, 2013, ARCADIS returned to the site to excavate and recycle the 0.22-cal casings from the pit. An ARCADIS unexploded ordnance (UXO) technician employed onsite construction support during the excavation. Excavations were conducted using a mini-excavator. An abandoned two-inch water pipe, believed to be part of the former golf course irrigation system, was observed running diagonally through the pit excavation. Broken pieces of an iron pipe believed to be an abandoned sewer line was also observed in the excavation. The utility location contractor excavated several test pits using air-knife technology to determine if casings could be found in the pit and to avoid the two-inch pipe observed in the pit. A total of six test pits were dug within the 19-foot by 9-foot area identified during the GPR survey. An additional test pit was dug directly at the location of the original coordinates of the casings pit. No casings were observed in any of the seven test pits dug. It is believed that the casings were spread or removed during the extensive earthwork and grading that dropped the elevation in the area by between 2 and 3 feet that has occurred since the casing pit was discovered in 2008. The excavation effort was concluded the same day.

The location of the excavation is shown in **Figure 3-1**. Photographs from the excavation effort are included as **Appendix A**. Daily logs are included as **Appendix B**.

### 3.4 Land Use Controls

This section discusses the LUCs that were established to be protective of human health and the environment and to effectively address the MEC/MPPEH risks. The area of applicability of LUCs at the Mortar Range MRA is presented on **Figure 3-1**.

As stated in the former Mortar Range MRA ROD (ARCADIS/Malcolm Pimie, 2012), the RAO for the site is to:

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- Control and minimize the potential for direct physical contact of receptors with possible MEC at the surface and within the subsurface.

The LUC performance objectives for the former Mortar Range MRA are as follows:

- Maintain a land use that protects potential human receptors from risks associated with the MEC / MPPEH;
- Educate current and future site users about the potential risks at the site through educational programs and signage;
- Employ on-call construction support during all intrusive construction projects, and employ anomaly avoidance procedures for all other intrusive activities;
- Identify and remove MEC/MPPEH/munitions debris that surface due to natural forces, such as frost heave and erosion, from the site; and
- Prohibit residential land use.

### 3.4.1 LUC Implementation

The following LUC implementation actions were undertaken by the U.S. Army (Army) in order to ensure that the LUC performance objectives at the former Mortar Range MRA are met and maintained.

FGGM has many safeguards in place to ensure protection of the environment and the health and safety of Installation personnel and the public. The four general categories of ICs evaluated or already in use at FGGM are as follows: governmental controls, proprietary controls, enforcement and permitting, and informational devices, which assist with the management and implementation of LUCs (USEPA, 2000; USEPA, 2010). These elements include requirements to obtain dig permits (from the Directorate of Public Works for any intrusive activity at FGGM or from the secure DoD facility for intrusive activities on that property), Master Plan Regulations, and the FGGM GIS Database. These controls, detailed below, have been developed with a consideration of all reasonably anticipated future land uses at FGGM, including administrative and industrial military operations and greenways.

ICs were supplemented by revising the established dig permit process to require on-call construction support for all intrusive construction and excavation projects and

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anomaly avoidance procedures for any other intrusive activities occurring on the MRA. Additionally, an education program was initiated as part of an orientation program for site workers, users, and emergency responders at the MRA.

### 3.4.1.1 *Updates to Installation Master Plan*

The Army issued a regulation, Master Planning for Army Installations, Army Regulation (AR) 210-20, on 16 May 2005, updating an earlier regulation dated January 26, 1976 and July 13, 1987. AR 210-20 establishes the requirement for an installation master plan and planning board to specify procedures for developing, submitting for approval, updating, and implementing the installation master plan. This regulation provides for comprehensive planning at Army installations and not only allows, but requires, incorporation of existing land use requirements into the installation's master plan.

The master plan regulations provide a framework for comprehensive planning through the use of component plans, which include, but are not limited to, the following:

- Natural Resources Plan;
- Environmental Protection Plan;
- Installation Layout and Vicinity Plan;
- Land-use Plan; and,
- Future Development Plan.

The overall objective is to provide each installation with a master plan through the integration of each component plan into the installation master plan. The component plans form a series of narrative, tabular, and graphic plans. Their integration into an installation master plan provides many benefits, as outlined in AR 210-20, including the mechanism for ensuring that installation projects are sited to meet operational, safety, physical security, and environmental requirements. The LUCs and their respective locations will be added to the next iteration of the Master Plan.

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### 3.4.1.2 FGGM GIS Database

FGGM maintains a comprehensive installation GIS database. The database includes descriptions of existing land and environmental restrictions, locations of known contamination, and locations of MRAs/MRSs. This information allows future end-users and tenants of FGGM to make rapid and accurate inquiries regarding sites within FGGM and will specify the LUCs in-place at specific locations.

A draft GIS layer containing the LUCs planned for the MRA, along with their respective locations and land use, was submitted to the Army on May 29, 2013. This GIS layer has been added to the FGGM GIS database, in accordance with AR 200-1, Section 12-4. Building restrictions, MEC concerns, and many other lines of inquiry will quickly be available to support the decision-making process. If additional MEC/MPPEH/munitions debris is found at the MRA, FGGM or designee will add the resultant data to the FGGM GIS database.

### 3.4.1.3 FGGM Access Regulations

Access regulations are in place at FGGM. Although not closed to the public, access to FGGM is strictly controlled. Trespassing and unauthorized activities on FGGM are prohibited. As of early 2012, construction of additional DoD buildings began on the former golf course, which comprises the majority of the MRA. This construction area is fenced off from the rest of FGGM and has additional high levels of security, similar to the existing secure DoD buildings. This area requires security badges to access or an escort with a security badge.

### 3.4.1.4 Dig Permit Process

Currently, dig permits must be obtained from the Directorate of Public Works prior to any intrusive activity at FGGM or the secure DoD facility. Due to the potential MEC/MPPEH hazards that exist at the former Mortar Range MRA, the FGGM the secure DoD facility dig permit process was revised to require on-call construction support<sup>1</sup> for all intrusive construction and excavation projects and MEC avoidance<sup>2</sup>

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<sup>1</sup> On-call support is necessary based on the low probability for encountering munitions, in accordance with Department of Army Pamphlet 385-64. Explosive Ordnance Disposal (EOD) or UXO-qualified personnel will be available to respond if construction personnel encounter or suspect they have encountered MEC. These personnel can either respond from offsite when called or be onsite and available to provide required construction support.

<sup>2</sup> Anomaly avoidance techniques may be employed on properties known or suspected to contain MEC to avoid contact with potential surface or subsurface MEC to allow entry to an area for the performance of required operations (for example, cultural resource studies, installation of fence posts, installation of environmental monitoring wells). Site workers will be escorted at all times by an EOD or UXO-qualified technician. If anomalies or MEC are detected, the

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procedures for any other intrusive activities occurring on the MRA. The on-call construction support and anomaly avoidance requirements provide for the protection and safety of human health while intrusive activities are being conducted.

### 3.4.2 Engineering Controls

#### 3.4.2.1 *Installation and Maintenance of Signage*

Sixteen warning signs were installed throughout the MRA on July 17, 2013, July 18, 2013, and completed on August 1, 2013. The signs were installed throughout the site near likely egresses to undeveloped areas (forested and undeveloped) to warn of potential MEC risk. These areas are based on the current understanding of future site layout after construction. A couple of the signs were installed outside of the MRA in likely egresses to undeveloped areas. **Figure 3-1** shows the locations of the installed signs. Photographs of the sign installation are included as **Appendix A**. The sign text is shown in **Appendix C**.

#### 3.4.2.2 *Education Programs*

As mentioned previously, construction as part of DoD expansion is currently underway on a majority of the MRA. As with any large construction project, an extensive health and safety program was developed and is being strictly enforced on the MRA during the construction activities. On-call construction support has been implemented as part of the health and safety program for the project. Additionally, construction workers are educated and reminded of potential hazards associated with MEC/MPPEH that may remain on the MRA as part of the overall health and safety program. This includes UXO awareness and basic identification.

As part of the remedy implementation, educational materials and guidelines were developed and an education program was submitted to the Army as part of the RD implementation. Educational guidelines provide procedures for administering the educational program (e.g., responsible administrators, applicability, timelines etc.) and establish the procedures for the educational program.

The educational materials that have been developed include an educational fact sheet and a brief slide presentation to be viewed as part of a site user/worker orientation program. The educational program will be provided to all site maintenance personnel,

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UXO escort will halt escorted personnel in place, select a course around the item, and instruct escorted personnel to follow (Engineering Pamphlet 75-1-2).

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security workers, and building managers. Annual training will also be provided to FGGM Department of Public Works employees who review dig permits to ensure they fully understand and enforce the requirements. Employees of the secure DoD facility's Miss Utility office will also receive training. Office workers in the secure DoD facility will have the training program posted on the internal Intranet. The educational materials contain the following:

- A brief history of the site use which to provide context;
- Images and descriptions of the types of MEC/MPPEH that may be encountered;
- Safety recommendations for site users/workers;
- A discussion of LUCs including dig permit requirements; and
- Instructions on actions to be taken if MEC/MPPEH is encountered on the MRA.

The educational materials will also be provided to emergency responders to ensure that current and future responders are aware of potential hazards associated with the MRA and the appropriate actions to be taken if MEC/MPPEH is encountered on the MRA.

The former Mortar Range MRA LUCs will be discussed in the FGGM newspaper, *SoundOff*, and on the FGGM Environmental Management System website, <http://www.ftmeade.army.mil/environment>. The information will include the educational materials (slide presentation and factsheet in **Appendix D**), a map depicting the areas subject to LUCs (**Figure 3-1**), and contact information for the FGGM Public Affairs Office to request additional information.

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### 4. Chronology of Events

Date	Event
September 30, 2011	Final RI Report
June 19, 2012	Final Feasibility Study
July 19, 2012 to August 18, 2012	Public comment period on the Proposed Plan
September 26, 2012	ROD signed by Army
September 27, 2012	ROD signed by USEPA
April 24, 2013	Final RD
July 16-18 and August 1, 2013	Remedy implementation
To be determined	Response-In-Place (RIP) and RAR Approval

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### 5. LUC Inspections, Reporting, and Enforcement

The Army is responsible for LUC inspections, reporting and enforcement activities required for the MRA. The following activities are performed: site inspections, compliance reporting, LUC enforcement, CERCLA Five-Year Reviews, and LUC modification or corrective action.

#### 5.1 Health and Safety

The implementation of these LUCs occurred under the 2010 *Performance Based Acquisition – FGGM Site-Wide Health and Safety Plan* (HASP) (ARCADIS, 2010a) and *HASP Addendum 1* (ARCADIS, 2010b), addressing UXO construction support. Health and Safety procedures were overseen by UXO Safety Officer, Russell Kelly.

#### 5.2 Site Inspections

Because there is the potential for MEC/MPPEH/munitions debris to resurface through mechanisms such as erosion or frost heaves, LTM has been put into place. LTM includes an annual LUC inspection (including sign inspection) / surface sweep, and annual reporting of the results, which is used in the required CERCLA Five-Year Reviews to ensure that the remedy remains protective.

Upon approval of the April 2013 RD by the USEPA and concurrence by MDE, the Army planned to conduct annual inspections of the site to confirm continued compliance with all LUC objectives. FGGM or a designee maintains the records of these inspections, which includes the following:

- Visual inspection / surface sweep for MEC/MPPEH/munitions debris – A visual inspection and magnetometer-assisted surface sweep of 100 percent of undeveloped areas by meandering path will be conducted by a UXO Technician (either UXO Technician II or III) to ensure that no MEC/MPPEH/munitions debris have been uncovered by erosion or frost heave. The results of the inspections will be recorded using the form in **Appendix E**.
  - **Handling MEC/MPPEH:** If MEC/MPPEH is identified, the location of the item will be marked/documented and photographed without disturbing the item. At completion of the inspection activities, the UXO Technician will contact Explosive Ordnance Disposal (EOD) to remove and/or properly dispose of MEC/MPPEH found on site. This approach will be followed to avoid making multiple calls to EOD. Demolition operations will be performed daily at the end

## Remedial Action Report

Former Mortar Range  
Munitions Response Area,  
Fort George G. Meade,  
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of the day.. Inspections are expected to take one day to complete and any demolitions will be performed at the end of the day.

- **Handling Munitions Debris:** After certified as explosive free, munitions debris identified during the visual inspection / surface sweep will be consolidated, segregated, and containerized in an onsite storage container and appropriately secured until proper disposition can be arranged. The storage container will be locked at all times when not in use. The location of this onsite storage container will be determined prior to the visual inspection / surface sweep. All munitions debris will be disposed of at a foundry and/or recycler, where it will be processed through a smelter, shredder, or furnace prior to resale or release, in accordance with all governing regulations.
- Condition of Warning Signs – The warning signs will be inspected for damage as part of annual LTM activities. Any necessary repair will be performed promptly.
- Evaluation of Land Use – The site will be inspected for any signs of changes in land use.

### 5.3 Compliance Reporting and Certification

Twelve months following the RIP for the former Mortar Range MRA, annual inspections will commence, with the first event planned for the summer of 2014. The Army will provide to USEPA and MDE a written annual LUC Compliance Certificate for the former Mortar Range MRA. This certification will include self-inspection dates, name of inspector, results of inspection, and the condition of ECs. The annual certification will address whether use of the property has conformed to use restrictions and controls, and whether the owners and state and local agencies were notified of the use restrictions and controls affecting the property. In addition, should any deficiencies or inconsistent uses be identified during the site inspections, the Army will provide USEPA and MDE a separate written explanation. The explanation will indicate the specific deficiencies or inconsistent uses found and what corrective efforts or measures have, or will be taken along with the certificate. Documentation of compliance with all provisions of the LUCs will be documented on the Annual Certification of Land Use Controls form (see **Appendix F**).

The Annual Certification of Land Use Controls will be used in preparation of the Five-Year Review to evaluate the effectiveness of the remedy. Based on the nature of the contamination (MEC/MPPEH), a residual hazard will always remain on the MRA. It is,

## **Remedial Action Report**

Former Mortar Range  
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therefore, assumed that compliance reporting will continue in perpetuity as an integral part of the LUCs.

Any activity that is inconsistent with the IC objectives or use restrictions, or any other action that may interfere with the effectiveness of the ICs will be addressed by the Army as soon as practicable, but in no case will the process be initiated later than ten days after the Army becomes aware of the breach.

FGGM will notify the USEPA and MDE as soon as practicable but no longer than ten days after discovery of any activity that is inconsistent with the LUC objectives or use restrictions, or any other action that may interfere with the effectiveness of the LUCs. FGGM will notify the USEPA and MDE regarding how FGGM has addressed or will address the breach within 14 days of sending the USEPA notification of the breach.

### **5.4 LUC Management and CERCLA Five-Year Reviews**

The focus of the LUC management will be with the FGGM Environmental Division, more specifically, the IRP Program Manager. The Program Manager will implement LUC compliance within their division.

The Army will conduct Five-Year Reviews of the former Mortar Range MRA LUC remedy, as required by CERCLA and the NCP. The annual monitoring of the environmental use restrictions and controls that will be conducted will be used as part of the preparation of the Five-Year Reviews to evaluate the effectiveness of the remedy. The Five-Year Review will be conducted on a site-wide basis at FGGM starting in 2017. In the case where a field mobilization is not required, the date of the initial monitoring event or the date of the ROD signature itself will trigger the Five-Year Review. For the first Five-Year Review, changes in site conditions will be evaluated. If conditions have changed and LUCs are no longer needed, annual site inspections could occur less frequently, such as every five years.

### **5.5 Notification of LUC Changes**

The Army shall not modify or terminate LUCs, implementation actions, or modify land use without approval by USEPA and MDE. The Army shall seek prior concurrence before any anticipated action that may disrupt the effectiveness of the LUCs or any action that may alter, increase, or negate the need for LUCs.

The Army shall notify the USEPA and MDE at least 45 days in advance of any proposed land use changes that are inconsistent with LUC objectives or the selected remedy. Should FGGM be made aware of a project that will necessitate a significant

## **Remedial Action Report**

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land use change, the office will notify the USEPA at least six months prior to this change occurring.

FGGM will provide notice to the USEPA and MDE at least six months prior to any FGGM transfer or sale of the site so that the USEPA and MDE can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective ICs. If it is not possible for FGGM to notify the USEPA and MDE at least six months prior to any transfer or sale, then the facility will notify the USEPA and MDE as soon as possible but no later than 90 days prior to the transfer or sale of any property subject to ICs.

In addition to the land transfer notice and discussion provisions above, the Army further agrees to provide the USEPA and MDE with similar notice, within the same time frames, as to federal-to-federal transfer of property. The FGGM Environmental Management Office shall provide a copy of the executed transfer assembly to the USEPA and MDE.

In the event of a transfer of property, each transfer of fee title from the United States will include a CERCLA 120(h)(3) covenant which will have a description of the residual contamination on the property and the environmental use restriction, expressly prohibiting activities inconsistent with the performance measure goals and objectives. The environmental restrictions are included in a section of the CERCLA 120(h)(3) covenant that the United States is required to include in the deed for any property that has had hazardous substances stored for one year or more, known to have been released or disposed of on the property. Each deed will also contain a reservation of access to the property for the Army and USEPA, and their respective officials, agents, employees, contractors, and subcontractors for purposes consistent with the Army IRP or the Federal Facility Agreement. The deed will contain appropriate provisions to ensure that the restrictions continue to run with the land and are enforceable by the Army.

The Army will notify the USEPA and MDE in advance of any changes to the internal procedures for implementing or maintaining the LUCs.

## **Remedial Action Report**

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### **6. Summary of Project Costs**

This project proceeded under a performance based contract between ARCADIS and the Army.

## Remedial Action Report

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### 7. Observations and Lessons Learned

The following observations and lessons learned were made during implementation of the selected response action.

- The MRA is actively under construction with multiple separate construction projects simultaneously underway. A recent munitions debris encounter lead to the site crew taking the appropriate actions to report and handle the item. The implementation of the remedy including the educational materials and revisions to the dig permit process can be credited with the proper and safe handling of this encounter.

#### 7.1 Site Contact Information

Listed below are the contact persons for this project.

##### U.S. Army Garrison Fort George G. Meade – Directorate of Public Works-Environmental Division

Paul Fluck  
4215 Roberts Avenue, Room 320  
Fort Meade, Maryland 20755-7068  
301-677-9365

##### US Army Environmental Command – Installation Restoration Division

Francis Coulters  
2450 Connell Road, Bldg. 2264, Rm. 129-010  
Fort Sam Houston, TX 78234-7664  
210-466-1739

##### U.S. Environmental Protection Agency Region III

John Burchette  
1650 Arch Street  
Philadelphia, PA 19103-2029  
215-814-3378

##### Maryland Department of Environment – Federal Facilities Division

Elisabeth Green, Ph.D.  
1800 Washington Blvd, Suite 625  
Baltimore, MD 21230-1719  
410-537-3346

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### ARCADIS Project Manager

Tim Llewellyn  
ARCADIS  
1114 Benfield Boulevard, Suite A  
Millersville, Maryland 21108  
410-987-0032

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Maryland

### 8. References

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----- 2010. *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites.* Office of Solid Waste and Emergency Response Directive No. 9355.0-89. November.

----- 2011. *Close Out Procedures for National Priority List Sites.* Office of Solid Waste and Emergency Response Directive No. 9320.2-22. November.

## Figures

Fort George G. Meade  
Remedial Action Report

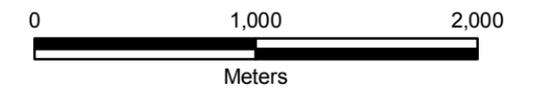


ARCADIS

Figure 1-1  
Site Location

Legend

-  Installation Boundary
-  Mortar Range MRA
-  Mortar Area MRS
-  Training Area MRS



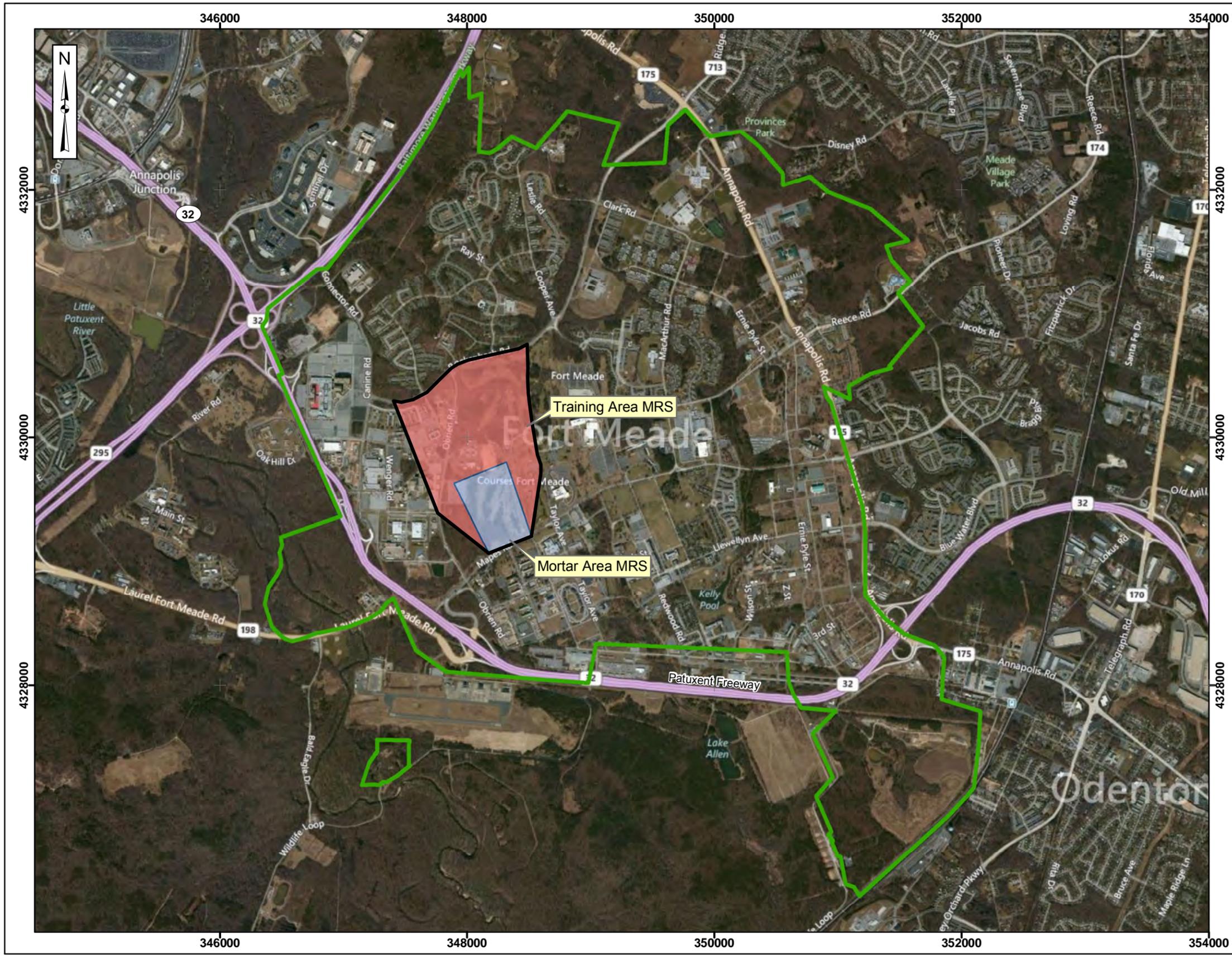
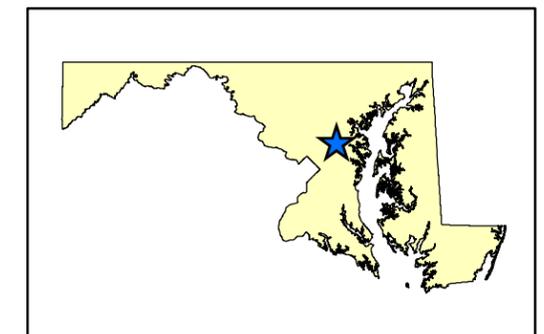
Data Sources: ESRI, ArcGIS Online, Bing Maps Aerial

FGGM, GIS Data, 2005

Coordinate System: UTM Zone 18

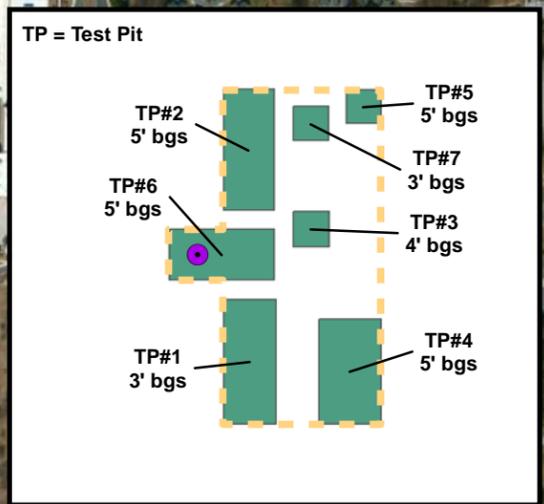
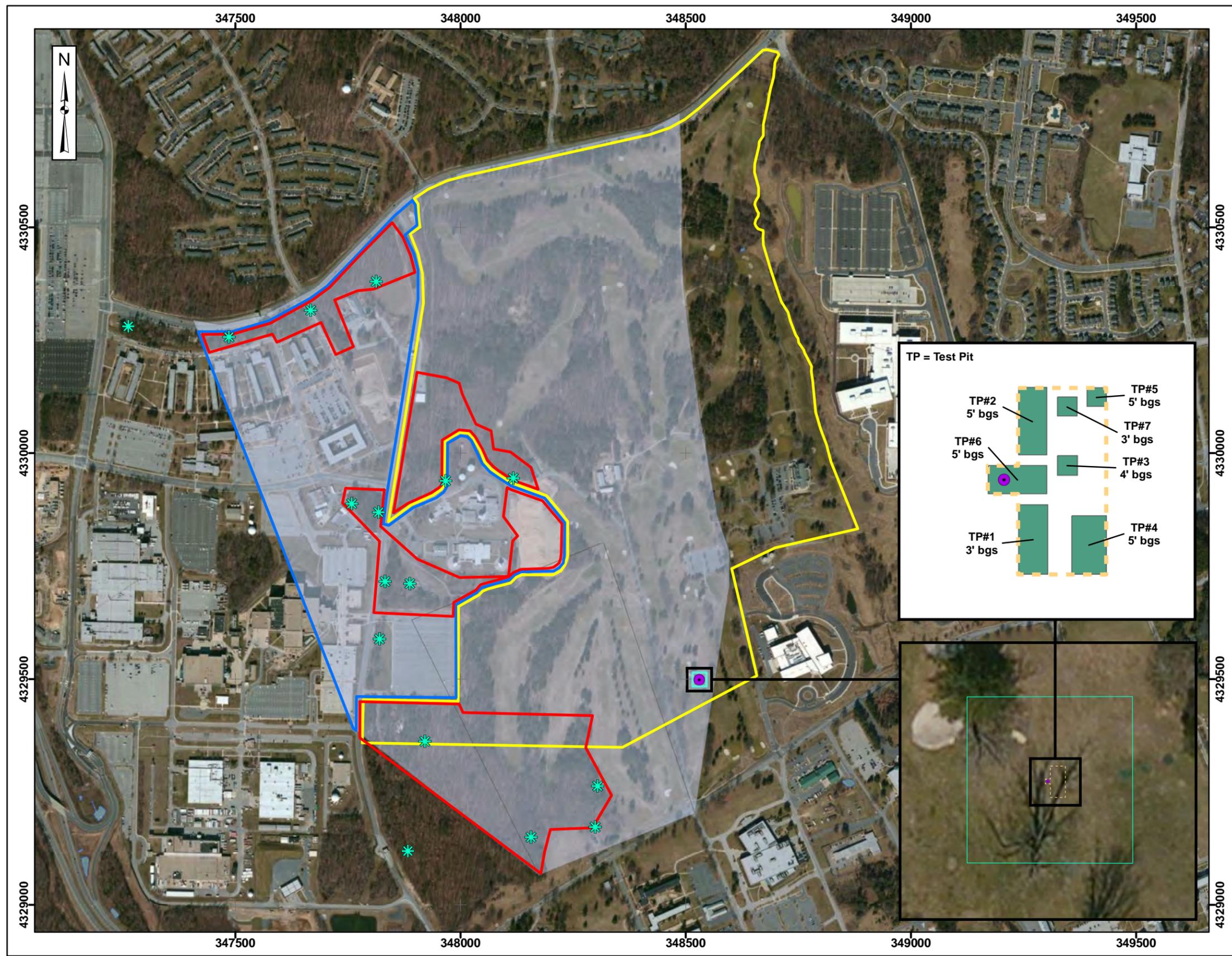
Datum: NAD 1983

Units: Meters



W:\Projects\ARM\1\Installations\Fort\_Meade\_Mortar\_Range\MXD\RD\Figure\_1-1\_Site\_Location.mxd

\\arcadis-us.com\office\data\WhitePlains-NY\WHI\_GIS\GIS\_data\Projects\ARMY\Installations\Fort\_Meade\_MD\2118130\_Mortar\_Range\MXDs\RA\_Report\Figure\_3-1\_LUC.mxd



**Fort George G. Meade  
Remedial Action Report**

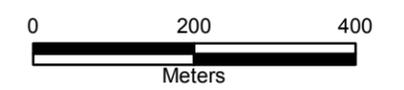


**ARCADIS**

**Figure 3-1  
Land Use Controls**

**Legend**

- Mortar Range MRA: Land Use Controls with on-call construction support for all intrusive construction projects, and anomaly avoidance procedures for any other intrusive activity.
- Current Secure DoD Facility
- Future Secure DoD Facility
- Proposed Posted Undeveloped Area
- Former Small Arms Casings Disposal Pit Location (no longer present)
- Sign Location
- 100'x100' GPR Investigated Area
- Test Pit
- Test Pit Area



Data Sources: ESRI, ArcGIS Online, Bing Maps Aerial  
FGGM, GIS Data, 2005

Coordinate System: UTM Zone 18  
Datum: NAD 1983  
Units: Meters

Contract: W912DR-05-D-0004

## **Appendix A**

Construction Photos  
Documentation

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 1:** Casing Pit – Pre-Excavation  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** South



**Photo 2:** - Casing Pit – Pre-Excavation  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** West

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 3:** - Casing Pit – Pre-Excavation  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** North



**Photo 4:** -Roll-Off Provided  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** West

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**

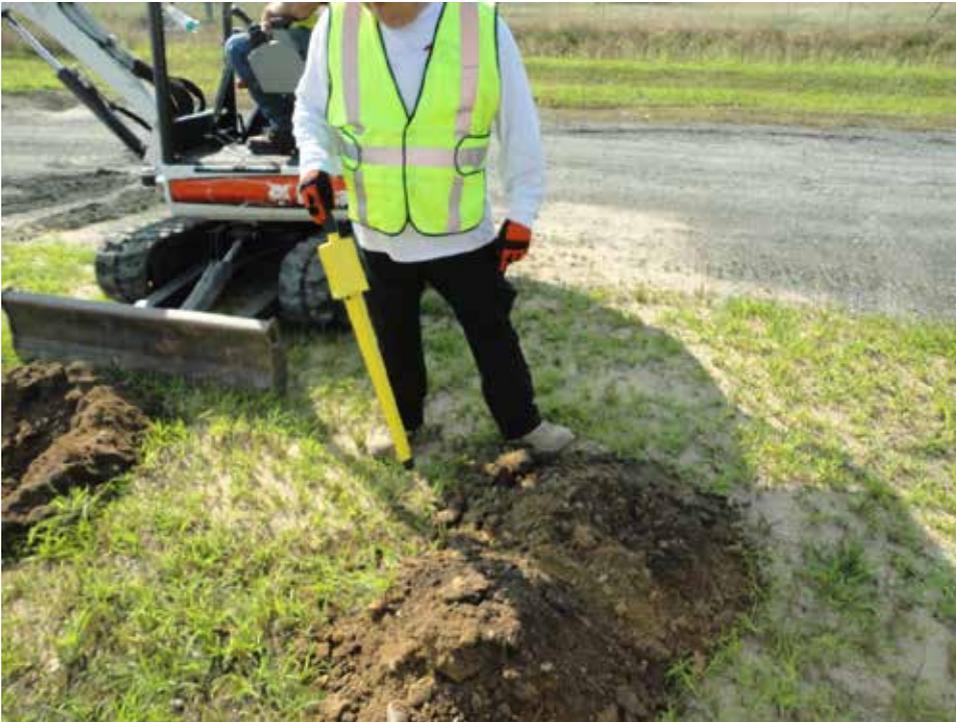


**Photo 5:** Beginning of Excavation  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** West



**Photo 6:** -First 6-inch Lift  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** N/A

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 7:** MEC Avoidance  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** South



**Photo 8:** Continued Excavation  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** West

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 9:** Water Pipe not located using GPR

**Date:** July 16, 2013

**Location Taken:** Casing Pit

**Direction Facing:** N/A



**Photo 10:** -Broken Water Pipe not located using GPR

**Date:** July 16, 2013

**Location Taken:** Casing Pit

**Direction Facing:** N/A

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 11: Test Pit Installation  
Date: July 16, 2013  
Location Taken: Casing Pit  
Direction Facing: East**



**Photo 12: MEC Avoidance in Lifts  
Date: July 16, 2013  
Location Taken: Casing Pit  
Direction Facing: N/A**

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 13:** 4-foot test pit  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** N/A



**Photo 14:** MEC Avoidance  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** N/A

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 15:** Test Pit  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** N/A



**Photo 16:** Test Pits  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** North

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 17:** Test Pits  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** South



**Photo 18:** Test Pits  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** North

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 19:** Backfilling Test Pits  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** West



**Photo 20:** Backfilling Test Pits  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** East

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 21:** Site Restoration  
**Date:** July 16, 2013  
**Location Taken:** Casing Pit  
**Direction Facing:** South



**Photo 22:** Sign Post Installation  
**Date:** July 17, 2013  
**Direction Facing:** N/A

**Removal Action  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**



**Photo 23: -Sign Post Installation  
Date: July 17, 2013  
Direction Facing: N/A**

## **Appendix B**

Daily Logs

0730 At office unloading supplies

0815 Onsite

0830 Tide water onsite, conducted 14/5 tailgate

Objective - Excavate small arms pit using 6" lifts, conduct UXO sweep using shovelst every 6". Mini-tractor onsite for digging purposes. Utilities locate completed yesterday.

0845 Russ completed surface UXO sweep using shovelst minor anomaly detected on SW side of pit

Wink Ranson (N&A waste & recycle)

↳ Office (43) 654-7314 Rolloffs  
Cell (301) 802-8073

0900 Began digging @ SW corner of suspected pits.

0930 Found 2" pipe running diagonally through the pit location. Stopped work and called Shelby M, & Tim Uccellini to discuss. Plan is to get air vac truck and have Underground service air ~~pit~~ a few test pits to see if there are bullet casings present in the pit. Truck not available until 1300.

1280 Underground Services onsite, discussed Sow and completed HS tailgate.

Plan is to install a 2' x 2' test hole in the center of the 80' x 9' suspected area of discharge. Discuss Findings and possibly install another <sup>test</sup> pit on the opposite end of the suspect ammunition pit.

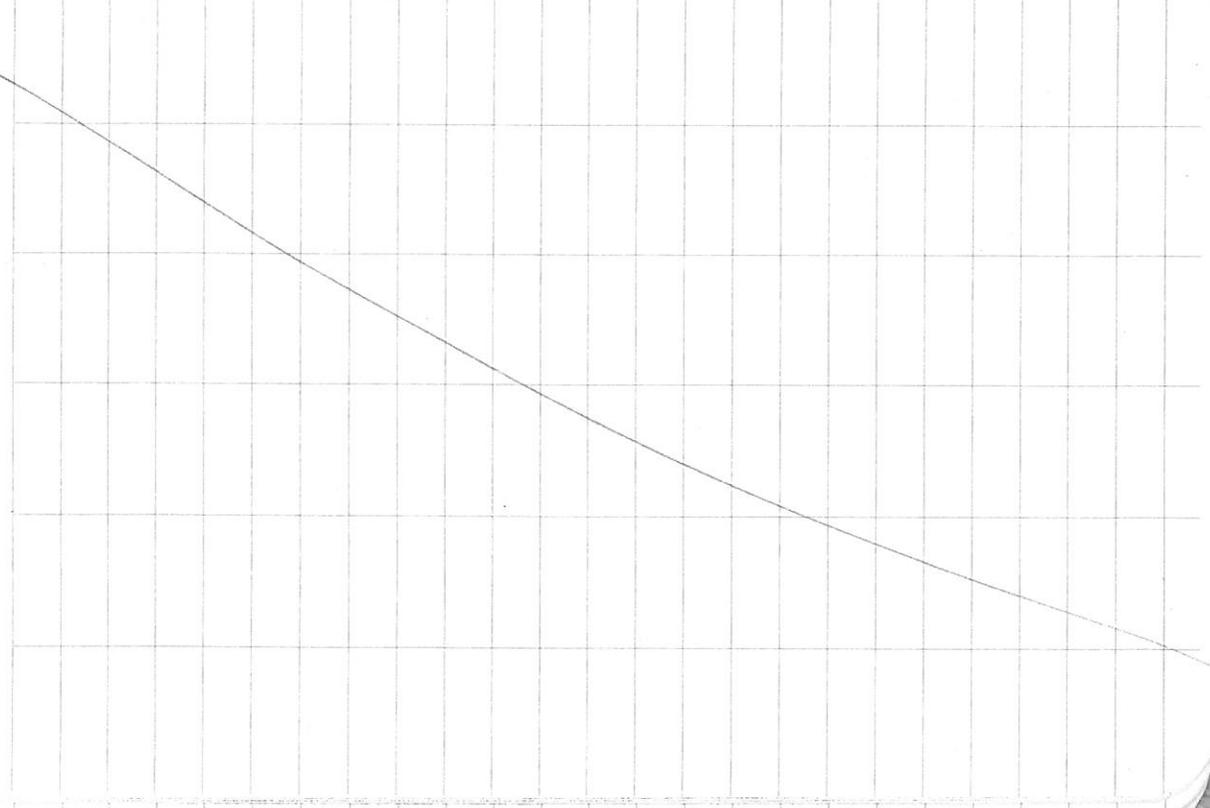
1525 In total installed 7 Test pits across the 19' x 9' "disturbed area" no bullet casings encountered. See sketch on next page for Test pit locations.

1535 Began Backfilling Test pits & completing surface restoration.

1625 Office

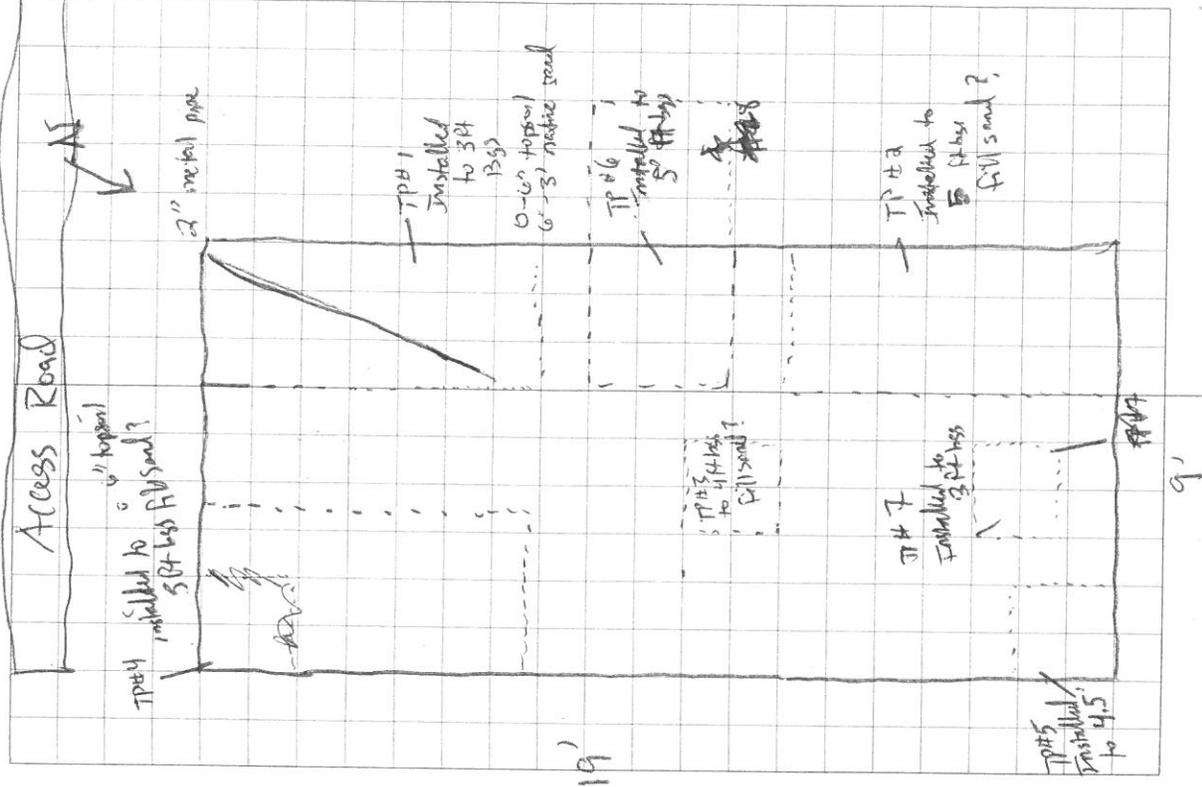
Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client \_\_\_\_\_



Location \_\_\_\_\_ Date \_\_\_\_\_

Project / Client Mapes Rd. SOP3



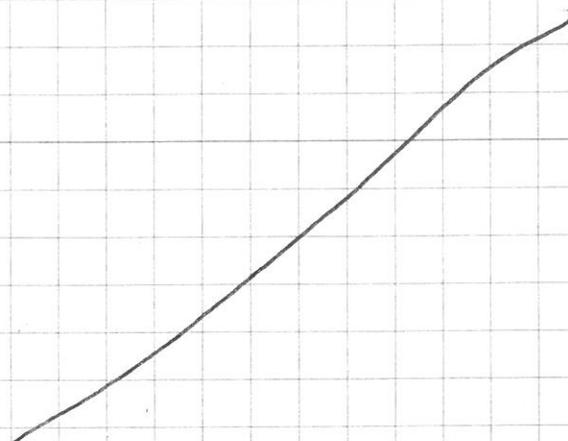
Location Montez Rezerve

Date 7/17/13

Project / Client USACE

KS, RK 100' clear Sign Installation

- 1030 Ruled up signs from SNA at Royal Fernis poles
- 1045 At sign location 18 to install sign pole.
- 1107 Sign 18 installed.
- 1140 Sign 17 installed
- 1153 Sign 15 installed.
- 1230 Sign 8 installed
- 1305 Sign 14 installed
- 1400 Sign 13 installed
- 1430 ~~1430~~ 0 Post



Project / Client UTRAC  
100' clear R5, R11, Underground Services

- 0730 At office loading equipment
- 0800 Onsite 1H discuss scw
- Objective: airknife EW-1 & JW-3 new location  
conduct UXO clearance at 2PT lifts
- 0905 Underground Services Onsite at EW-1  
0915 Began airknifing at EW-1  
w/ UXO on 2PT lifts.
- 0930 Offset EW-1 location Air knifed to 6ft base  
UXO cleared to 8ft base no anomalies  
hole is cleared; Moving to JW-3  
EW-1 offset was Pt west of original  
location.
- 1000 At JW-3 (new location) Air knifed to  
4ft base, UXO clear to 6ft base  
dense clay encountered, hole cleared  
at 1030.
- 1130 At NSA gate
- 1205 Installed Sign #1.
- 1220 Installed Sign #2
- 1250 Installed Sign #3
- 1312 Installed Sign #4
- 1325 ~~Installed~~ Sign #6
- 1346 Installed Sign #11
- 1356 Installed Sign #7

Project / Client \_\_\_\_\_

- 1405 Installed Sign 5
- 1434 Installed Sign 12
- 1500 Offsite



## **Appendix C**

Digging Restriction Sign



**SIGNS**  
ON U-CHANNEL POSTS

Proposed New Signage For:

Arcadis

Location:

Colors Used:

<b>SALES REP:</b>	BRIAN KERLEY
<b>DATE:</b>	7/11/2013
<b>SCALE:</b>	3" = 1'
<b>FILE NAME:</b>	Arcadis
<b>SKETCH#:</b>	
<b>ARTIST:</b>	A Mehler

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Customer must approve sketch prior to fabrication of sign. Customer is responsible for proofreading and checking copy for any and all spelling and grammatical errors. KSI will not be responsible for these errors. Note that colors shown on this drawing are only a representation. Actual colors may vary. If exact match is needed, please notify salesperson. Please initial in box provided. Signed copy must be returned to KSI salesperson or mail or fax to office.

**CUSTOMER'S APPROVAL**



7650 Preston Drive, Landover, Md. 20785  
 PH: (301)773-6800 FAX: (301)773-3465

## **Appendix D**

Educational Materials

## **Fort George G. Meade and secure DoD facility former Mortar Range Site User Training Guide**

Training Materials Include:

- Fort Meade Unexploded Ordnance Safety Program Slide Presentation
- Mortar Range Munitions Response Area Fact Sheet

Target Audience:

- Individuals responsible for maintaining structures, grounds/land on the former Mortar Range Munitions Response Area
- Individuals responsible for emergency response and security on the former Mortar Range Munitions Response Area
- Individuals responsible for construction, including construction workers, planners, and managers, on the former Mortar Range Munitions Response Area
- Employees of the Fort Meade and secure DoD facility Environmental Divisions
- Employees of Fort Meade Department of Public Works who process dig permits
- Individuals working within office buildings on the former Mortar Range Munitions Response Area

Purpose:

- Educate site users (audience) of the potential hazards posed by possible unexploded ordnance
- Inform site users of actions to take if an ordnance item is encountered, and
- To communicate land-use restrictions applicable to the former Mortar Range Munitions Response Area.

Training Administrators:

- Fort Meade Environmental Division (or assignee)

Training Drivers and Timeline

- With the exception of office workers, training should be administered as part of orientation upon assignment to work on the former Mortar Range Munitions Response Area or within the Fort Meade Environmental Division
- Training should be completed within one month of assignment
- Training will be provided on an internal Intranet for office workers and is non-mandatory

Training shall be completed annually by employees of Fort Meade Department of Public Works who process dig permits to ensure they fully understand the requirement



**U.S. Army Fort George G. Meade  
Military Munitions Response Program  
Former Mortar Range Munitions Response Area  
Fact Sheet**



**Final Date**

**OVERVIEW**

This fact sheet discusses the history of the former Mortar Range Munitions Response Area, the Army's environmental investigation of the site, and the measures the Army has put in place to ensure the site is safe.

**LOCATION & HISTORY OF SITE**

The 322-acre former Mortar Range Munitions Response Area (site) was a range and training area located in the west-central portion of Fort Meade (see map below). Based on munitions debris found at the site, it is believed the site was used from the early 1920s into the 1940s. The former Mortar Range Munitions Response Area has been divided into two munitions response sites: the Mortar Area and the Training Area.

The majority of the site has been used as a golf course since 1956. A jogging trail was along the western edge of the golf course. The northwestern portion of the site is Department of Defense property and is developed with buildings and associated paved surfaces. In early 2012, the Department of Defense closed the golf course and jogging trail and began construction of additional buildings on the site.

**COMPREHENSIVE INVESTIGATIONS CONDUCTED**

The Army conducted a thorough remedial investigation of the site to determine if any risk posed by munitions and explosives of concern needs to be addressed. The studies conducted by the Army included reviewing historical records, a geophysical investigation, an intrusive investigation, and soil sampling.

The 2010 Remedial Investigation included a geophysical investigation that identified 6,228 anomalies; 1,805 were identified as cultural features such as buried utilities. The remaining 4,423 anomalies were evaluated and 1,333 were hand dug during the intrusive investigation. The majority were found to be metal items such as horseshoes and nails. The investigation found no unexploded ordnance.



## COMPREHENSIVE INVESTIGATIONS CONDUCTED (continued)

Historical evidence indicates that risks associated with unexploded ordnance may exist on the former Mortar Range Munitions Response Area. However, based on the results of investigations conducted there is a low probability of encountering unexploded ordnance, as only munitions debris and evidence of only non-explosive training items were identified during the 2010 Remedial Investigation.

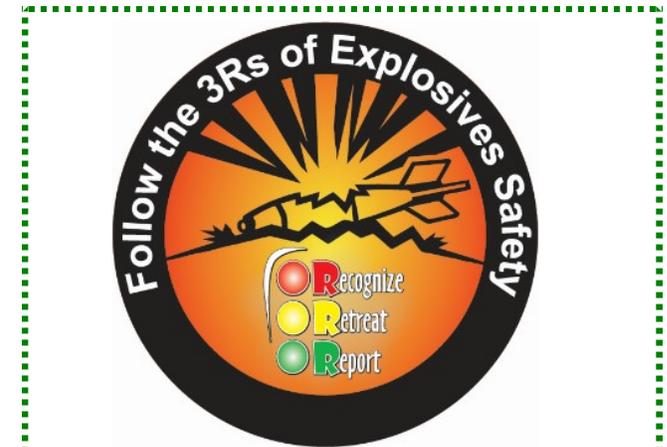
## RECORD OF DECISION SIGNED TO PROVIDE LONG-TERM SITE MONITORING

In September 2012, the Army and the U.S. Environmental Protection Agency signed a Record of Decision. This document legally binds the Army to maintain land-use controls and conduct long-term monitoring. The land-use controls require a permit to be obtained before digging occurs and prohibits residential housing at the site. The long-term monitoring includes annual inspections to ensure no munitions items have moved to the surface through erosion or frost heave.

A copy of this Record of Decision and more information about the site is available online at: [www.ftmeade.army.mil/environment](http://www.ftmeade.army.mil/environment) (click Clean-up Program, Program Sites, and Former Mortar Range). The Record of Decision is also available in the Fort Meade Administrative Record located at the Anne Arundel County Library, West County Area Branch, 1325 Annapolis Road, in Odenton, Maryland.

## STEPS TO FOLLOW IF YOU IDENTIFY A POTENTIAL MUNITIONS ITEM

Below are photographs of some of the munitions items found during the investigation. If you see an item that looks suspicious, do not touch it. Leave the area and immediately call 911.



**RECOGNIZE:** When you discover a suspicious item or a possible munitions, remember they can be very dangerous. Do not touch, kick, throw or do anything else to disturb the item. Also, remember that the munitions are sometimes not readily identifiable, and may appear to be any other metallic or rusty item. Use caution and do not touch it.

**RETREAT:** Mark the general location of the item (a minimum of 10 feet away) and retreat to a minimum of 300 feet away on the same path used to approach the item.

**REPORT:** Call 911.

**Additional Information:** Go to the Army Environmental Command website: <http://aec.army.mil/usaec/cleanup/images/mmrp-uxofactsht.pdf>



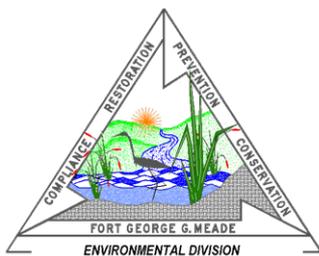


# Fort George G. Meade



## Unexploded Ordnance Safety Program

### Former Mortar Range Munitions Response Area





# Purpose



The purpose of this training presentation is to:

- Educate site users of the potential hazards posed by possible unexploded ordnance
- Inform site users of actions to take if an ordnance item is encountered, and
- To communicate land-use restrictions applicable to this area.





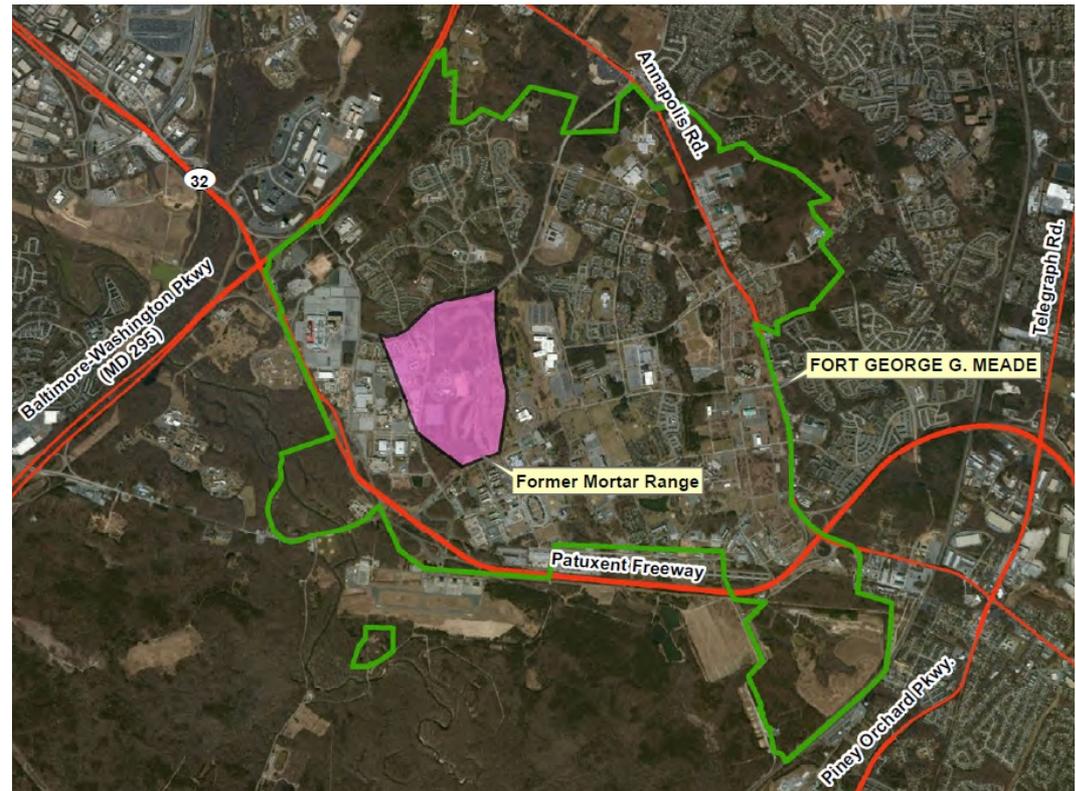
# Former Mortar Range Location



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These buildings are located on a former Mortar Range which was located in the west-central portion of Fort Meade and is bounded to the:

- north by Rockenbach Road,
- east by Taylor Avenue, and
- south by Mapes Road.





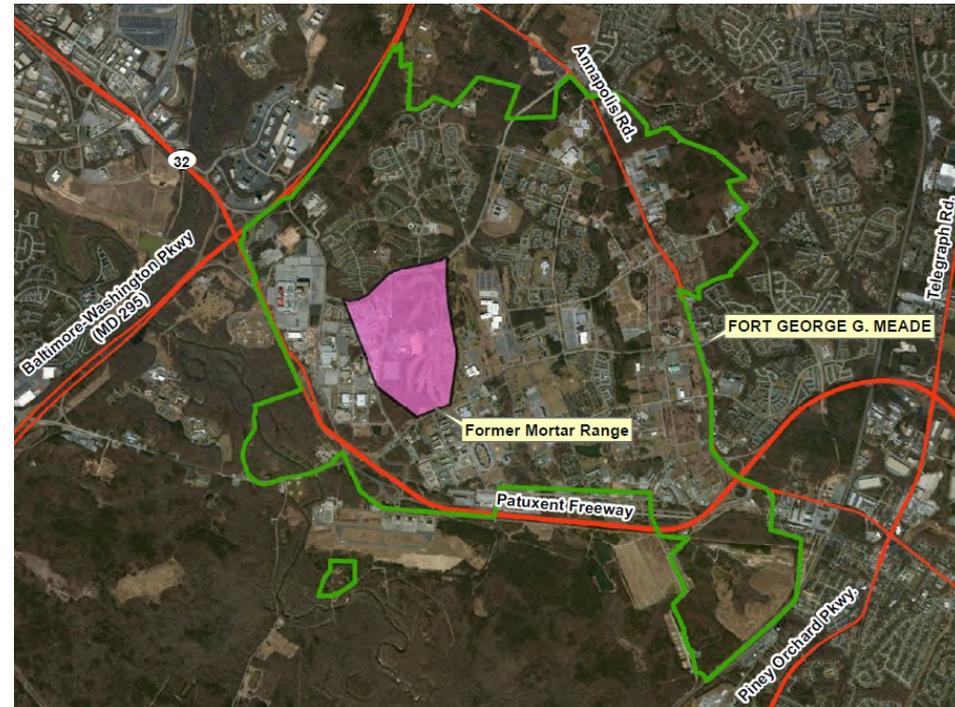
# Former Mortar Range Background



The former Mortar Range was active from the early 1920s until the 1940s when it became the installation golf course. Future use is administrative and construction is currently underway.

Extensive studies found only one live munition, but did find numerous training rounds without explosives.

Although the probability of encountering live munitions is low, it cannot be ruled out.



*Additional information regarding the former Mortar Range MRA is available on the FGGM Website: <http://www.ftmeade.army.mil/environment>*





# *Safety Recommendations for Site Users*

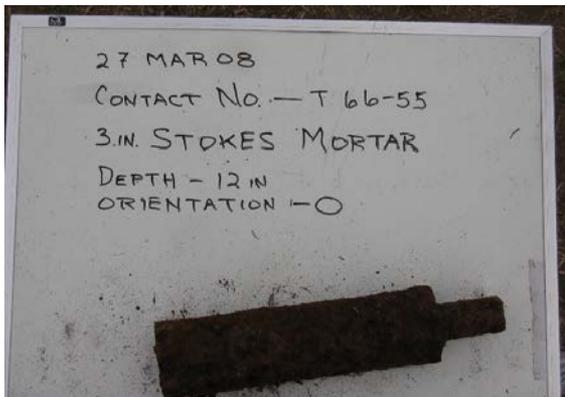


- Site Users - Avoid unpaved, wooded or undeveloped portions of the site. Your best defense is avoidance.
- Maintenance Users - Use extreme caution when working in areas where evidence of erosion is observed. Be aware of and follow the Fort Meade and secure DoD facility dig permit processes. Be familiar with examples of munitions presented on the following slide.
- All Users – Understand the Land Use Restrictions. Obey signage.





# Examples of Munitions Debris Encountered on the Site



3-inch Training Stokes Mortar



Small Arms Ammunition



75-mm Mk1 Shrapnel Projectile  
(Explosive Hazard)



60-mm Training Mortar



81-mm Training Mortar





# Learn the **3RS** of UXO Safety



- R**ecognize ...when you may have encountered munitions.
- R**etreat ...do not touch, move or disturb it, and carefully leave the area.
- R**eport ...immediately to the police.

**UXO** stands for **U**ne**X**ploded **O**rdnance  
(UXO can be: new or old; shiny or rusty; clean or dirty)

*Additional information can be found on the Army Environmental Command website:  
<http://aec.army.mil/usaec/cleanup/images/mmrp-uxofactsht.pdf>*





# UXO Safety Steps



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Should you encounter UXO or suspicious items:

- **STOP**, do **NOT** touch or attempt to move any object you find.
- Note the location and go back the way you came.
- Notify the Fort Meade Police Department by calling 911.
  - Explain to the dispatcher where you found the object.





# UXO Safety



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This training **DOES NOT** make you an expert in UXO!!  
Safety must always be your prime consideration.

## Follow the three Basic Rules of UXO Site Safety:

1. If you didn't drop it, don't pick it up!
2. If you didn't drop it, don't pick it up!
3. If you didn't drop it, don't pick it up!





# UXO Safety



## REMEMBER:

Not all hazards are obvious, don't assume anything is safe.

- DO NOT TOUCH IT!
- DO NOT MOVE IT!
- DO NOT DELAY IN REPORTING IT!

Be Safe!

Your best defense is avoidance!





# Glossary



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

**Land Use Controls (LUCs)** – LUC are physical, legal, or administrative mechanisms that restrict use of or limit access to, real property, to manage risks to human health and the environment. Physical mechanisms encompass a variety of engineered remedies to contain or reduce contamination and/or physical barriers to limit access to real property, such as fences or signs.

**Munitions and Explosives of Concern (MEC)** – This term, which distinguishes specific categories of military munitions that may pose unique explosives safety risks, includes: unexploded ordnance (UXO), as defined in 10 U.S.C. 101(e)(5); discarded military munitions (DMM), as defined in 10 U.S.C. 2710(e)(2); and munitions constituents (e.g., trinitrotoluene [TNT], cyclotrimethylenetrinitramine [RDX]) present in high enough concentrations to pose an explosive hazard.

**Munitions Debris** – Remnants of munitions (e.g. fragments, penetrators, projectiles, shell casings, links, fins) remaining after munitions use, demilitarization, or disposal.

**Munitions Response Area (MRA)** – Any area on a defense site that is known or suspected to contain unexploded ordnance, DMM, or MC. Examples include former ranges and munitions burial areas. An MRA is composed of one or more munitions response sites.

**Munitions Response Site (MRS)** – A discrete location within an MRA that is known to require a munitions response.





# Glossary (Cont'd)



**Unexploded Ordnance (UXO)** – UXO are 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 materiel.
- Remain unexploded, whether by malfunction, design, or any other cause. (10 U.S.C. 101(e)(5)).

**UXO Construction Support** – Support provided by qualified UXO personnel during construction activities at potential MEC sites to ensure the safety of construction personnel from the harmful effects of UXO. When a determination is made that the probability of encountering UXO is low (e.g., current or previous land use leads to an initial determination that UXO may be present), a minimum of a two person UXO team will stand by in case the construction contractor encounters a suspected UXO with unknown fillers. When a determination is made that the probability of encountering a UXO is moderate to high (current or previous land use leads to a determination that MEC was employed or disposed of in the parcel of concern, e.g., open burn and open detonation areas), UXO teams are required to conduct subsurface UXO removal for the known construction footprint either in conjunction with the construction contractor or prior to construction. The level of effort will be determined on a case-by-case basis in coordination with the MM MCX. (EP 75-1-2, ER 1110-1-8153).



## **Appendix E**

Annual Inspection Checklist

**Annual Inspection Checklist for Land Use Evaluation**

1. Land Use Evaluation

Date: \_\_\_\_\_

1. Inspector walked over entire site. \_\_\_\_ Yes \_\_\_\_ No

Reason why not?

2. Check for any sign of the following conditions – note whether corrective action was taken:

<u>Condition</u>	<u>Yes/No</u>	<u>Corrective Action Taken</u>	<u>Designation of Location Shown on Attached Map</u>
Intrusive activities			
MEC/MPPEH/munitions debris			
Signs of vegetative stress			
Construction activities			
Signs of erosion			
Other			
No residential / no change in land use			

3. Signs appropriately posted

<u>Sign noting the following (# of signs installed)</u>	<u>Yes/No/#</u>	<u>Corrective Action Taken</u>
Warning Signs (16)		

\_\_\_\_\_  
Printed Name & Title of Inspector

\_\_\_\_\_  
Signature of Inspector

Date \_\_\_\_\_

\_\_\_\_\_  
Approved by Paul Fluck, Program Manager  
Installation Restoration Program  
DPW-ED

Date \_\_\_\_\_

## **Appendix F**

Annual Certification of Land  
Use

**Annual Certification of Land Use  
Former Mortar Range MRA  
Fort George G. Meade, Maryland**

**Date**

This certification is being made in accordance with the Remedial Design (RD) for the former Mortar Range MRA. The RD is in accordance with the former Mortar Range MRA Record of Decision (ROD) signed by the Fort George G. Meade (FGGM) garrison commander and USEPA Region 3 Director of the Emergency and Remedial Response Division on \_\_\_\_\_, 2012 and \_\_\_\_\_, 2012, respectively.

1. **Certification of Point of Contact:** Mr. Paul Fluck is the designated point-of-contact for monitoring, maintaining, and enforcing the site-specific LUCs as specified in Section 4 of the RD.
2. **Certification of Commitment to Funding:** Funding for the proposed LUCs has not yet been awarded.
3. **Certification of how LUC objectives outlined in Section 4.2 of the RD:**
  - A. **LUC Objective: To maintain a land use that is protective from risks associated with MEC/MPPEH:**
    - i. *Pit Removal:* The pit removal will be coordinated through FGGM Safety and EMO, with additional support from the USACE Huntsville Division, Ordnance and Explosives Center of Expertise. This will be done as a preliminary maintenance activity to prepare the Training Area MRS for the LUC program.
    - ii. *FGGM Master Plan:* The FGGM Master Plan will be updated based on the new land use requirements. As planned, construction is currently underway over a large portion of the MRA.
    - iii. *The FGGM Geographic Information System (GIS):* The FGGM GIS incorporates the area of applicability existing land and environmental restrictions, locations of known contamination, and locations of MRAs / MRSs. The plan is to incorporate the GIS into the new Master Plan by reference.
    - iv. *Dig Permits:* No excavation of soil without approval of the FGGM Installation Restoration Project Manager; no excavation of soil without the proper safety equipment and a health and safety plan;
    - v. *FGGM Access Regulations:* Access regulations are in place at FGGM. Although not closed to the public, access to FGGM is strictly controlled. Trespassing and unauthorized activities on FGGM are illegal.
    - vi. *Army Military Construction Program Development and Execution:* Prior to construction activities, the Army categorizes the proposed construction site based on an environmental survey. Under this regulation, the Army must determine wetland status of the site, historical significance, and endangered species habitat identification.
    - vii. *Unexploded Ordnance (UXO) Construction Support:* Institutional Controls will be supplemented by the requirement for UXO Construction Support for all intrusive Military Construction projects, and UXO avoidance procedures for any other intrusive activity. UXO procedures will be coordinated through FGGM Safety and EMO, with additional support from the USACE Huntsville Division, Ordnance and Explosives Center of Expertise. All intrusive activities (e.g., investigations involving any digging, clearing activities, and

construction activities) must be authorized prior to the commencement of work.

- viii. *Posted Signs:* Signs will be posted around the site to prevent unauthorized digging. The conditions of these signs will be verified and documented annually.
- ix. *Education Program:* An education program will be initiated for potential future site workers, users, and emergency responders of the MRA. This will be coordinated through FGGM EMO.
- x. *Inspections:* Annual Inspection forms were developed and approved by the USEPA. These forms have been included with the RD.
- xi. *Notification Requirements:* If the land use at the former Mortar Range MRA were to change, any and all notifications, as described in Section 4.5.3.5 of the RD, will be made to the regulators. Currently the land use has not changed (construction remains underway); therefore, there was no need to notify the USEPA or Maryland Department of the Environment (MDE) of any land use changes in the past year.
- xii. *CERCLA Five –Year Reviews:* The Army will conduct Five Year Reviews as required by CERCLA and the NCP to determine if the LUC have remained protected of human health under the currently and reasonably anticipated future use. The Army will not modify or terminate LUCs, implementation actions, or land use with approval by USEPA and MDE.

**B. LUC Objective: Prohibit the development and use of the MRA for residential housing, elementary and secondary schools, child care facilities and playgrounds that result in unacceptable risk:**

- i. *Prohibit residential land use:* Residential land use at the former Mortar Range MRA will be prohibited as part of LUCs. No future residential development is planned within the MRA boundary. Residential land use at the former Mortar Range MRA will be prohibited. Due to the fact that the former Mortar Range MRA is a site entirely included within the FGGM property boundary and this property will remain under ownership and control of the federal government, a deed notice will not be necessary.

***“I certify that the site-specific land use controls for the former Mortar Range MRA have been in effect throughout (insert calendar year here) or for the period starting (Month Year and ending Month Year) and are protective of human health and the environment.”***

\_\_\_\_\_, Paul Fluck  
Project Manager  
For Environmental Restoration

\_\_\_\_\_, \_\_\_\_\_  
Month, Year  
Date

Attachments:

**Appendix G**

U.S. Environmental Protection  
Agency Memorandum



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029**

August 7, 2013

Paul V. Fluck, P.G., REP  
Installation Restoration Manager  
Dept. of Army DPW - Environmental Division  
4215 Roberts Ave,  
Room #320  
Fort George G. Meade, MD. 20755-7068

Subject: Memorandum to File. Mortar Range Record of Decision (signed September 27, 2012).

Mr. Fluck:

During the implementation of the Remedial Action selected by the September 27, 2012, Record of Decision for the Mortar Range MMRP Site, the Army's contractor Arcadis, has not been able to locate the buried .22 caliber shell casings to complete the removal action associated with the remedy. This is believed to be due to the fact that there has been a significant amount of reworking of the landscape at the Former Mortar Range because of the Agency's Campus development. Based on GPS Coordinates and test pits, it appears that the current landscape is approximately 3' lower than it was at the time of the Remedial Investigation when the buried shell casings were identified. Attempts were made to locate the casings including test pits, a GPR survey, and a magnetometer survey at the known GPS coordinates. These attempts have been unsuccessful.

It is the opinion of EPA that the failure to locate the buried shell casings does not have a significant impact on the protectiveness of human health and the environment and does not result in a significant change to the Remedial Action selected in the Record of Decision.

If you have any questions, please contact me at 215-814-3378.

Sincerely,

A handwritten signature in black ink, appearing to read "John Burchette", is centered on the page. The signature is fluid and cursive, with a large initial "J" and "B".

John Burchette  
Remedial Project Manager

cc: Dr. Elisabeth Green

## **Appendix G**

Response to Comments

**Response to Comments Table**

**Draft Remedial Action Report, Mortar Range, Fort George G. Meade, MD**

**October 2012**

Response Code: A = Agree with comment D = Disagree with comment C = Comment requires clarification N = Comment noted, no action required or taken

Comment Number	Commenter	Page(s)	Section	Line(s)	Comment	Response Code	Response
1	MDE	Entire Doc			The Federal Facilities Division (FFD) of the Maryland Department of the Environment's Land Restoration Program has completed its review of the above document. The FFD has no comment on this document, and looks forward to receipt of the final for incorporation into our site file.	N	
2	EPA RPM				Please insert a signature page to be signed by the Army and EPA. The EPA signature block should be: Paul Leonard Office Director Office of Federal Facility Remediation and Site Assessment U.S. Environmental Protection Agency, Region III	A	A signature page has been added to Section 1 of the report.
3	EPA RPM	5-2			"Handing Munitions Debris" handling?	A	Revised as requested.