

**Final**  
**M2 Parcel Ordnance and Explosives**  
**Removal Action Work Plan**  
**Fort McClellan, Alabama**

Delivery Order 0005  
Contract Number DACA87-99-D-0010



**U.S. Army Corps of Engineers**  
**Engineering and Support Center**  
**Huntsville, Alabama**

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**ACRONYMS AND ABBREVIATIONS**

ADEM	Alabama Department of Environmental Management
AEDA	Ammunition, Explosives and other Dangerous Articles
AHA	Activity Hazard Analysis
ALDOT	Alabama Department of Transportation
ANG	Alabama National Guard
ARAR	Applicable or Relevant and Appropriate Requirement
ASP	Ammunition Supply Point
ASR	Archives Search Report
BIP	Blow-in-Place
CCBC	Counter-Charged on the Bottom Center Line
CEHNC	United States Army Corps of Engineers, Engineering and Support Center, Huntsville
CEHNC DID	CEHNC Data Item Description
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGI	Combustible Gas Indicator
CPR	Cardiopulmonary Resuscitation
CWM	Chemical Warfare Material
DoD	Department of Defense
DQO	Data Quality Objective
DRMS	Defense Reutilization and Marketing Service
EA	Environmental Assessment
EHS	Environmental Health and Safety
EOD	Explosive Ordnance Disposal
ESS	Explosives Safety Submission
EZ	Exclusion Zone
FID	Flame Ionization Detector
FMC	Fort McClellan
ft	feet
GIS	Geographic Information System
HTRW	Hazardous, Toxic, and Radioactive Waste
IAW	in accordance with
IDW	Investigation Derived Waste
JPA	Anniston-Calhoun County FMC Joint Powers Authority
MPM	Most Probable Munition
MSD	Minimum Separation Distance
MSDS	Material Safety Data Sheet
msl	mean sea level
NONEL	Non-Electric
OE	Ordnance and Explosives
OEW	Ordnance and Explosive Waste
ORNL	Oak Ridge National Laboratory
OSHA	Occupational Safety and Health Administration
PAT	Procurement Advisory Team
PESM	Project Environmental and Safety Manager

**ACRONYMS AND ABBREVIATIONS**

(Continued)

PID	Photoionization Detector
PM	Project Manager
PPE	Personal Protective Equipment
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
QD	Quantity-Distance
QRP	Qualified Recycling Program
SAIC	Science Applications International Corporation
sec.	Section
SOP	Standard Operating Procedures
SS	Safety Specialist
SSHP	Site-Specific Safety and Health Plan
SUXOS	Senior Unexploded Ordnance Supervisor
SZ	Support Zone
TBC	To Be Considered
TDEM	Time Domain Electromagnetics
USDOT	United States Department of Transportation
USRADS	Ultrasonic Ranging and Data System
UXO	Unexploded Ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Site Safety and Health Officer
WP	White Phosphorous
WP	Work Plan

## **1.0 INTRODUCTION**

This is a site-specific work plan prepared for the execution of Delivery Order 0005, M2 Parcel Ordnance and Explosives (OE) Removal Action. Under contract DACA87-99-D-0010, Ordnance and Explosives Response at Fort McClellan, Alabama, a General Site-Wide Work Plan (Site-Wide WP) was prepared for execution of OE response projects at Fort McClellan. Site specific delivery orders are extensions of the Site-Wide WP. To prevent redundancy, the site specific work plans generally incorporate, by reference to the Site-Wide WP, those descriptions, information, guidance, or procedures applicable to the work authorized under the specific delivery order.

### **1.1 Review Comments and Responses**

This work plan was originally submitted 22 April, 2000. Comments on the plan were received, responded to, and incorporated, as appropriate, into this final version of the work plan. Comments received and annotated responses to the comments are included in Appendix A.

### **1.2 Project Authorization**

This project is authorized under Contract DACA87-99-D-0010, Ordnance and Explosives Response at Fort McClellan, Alabama.

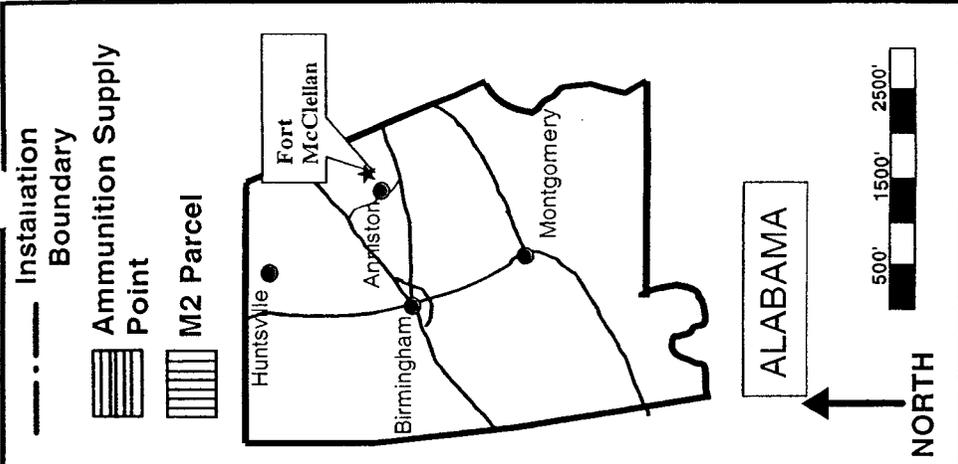
### **1.3 Purpose and Scope**

1.3.1 The purpose of this delivery order is to perform a removal action of all OE (unexploded ordnance (UXO) and inert ordnance) for the M2 Parcel at Fort McClellan (FMC), Alabama. This clearance is to be a final removal action prior to transfer of this property to the Anniston-Calhoun County FMC Joint Powers Authority (JPA) for possible commercial development.

1.3.2 The scope of services includes preparation of site-specific work plans (WP) and Explosive Safety Submission (ESS), location surveys and mapping, UXO removal, turn in of inert ordnance and metallic debris, quality control, and preparation of a site specific removal report. A full copy of the Statement of Work, including objectives, background, description of services (with task descriptions), schedule of meetings and deliverables, submittals and correspondence, performance metrics, safety requirements, public affairs, and references is included in Appendix B.

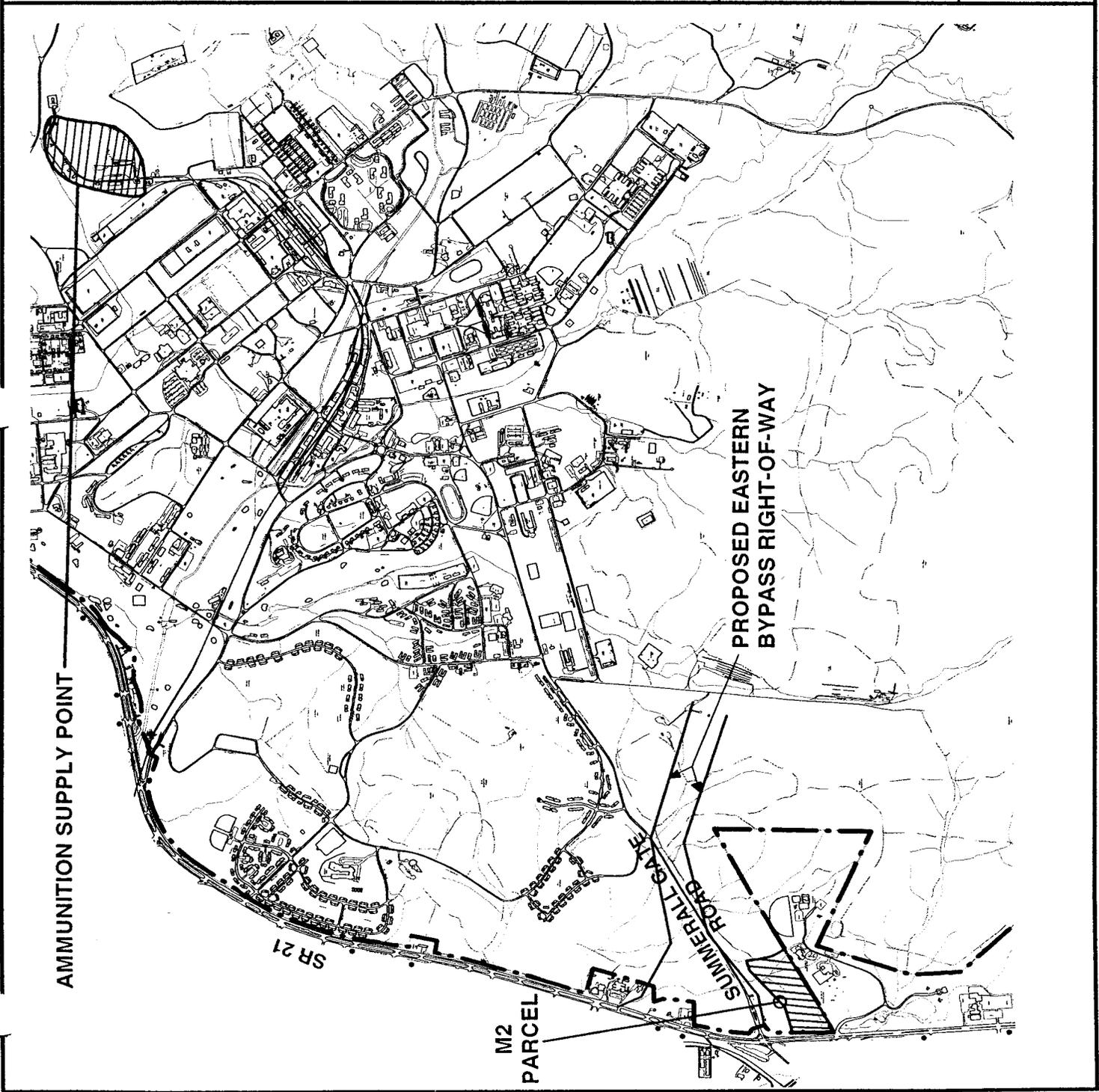
### **1.4 Site Location**

The M2 Parcel consists of approximately 20 acres and is located on the western boundary of Fort McClellan just south of Summerall Gate Road. Figure 1- 1 shows the location of the parcel.



**FIGURE 1-1**  
 LOCATION OF M-2 PARCEL  
 U.S. ARMY ENGINEERING  
 AND SUPPORT CENTER  
 HUNTSVILLE, ALABAMA  
 CONTRACT No DACA87-99-D-0010  
 FORT McCLELLAN, ALABAMA

FOSTER WHEELER  
 ENVIRONMENTAL CORPORATION



## **1.5 Site History**

1.5.1 For a description of Fort McClellan's site history, refer to Section (sec.) 1.4 of the Site-Wide WP. The M2 Parcel has been identified as part of a much larger undocumented training area for OE. Although the full extent of the training area has not been delineated, other site investigations have determined that the potential presence of OE extends east from Summerall Gate along the proposed route of the Eastern Bypass as well as encompassing the M2 Parcel. The potential OE that is suspected to be on the M2 Parcel and its associated hazards are identified in Table 1-1. No evidence of Chemical Warfare Material (CWM) has been associated with the M2 Parcel. The period and duration of training that was conducted in the M2 Parcel is unknown.

1.5.2 Several previous and ongoing investigations have indicated the presence of OE items within the parcel. The US Army Corps of Engineers, St. Louis District, compiled an Archives Search Report (ASR) in 1996. The ASR was prepared by reviewing available records and reports documenting the history of the site. Historical information pertaining to site operations, including a listing of site investigations conducted before 1996, is contained within this document. In 1998, the US Army Corps of Engineers, St. Louis District, revised the ASR to include suspect CWM areas. The ASR was finalized in July 1999.

1.5.3 The Final Archives Search Report (prepared by the US Army Corps of Engineers, St. Louis District) presented the findings of the site inspection and evaluation of potential ordnance and explosives occurrence at former Fort McClellan. Numerous areas suspected of being used for chemical warfare training or chemical warfare material storage were inspected. No indication of OE training, chemical training or chemical materiel storage was noted in the document to be within the boundaries of the M2 Parcel.

1.5.4 Barge, Waggoner, Sumner and Cannon, Inc. conducted an Environmental Assessment (EA) for the Alabama Department of Transportation (ALDOT) in August 1998. This document identified the economic and environmental impacts of the proposed eastern bypass and evaluated right-of-way alternatives for the bypass. A Finding of No Significant Impact was finalized in December 1999. The corridor of study for the proposed eastern bypass also encompassed the M2 Parcel. Threatened and endangered species were not anticipated within the M2 Parcel. Isolated wetlands associated with streams were described in three separate areas within the right-of-way, none of which is located in the M2 Parcel.

1.5.5 An Historical Aerial Photography Investigation of the Fort McClellan East By-Pass Study Area (1998) was prepared by Oak Ridge National Laboratory (ORNL) for the US Army Engineering and Support Center, Huntsville. It provided an analysis of land usage over a span of more than 50 years and potential areas of OE occurrence. Part of the M2 Parcel was included in the photographic coverage investigated by ORNL. There were also anomalies identified in photographic coverage overlapping the M2 Parcel that were recommended for further investigation.

**Table 1-1**  
**Potential OE at M2 Parcel**

MUNITION/COMPONENT	EXPLOSIVE/INCENDIARY HAZARD	CALCULATED PENETRATION DEPTH
M15 WP Hand Grenades	15 oz. White Phosphorus filler, detonating fuze, 13.5g tetryl burster	Surface
60mm practice mortars ( M69)	None	4 inches
Rifle (Burning type) smoke grenades	Smoke filler, incendiary	4 inches
2.36 inch practice rocket	None	10 inches
Rocket propelled ground signals (slap flares)	Small explosive charge	3 inches
Surface trip flares (M48)	75 grain propelling charge, explosive	Surface
Practice hand grenades ( MK II)	28.35 g black powder, explosive	Surface
Mine Activator, practice ( M1)	Small explosive charge	Surface
Mine, anti-personnel, practice (M8)	11 g black powder, explosive	Surface

1.5.6 Zapata Engineering conducted a non-intrusive ground reconnaissance in August 1998. The purpose of the ground reconnaissance was to resolve anomalies resulting from the Historical Aerial Photography Investigation and to visually identify areas of possible OE occurrence, which may not have been previously characterized within the proposed eastern bypass right-of-way. As documented in Zapata Engineering's Ground Reconnaissance Trip Report dated September 1998, no evidence of ordnance impact areas were identified within the areas in and adjacent to the M2 Parcel. However, several areas revealed evidence of possible training activities and were identified as potential sample locations. The most notable locations were in the northern portion of the proposed eastern bypass right-of-way, near Summerall Gate. In particular, possible training areas were located north and south of Summerall Gate Road, approximately 200 to 300 yards inside the installation boundary. These areas adjoin and overlap the M2 Parcel.

1.5.7 In February of 1999, Zapata Engineering conducted a geophysical survey of six areas encompassing 8.56 acres in and adjacent to the M2 Parcel. Approximately half of the geophysical data collected in Area 6 overlaps the M2 Parcel. Several subsurface anomalies were identified as potential OE.

1.5.8 In May of 1999, intrusive sampling was conducted in several of the areas previously geophysically mapped. Several OE items used for training were found in sampling grids near the M2 Parcel. The items found included 60mm practice mortars, expended smoke rifle grenades, expended rocket propelled ground signals (slap flares), expended practice anti-personnel mines (M8), expended ground trip flares (M48), and an unexpended M1 mine activator. No intrusive sampling was performed within the M2 Parcel.

1.5.9 In February of 2000, Mr. Hank Hubbard, a safety specialist with the U.S. Army Corps of Engineers, Engineering Support Center, Huntsville (CEHNC), performed visual ground reconnaissance within and adjacent to the M2 Parcel, identifying the remains of a White Phosphorus grenade on the ground surface adjacent to the M2 Parcel.

1.5.10 Currently EODT, Inc. is performing a one foot clearance over the proposed footprint of the Eastern Bypass to support pre-construction activities. Expended rifle smoke grenades, smoke grenades and parts of an expended white phosphorus hand grenade were found in grids adjoining the M2 Parcel on the northern boundary.

## **1.6 Topography**

The topographic gradient at the M2 Parcel varies from an elevation of approximately 810 feet (ft) above mean sea level (msl) on the eastern boundary, approximately 825 ft msl in the center of the site, and approximately 770 ft msl on the western boundary of the site.

## **1.7 Climate**

Refer to the Site-Wide WP (sec. 1.0).

## **2.0 TECHNICAL MANAGEMENT PLAN**

### **2.1 General**

In accordance with CEHNC Data Item Description (CEHNC DID) OE-005-02, Technical Management Plan, the following items have been addressed and are included within sec. 2.0, Technical Management Plan of the Site-Wide WP: (1) identification of guidance and regulations under which this OE removal action will take place, (2) procedures to follow in the event CWM is discovered at the M2 Parcel, (3) procedures to be followed in the event unexploded ordnance (UXO) cannot be destroyed onsite at the M2 Parcel, if planned and (4) procedures to follow if an unidentified UXO is located within the M2 parcel.

#### *2.1.1 Regulatory Compliance*

A Regulatory Compliance Plan for OE response activities at Fort McClellan is presented in sec. 2.1 Regulatory Compliance, of the Site-Wide Work Plan. The plan discusses potential applicable or relevant and appropriate requirements (ARARs) and requirements to be considered (TBCs) for the investigation and management of OE at Fort McClellan. This OE removal action at the M2 Parcel is considered a non-time critical removal action and will be conducted in a manner consistent with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, the NCP and CERCLA guidance entitled “Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA.” In accordance with CERCLA Section 121, actual permits will not be required for on-site work. Rather, substantive compliance with the selected ARARs/TBCs must be achieved. Accordingly, ARARs have been identified for the OE removal action at M2 Parcel. Only action-specific ARARs were found to be applicable. No chemical-specific or Location-Specific ARARs or TBCs were identified. The ARARs are listed in Table 2-1.

## **2.2 Technical Scope**

The technical scope of this project is to complete the removal of all OE at the M2 Parcel site located on the western edge of Fort McClellan. The project tasks as described in the Statement of Work (see Appendix B) include preparation of the work plan (this document) and ESS (Task 1), location surveys and mapping (Task 2), UXO removal (Task 3), turn-in of inert ordnance and metallic debris (Task 4), quality control (Task 5), and preparation and submission of the removal report (Task 6).

#### *2.2.1 Task 1-M2 Parcel Work Plan (WP) and Explosives Safety Submission*

2.2.1.1 The M2 Parcel WP includes site specific details for the M2 Parcel that are not covered within the Site-Wide WP and incorporates (by reference) information, guidance, procedures, and sections of the Site-Wide WP that are applicable at the M2 Parcel. Only those items that may differ from the Site-Wide WP or are in addition to the Site-Wide WP are included herein. If there are deviations from the Site-Wide WP, supporting rationale will be included. The M2 Parcel WP is being prepared in accordance with CEHNC DID OE-005-01 Type II Work Plan.

**Table 2-1**  
**List of Potential Applicable or Relevant and Appropriate Requirements (ARARs)**  
**and Requirements To Be Considered (TBCs)**

ARAR/TBC TYPE	CITATION	DESCRIPTION	COMMENTS
<b>LOCATION-SPECIFIC</b>			No location specific ARARs have been identified as applicable to the M2 Parcel OE Removal Action
<b>CHEMICAL-SPECIFIC</b>			No chemical specific ARARs have been identified as applicable to the M2 Parcel OE Removal Action
<b>ACTION-SPECIFIC</b>			
<i><b>FEDERAL</b></i>			
Air Pollution Control	40 CFR 50.7	National Ambient Air Quality Standard for Particulate Matter	Potential ARAR for detonation activities which generate particulate matter emissions
Military Munitions- Identification	40 CFR 266.202	Criteria for determining when a military munition is classified as a solid waste	Potential ARAR for the identification of military munitions as a solid waste, and potentially a reactive (D003) or ignitable (D001) hazardous waste
Military Munitions- Transportation	40 CFR 266.203	Requirements for the transportation of military munitions classified as a hazardous waste	Potential ARAR for the on-site transportation of military munitions
Military Munitions- Storage	40 CFR 266.205	Requirements applicable to the storage of military munitions classified as a hazardous waste	Potential ARAR for the interim on-site storage of military munitions
Hazardous Waste Generation	40 CFR 261	Requirements for the identification of hazardous waste	Potential ARAR for the identification of potentially contaminated materials, including OE as a potentially reactive (D003) or ignitable (D001) hazardous waste
	40 CFR 262	Requirements for generators of hazardous waste	Potential ARAR for the generation, storage and packaging of contaminated material, including OE as a potentially reactive (D003) or ignitable (D001) hazardous waste

**Table 2-1  
List of Potential Applicable or Relevant and Appropriate Requirements (ARARs)  
and Requirements To Be Considered (TBCs)**

ARAR/TBC TYPE	CITATION	DESCRIPTION	COMMENTS
Treatment of Hazardous Waste	40 CFR 265.370	Specifies requirements for the thermal treatment of hazardous waste, including waste explosives	Potential ARAR for the detonation of OE/UXO as hazardous waste
	40 CFR 264 Subparts S and EE  40 CFR 265	Provides requirements for handling waste at the following facility types:  - Temporary Units (TUs)  - Staging Piles  Hazardous Waste Munitions and Explosive Storage	Potentially applicable for the storage and treatment of soils contaminated with munitions residues from remediation activities.
Off-Site Disposal of Hazardous Waste	40 CFR 268 Subparts A through E	Identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise restricted waste may continue to be land disposed.	Potentially applicable if soils/sediments and media containing munitions residues are disposed of off site in a landfill as hazardous waste.
U.S. Department of Transportation (USDOT) Hazardous Materials Transportation Regulations	49 CFR 172.101 Hazardous Materials Table	Provides information on regulated hazardous materials, including hazard classes, packing and labeling standards	Potential ARAR for the classification of hazardous materials and hazardous wastes generated on-site for transportation purposes
	49 CFR 172.700-704	Requirements for USDOT training	Potential ARAR for on-site workers engaged in a USDOT function
	49 CFR 173	Packaging requirements for USDOT regulated hazardous materials and hazardous wastes	Potential ARAR for on-site packaging of USDOT hazardous materials
Munitions Storage Standards	DOD 6055.9-STD	Department of Defense (DoD) Ammunition and Explosive Safety Standards	Potential TBC for storage and handling of military munitions

**Table 2-1**  
**List of Potential Applicable or Relevant and Appropriate Requirements (ARARs)**  
**and Requirements To Be Considered (TBCs)**

ARAR/TBC TYPE	CITATION	DESCRIPTION	COMMENTS
Environmental Protection and Enhancement	AR 200-1	Requires compliance with environmental statutes and regulations and consultation with federal, state and local regulatory agencies for activities at Army installations	ARAR for all phases of field work
<b>ALABAMA</b>			
Hazardous Waste Munitions and Explosives Storage	Alabama Department of Environmental Management (ADEM) 335-14-5-.31 Military Munitions: ADEM 335-14-7-.13	Provides State of Alabama requirements and standards for design and operation of munitions and explosives storage facilities. Describes procedures for inventories, inspections, and packaging.	<u>ARAR</u> Relevant and appropriate to the on-site storage of media contaminated with munitions residues.
Off-Site Disposal of Hazardous Waste	335-14-9	Identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise restricted waste may continue to be land disposed.	Potentially applicable if soils/sediments and media containing munitions residues are disposed of off site in a landfill as hazardous waste
Military Munitions- Identification	335-14-7-.13(3)	Criteria for determining when a military munition is classified as a solid waste	Potential ARAR for the identification of military munitions as a solid waste, and potentially a reactive (D003) or ignitable (D001) hazardous waste
Military Munitions- Transportation	335-14-7-.13(4)	Requirements for the transportation of military munitions classified as a hazardous waste	Potential ARAR for the on-site transportation of military munitions
Military Munitions- Storage	335-14-7-.13(6)	Requirements applicable to the storage of military munitions classified as a hazardous waste	Potential ARAR for the interim on-site storage of military munitions

**Table 2-1  
List of Potential Applicable or Relevant and Appropriate Requirements (ARARs)  
and Requirements To Be Considered (TBCs)**

ARAR/TBC TYPE	CITATION	DESCRIPTION	COMMENTS
Hazardous Waste Generation	335-14-2	Requirements for the identification of hazardous waste	Potential ARAR for the identification of potentially contaminated materials, including OE as a potentially reactive (D003) or ignitable (D001) hazardous waste
	335-1-3	Requirements for generators of hazardous waste	Potential ARAR for the generation, storage and packaging of potentially contaminated materials, including OE as a potentially reactive (D003) or ignitable (D001) hazardous waste
Storage and Treatment of Hazardous Waste	335-14-6	Specifies requirements for the design and operation of hazardous waste stockpile/storage areas and for the thermal treatment of hazardous waste	Potential ARAR for the stockpiling of contaminated materials and detonation of OE/UXO
Air Quality Standards	335-3-1-.03	Sets standards for ambient levels of air pollutants	Potential ARAR for site activities resulting in the emission of air pollutants
	335-3-4-.02	Particulate emission standards for fugitive dust	Potential ARAR for on-site detonation of OE resulting in particulate emissions

2.2.1.2 The ESS is a separate document that is being prepared in accordance with CEHNC DID OE-060, Conventional Explosives Safety Submission. The M2 Parcel WP and the ESS will be submitted together. Site work, including surveying, brush clearance, and geophysical investigations can begin (and are planned to do so) prior to approval of the ESS. However, OE removal operations will not begin until the ESS has received final approval.

### *2.2.2 Task 2-Location Surveys and Mapping*

Surveying and mapping will be performed in accordance with CEHNC DID OE-005-07, Location Surveys and Mapping. Refer to sec. 7.0 of the Site-Wide WP and sec. 7.0 of this document for specific technical criteria. Following brush clearance and prior to commencing geophysical investigations of the M2 Parcel, the site will be subdivided into grids (typically 200 feet (ft) by 200 ft or 100 ft x 100 ft). The boundaries of the M2 Parcel and the corners of each grid will be surveyed and mapped.

### *2.2.3 Task 3-UXO Removal*

Foster Wheeler is defining this task to include the activities associated with brush clearance, geophysical surveys/investigations, data analysis and generation of dig sheets, and target anomaly excavation and disposal. The sequence anticipated is a complete brush clearance, followed by a confirming sweep (magnetometer) of the brush-cleared areas to remove any remaining metallic surface debris that may still be on the surface, establishment of survey grids, geophysical survey investigations, data analysis and generation of target anomaly dig sheets, target anomaly reacquisition, and excavation and disposal.

#### **2.2.3.1 Brush Clearance**

The M2 Parcel will be cleared of brush to prepare the site for geophysical investigation and subsequent removal of UXO and inert ordnance. Brush clearing teams will be escorted and preceded by qualified UXO specialists who will perform visual sweeps of the area to be cleared. In the event suspect UXO is encountered, the UXO specialist will mark the item, clear the area in accordance with (IAW) the most probable munition (MPM) exclusion zone distance, notify the Senior UXO Supervisor (SUXOS), who will then notify the CEHNC Safety Representative and schedule disposal operations IAW disposal procedures as described in sec. 2.7.2.3 of this plan. Foster Wheeler intends to subcontract the brush clearing services to a qualified brush clearing company. Brush clearance will be performed in accordance with the Environmental Protection Plan (see sec. 12 of this document and the Site-Wide WP).

#### **2.2.3.2 Surface Sweep**

Following behind the brush clearing activities, UXO specialists will perform a sweep of the brush-cleared areas to prepare the site for geophysical survey investigations. The surface sweep renders the surface area safe to operate and removes metallic debris that can mask subsurface OE items.

### 2.2.3.3 Establishing Grids

Following brush clearance, 100 ft by 100 ft grids will be established by a land surveyor under contract to Foster Wheeler Environmental. The surveyor and crew will be escorted by a UXO Specialist who will perform a magnetometer survey prior to the survey crew setting survey stakes.

### 2.2.3.4 Geophysical Investigation

Foster Wheeler plans to use the Ultrasonic Ranging and Data System (USRADS) coupled with the EM-61 sensor to perform the geophysical surveys. This configuration of instruments was used during the demonstration test/prove-out at the Fort McClellan test plot and was found to be very effective for the type of soils, terrain and vegetative coverage at Fort McClellan. Sec. 5.0 of this WP describes the investigation plan details. The plan was developed in accordance with CEHNC DID OE-005-05, Geophysical Investigation Plan and is an extension of the site-wide plan included in sec 5.0 of the Site-Wide WP.

### 2.2.3.5 Data Analysis/Target Anomaly Reacquisition

After the geophysical data have been processed, Foster Wheeler Environmental will interpret the data using internally developed software. Geophysical anomalies will be automatically selected by the computer, selected interactively by the interpreter, or both. Estimates of depth and relative size are determined for each anomaly, and a preliminary dig list will be generated. Preliminary dig list anomalies with estimated sizes and other characteristics that fall within the size ranges for the ordnance types anticipated at the M2 parcel will be identified as potential OE on the final dig list. Anomalies will be reacquired using an EM61 Hand Held instrument to pinpoint the target(s). This location will be flagged and a unique identification number written on the flag. Data analysis and target anomaly reacquisition will be performed IAW the Site-Wide WP.

### 2.2.3.6 OE Excavation and Disposal

OE excavation and disposal will be performed IAW the procedures set forth in sec. 2.7 OE Operations, of this WP.

## 2.2.4 *Task 4-Turn-in of Inert Ordnance and Metallic Debris*

The turn in of all recovered inert ordnance items and metallic debris will be performed as described in the OE Scrap Management Plan included in the Site-Wide WP (sec. 2.8). This plan was developed in accordance with DoD 4160.21-M, the Defense Demilitarization and Trade Security Control Manual.

## 2.2.5 *Task 5-Quality Control*

Quality Control will be performed in accordance with the site-wide QC plan developed and included in the Site-Wide WP (see sec. 11.0). The plan was developed in accordance with CEHNC DID OE-005-11, Quality Control Plan.

### **2.2.6 Task 6-Removal Report**

The Removal Report will describe all the operations and activities performed on tasks 1 through 5. It will include a statement that the project has been completed in accordance with the delivery order statement of work and the approved work plan. The report will be prepared in accordance with CEHNC DID OE-030, Site Specific Final Report.

## **2.3 Project Organization**

The project management organization consists of the CEHNC Project Manager (David Skridulis), the Fort McClellan BRAC Cleanup Team, and the Foster Wheeler Environmental project team and major subcontractor, USA Environmental. Figure 2-1 depicts the project management organization.

### **2.3.1 Personnel Responsibilities**

Specific responsibilities of key Foster Wheeler Environmental and USA Environmental personnel proposed for assignment to this project are described below. All personnel that will be assigned to this project meet the CEHNC training and experience requirements for the position to which they are assigned in accordance with CEHNC DID OE-025, Personnel/Work Standards. The key personnel will be supported by technical resources throughout the Foster Wheeler Environmental organization on an as-needed basis for individual task orders. Resumes for the key personnel are included in Appendix C of this document.

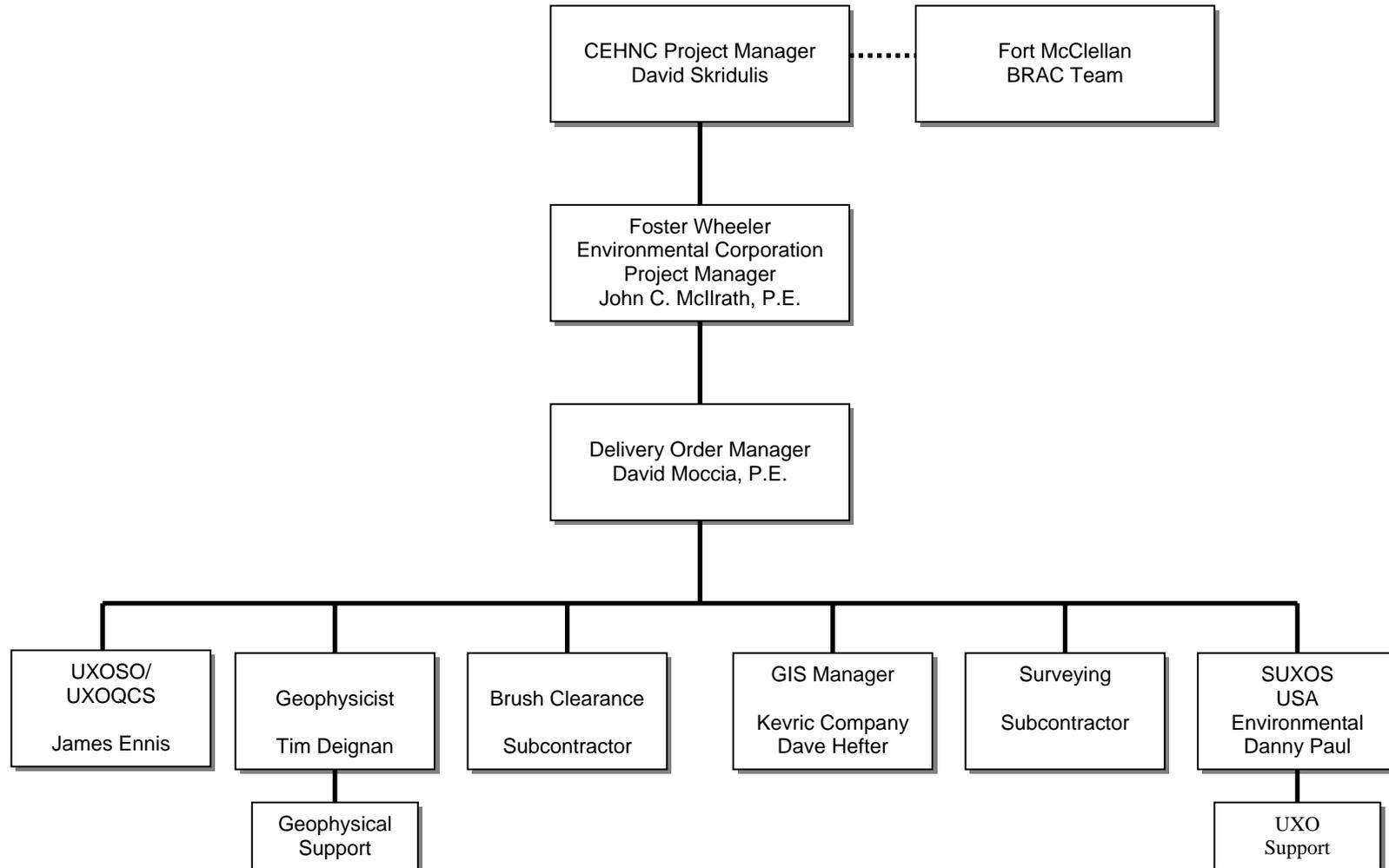
#### **2.3.1.1 Project Manager--John C. McIlrath, P.E.**

Mr. McIlrath is responsible for the overall implementation of all delivery orders assigned under this contract and for the selection and assignment of Delivery Order Managers. He is responsible for the management of all Foster Wheeler Environmental resources needed for the successful implementation of site operations, is the primary point of contact between Foster Wheeler Environmental and CEHNC. All Delivery Order Managers report directly to Mr. McIlrath.

#### **2.3.1.2 Delivery Order Manager--David Moccia, P.E.**

Mr. Moccia is responsible for the planning and execution of this delivery order in accordance with the authorized statement of work; the daily execution and progress of the work; and for ensuring that the delivery order is completed on schedule, within the authorized budget, and within the level of quality expected by CEHNC. Supporting personnel will report directly to Mr. Moccia and he will report directly to the Project Manager.

Figure 2-1  
M2 Parcel  
Management Team



### 2.3.1.3 Senior UXO Supervisor (SUXOS)—Danny Paul

Mr. Paul of USA Environmental is the SUXOS assigned to this delivery order. He will assist in the development of the WP for this delivery order and assist in identifying personnel and equipment requirements. He will supervise and be responsible for all daily UXO activities of the field teams, the successful performance of the UXO field teams, the early detection and identification of potential problem areas and institution of corrective measures. He will also be responsible for overall coordination of on-site UXO activities and for keeping the Delivery Order Manager informed of staffing, resource or other issues that could impact performance on this delivery order.

### 2.3.1.4 UXO Site Safety and Health Officer (UXOSO)--James Ennis

Mr. James Ennis is the UXO Site Safety and Health Officer (UXOSO). He is UXO-qualified and is responsible for ensuring that all site activities are conducted in accordance with this site specific WP and the Site-Wide WP, the Site Safety and Health Plan (site specific and the General), CEHNC and Fort McClellan policies and procedures, and relevant federal, state and local regulations. Mr. Ennis is also responsible for implementing on-site training requirements and recommending changes to level of personal protective equipment (PPE) to the Foster Wheeler Environmental certified industrial hygienist. He has Stop Work authority for safety conditions and has responsibility for evaluating and analyzing potential safety problems, implementing safety-related corrective actions, and maintaining a daily safety log. Although the UXOSO has the primary authority to stop work, all site personnel have the responsibility to stop work to prevent an unsafe act or when observing unsafe working conditions.

### 2.3.1.5 UXO Quality Control Specialist (UXOQCS)—James Ennis

Mr. Ennis will serve dual roles as the UXOQCS and the UXOSO. This is permitted in accordance with CEHNC DID OE-025 (par. 10.6.2.1.4) if there are less than 15 personnel onsite. He is UXO-qualified and is responsible for ensuring that all site operations are conducted in accordance with recognized performance criteria and for performing Quality Control (QC) checks of all field work prior to CEHNC Quality Assurance (QA) inspections. Sec. 11 of the Site-Wide WP contains additional UXOQCS responsibilities and the performance criteria which will be met during this project.

### 2.3.1.6 Geophysicist--Tim Deignan

Mr. Tim Deignan is the lead geophysicist. He is responsible for preparation of sections of this site specific WP that discuss geophysical investigations and geophysical QC. He is also responsible for the overall implementation of these plans, geophysical QC, data analysis, interface with CEHNC geophysicists for data evaluation and with the Geographic Information Systems (GIS) manager for incorporation of geophysical data into the site-wide GIS. Mr. Deignan is also responsible for providing dig sheets to the UXO teams and coordinating QC efforts with the UXO teams during the intrusive investigation. He will be the project geophysicist-of-record.

### 2.3.1.7 GIS Manager—David Hefter

Mr. Hefter is the GIS Manager for this delivery order and for the overall Fort McClellan contract. He is responsible for development, operation and maintenance of the site-specific GIS for this project. Geophysical and intrusive data collected during the performance of this and all other delivery orders will be incorporated into a single GIS for the entire Fort McClellan site. He will also be responsible for transferring all data to the CEHNC GIS System.

## 2.4 Mobilization Plan

2.4.1 Foster Wheeler Environmental has prepared field office facilities at Fort McClellan to operate from during the execution of field work at Fort McClellan. The facilities include a field data processing center for data entry and preliminary analysis of geophysical data and appropriate links for data transfer, telephones, fax machine, computers with printers, and miscellaneous office supplies and materials. Storage space in the same vicinity as the field office is available for storage of equipment and supplies.

2.4.2 Arrival of the work force will be scheduled to allow for immediate productivity. Site-specific training for all on-site personnel will be provided to ensure that all on-site personnel fully understand the operational procedures and methods to be used during the OE response activities at the M2 Parcel, including individual duties and responsibilities, and all safety and environmental concerns associated with operations. Any personnel arriving at the site after this initial training session will be trained as they arrive. Training will be provided by the UXOQCS and the UXOSO as described and in accordance with the Site-Wide WP (sec. 2.0)

2.4.3 In accordance with the Site-Wide WP (sec.2.0), local services and agencies will be contacted to ensure the availability of resources that may be needed during the course of the project. Prior to beginning actual field operations, and on each Thursday during the period of field activities, Foster Wheeler Environmental will notify the CEHNC Safety Representative of the following week's schedule and activities. All field activities will also be coordinated with the Fort McClellan Transition Force Operations. Field personnel will log in and out of areas on a daily basis.

## 2.5 Site Preparation Activities

Upon completion of mobilization activities, Foster Wheeler Environmental will commence site preparation. Site preparation activities will be performed as described in the Site-Wide WP and below.

### 2.5.1 *Brush Clearance*

The M2 Parcel is heavily vegetated with trees, bushes, vines, and Kudzu plants. The complete area (approximately 20 acres) will be cleared of vegetation to a height of not greater than four inches above ground surface. Trees with trunks greater than three inches in diameter will not be

removed. Clearing will be performed in accordance with the Environmental Protection Plan (sec. 12). A visual sweep of the designated area for surface OE, will be made prior to the start of brush clearing operations. A UXO specialist (UXO Technician II) will oversee brush clearing and be responsible for sweeping newly cleared areas for OE potentially uncovered by brush clearing operations. Cut vegetation will be disposed onsite by chipping. Any OE encountered during vegetation removal will be marked with pin flags and reported to the SUXOS. Prior to reporting to the SUXOS, the UXO specialist will make a preliminary assessment of the item and determine the necessity to evacuate the brush clearing crew. The SUXOS will identify the item and determine if operations can continue or if the site will be evacuated until the item is disposed of. The item will be disposed of immediately or at the end of the day's operation in accordance with the disposal procedures in sec. 2.7.

### **2.5.2 Location Surveys**

Location surveys to establish site boundaries and grid corners will be performed throughout the approximately 20-acre site. The land survey crew will be accompanied by a UXO Specialist at all times while on the site. In all areas suspected of having possible OE contamination, the UXO Specialist will visually inspect the areas where personnel may transit. At all points where wooden stakes or posts are to be driven into the soil or where survey corners are to be located, a magnetometer check of that point will be accomplished prior to their emplacement. If at any time the magnetometer indicates a positive reading, another location free of anomalies shall be selected for placement of the marker. Survey and boundary stake installation are the only intrusive activities (subsurface) authorized during surveying activities.

### **2.5.3 Surface Sweeps**

Prior to conducting the geophysical investigation, UXO teams will perform a visual reconnaissance of the area to remove any metallic debris and any OE from the ground surface. This will ensure the safety of the geophysical field personnel as well as reduce the potential for cultural interference in the geophysical data. The removal and disposal of surficial metal will be in accordance with standard procedures developed for this type of work by UXO personnel. The debris will be moved from each survey grid and temporarily stored for subsequent disposal in accordance with the OE scrap management plan (sec. 2.8)

## **2.6 Statistical Sampling Procedures (NOT USED)**

## **2.7 OE Operations**

### **2.7.1 Intrusive Activities**

The effort at the M2 Parcel is a removal action involving the geophysical investigation of the entire area and removal of all target anomalies. Although OE are not expected to be found below 12 – 18 inches, the statement of work for the M2 Parcel requires that sampling continue to the depth required to identify it. The following procedures describe the specific activities required, including daily briefing/verification; exclusion zone establishment; anomaly acquisition;

excavation; located UXO procedures; handling, transportation, and storage of UXO/OE; disposition of located anomalies; demobilization; and data collection and recording.

### 2.7.1.1 Daily Briefing/Verification

2.7.1.1.1 The Senior UXO Supervisor will receive a package for the target anomalies within each grid and verify that CEHNC Safety Representative and Fort McClellan Transition Force Operations received an exclusion zone map at least 24 hours prior to intrusive activities. An area map will be submitted to Transition Force Operations on Thursday of each week for the following weeks proposed operations. The Senior UXO Supervisor will assign selected anomalies to each of the UXO teams for intrusive investigation and will also provide a daily briefing to the intrusive teams which includes the following:

- Review emergency procedures;
- Discuss previously located UXO; and
- Describe any known utilities.

2.7.1.1.2 The Senior UXO Supervisor will complete the top portion of the Intrusive Activities Checklist for each area and transfer it to the assigned UXO Supervisor for completion. The UXO Supervisor is responsible for completing the Intrusive Activities Checklist received from the Senior UXO Supervisor and will brief the UXO team on potential hazards identified in their particular area. The checklist includes the following activities:

- Verify dig permit has been issued.
- Verify that roads have been closed.
- Verify exclusion zone boundaries.
- Complete Health and Safety and Intrusive Equipment Checklists of the UXO Demolition Procedures (see Site-Wide WP, Attachment 2-1).
- Ensure the Foster Wheeler Environmental Command Center has completed the notification checklist:
  - CEHNC Safety Representative;
  - Fort McClellan Transition Force Operations;
  - Medical Facility;
  - Fire Department; and
  - Security Department.
- Perform daily tailgate safety briefing:
  - Designate emergency vehicles;

- Designate emergency evacuation route; and
- Review emergency response procedures.
  
- Verify daily equipment inspection.
- Verify with the appropriate utility companies that underground utilities have been secured.
- Verify with designated personnel that the area has been evacuated.
- Notify the Foster Wheeler Environmental Command Center that intrusive investigations are commencing.
- Start intrusive activities.
- Request the UXOSO/QCS to check area.
- Stop intrusive activities.
- Request CEHNC conduct a QA check (if required).
- Verify that the Foster Wheeler Environmental Command Center notifies the following upon completion of the days activities:
  - CEHNC Safety Representative;
  - Fort McClellan Transition Force Operations;
  - Medical Facility;
  - Fire Department; and
  - Security Department.
- Fill all dig sites and smooth area.
- Demobilize the area.
- Provide packet to the UXOSO/QCS for database entry.
  - The UXOSO/QCS is responsible for conducting daily inspections of each intrusive site to ensure compliance with the Site-Specific Safety and Health Plan (SSHP). The UXOSO/QCS has stop work authority in case of imminent safety hazards or potentially dangerous situations. After stopping work, he will immediately notify the SUXOS. Additionally, the UXOSO/QCS will conduct QC checks at the completion of each grid and will escort CEHNC personnel assigned for quality assurance inspections.

### 2.7.1.2 Exclusion Zone Establishment

2.7.1.2.1 An exclusion zone will be established around each grid prior to conducting intrusive activities. The exclusion zone will be based on the most probable munition to be encountered. The MPM for the M2 parcel has been determined by the CEHNC to be the M15 WP hand

grenade and the minimum separation distance (MSD) for intrusive activities at the M2 Parcel will be 200 feet. The MPM has a maximum fragment range of 517 feet. The 1 in 600 (one hazardous fragment/600 square feet) for this item is an MSD of 200 feet. The only evidence that this item may be present within the M2 Parcel was the discovery of the remains of a WP grenade top found approximately 300 feet north of the M2 Parcel. However, approximately 30 acres of grids have been cleared in this area and no other evidence of WP was discovered. The MSD for the M2 Parcel was reduced to 200 feet, the reduced distance being based on the 1 in 600 feet for the M15 white phosphorous hand grenade. An MSD of 200 ft will be observed between UXO teams. If any munition, other than those identified in Table 1-1 Potential OE at M2 Parcel, is discovered, all intrusive work will cease and the MSD and/or engineering controls will be reevaluated. Appendix D contains the memorandum from CEHNC specifying the MPM and a memorandum from the CEHNC Safety Group granting an exception to the 200 feet exclusion zone.

2.7.1.2.2 Road barricades will be utilized to block road access to the M2 parcel site. Warning tape will restrict immediate access to the M2 Parcel site during intrusive activities. Evacuation of the public buildings south of the southern border (Museum of Natural History and the Museum of World History) and temporary rerouting of vehicle traffic along the western border will be required when performing intrusive operations along these borders. All evacuations and road closings will be coordinated with the local authorities.

2.7.1.2.3 Exclusion zones will remain in effect until notification by the Foster Wheeler Environmental command center to CEHNC Safety Representative and Fort McClellan Transition Force Operations upon completion of intrusive activities. Special access within the exclusion zone will be controlled through the sign-in/sign-out log (field log). There will be no intrusive activities when non-UXO personnel are within the exclusion zone. A minimum distance of 200 feet should be maintained between each UXO team.

### 2.7.1.3 Anomaly Acquisition

Suspected subsurface UXO locations (geophysical anomalies) will be presented as coordinate locations in the intrusive package provided to the SUXOS. The SUXOS will provide the coordinates to each team for anomaly acquisition. The designated anomalies will be acquired and marked with pin flags using the USRADS positioning system. The operator will locate the plotted anomaly position and place a numbered pin flag corresponding to the anomaly identification located at that position. The reacquisition will be accomplished prior to assigning a UXO Team to intrusively investigate. A Standard Operating Procedure (SOP) for anomaly acquisition is under development.

### 2.7.1.4 Excavation

2.7.1.4.1 Each selected anomaly will be investigated and recorded. As it is expected that all target anomalies will be within the top 12-18 inches of the surface, all excavations will be performed manually. Earth-moving machinery is not planned for use at the M2 Parcel. During excavation operations, only UXO personnel necessary for the operation will be within the

exclusion zone. Excavation and trenching shall comply with the provisions of 29 Code of Federal Regulations (CFR) 1926, Subpart P.

2.7.1.4.2 If recovered UXO/OE is identified as Recovered Chemical Warfare Material all intrusive activities will cease, the site will be evacuated in an upwind direction, and secured. The CEHNC Safety Representative and Fort McClellan Transition Force Operations will be notified and disposition instructions requested.

2.7.1.4.3 There is a potential that during the intrusive investigation, hazardous materials other than UXO will be located, including underground utilities, chemicals, and other hazards.

- **Underground Utilities** - In an attempt to avoid underground utilities, a dig permit will be obtained from the appropriate utility companies for each area that will be intrusively investigated. The Schonstedt locator will be used during intrusive activities to locate energized power lines. Indication from the Schonstedt locator or uncovering a tell-tale tape will require immediate suspension of intrusive activities.
- **Chemicals** - During intrusive activities, locating industrial type chemicals is a possibility. The M2 parcel site has been investigated for chemical contamination by the army's Hazardous, Toxic, and Radioactive Waste (HTRW) contractor and the indication from sampling several sites on the parcel is that there are no signs of hazardous chemical contamination. However, if any evidence of chemical contamination is detected, all intrusive activities will cease and the Foster Wheeler Environmental command center will notify CEHNC Safety Representative and Fort McClellan Transition Force Operations. The designated Fort McClellan Transition Force Operations environmental response team will evaluate the situation and perform first response functions as required. Foster Wheeler Environmental UXO personnel will escort all personnel entering the exclusion zone. Other site personnel will assist response personnel as required. The evacuated area will be evaluated by the SUXOS, CEHNC Safety Representative and the UXOSO/QCS. Operations will continue only when it is safe to proceed.
- **Other Hazards** - In the event that sealed drums, contaminated soils, or other suspect materials or conditions are encountered during the intrusive investigation that would indicate a potential health or safety hazard, work efforts will stop and the Fort McClellan environmental response team will be notified. Work will not continue until an evaluation by the SUXOS and UXOSO/QCS is made. Operations will continue only when it is safe to proceed.

#### 2.7.1.5 Located OE/UXO Procedures

2.7.1.5.1 The clear preference at the M2 Parcel when encountering UXO is to destroy the item in place using explosives (Blow-in-Place [BIP]). Standard procedures will be to dispose of all located UXO items daily between 1430 and 1615 hours. In the event that located UXO cannot be disposed of in the location found and on the day the item was located the item will be handled as (1) Ordnance Safe to Transport, (2) Ordnance Not Safe to Transport and the area can

withstand a high order detonation, or (3) Ordnance Not Safe to Transport and the area cannot withstand a high order detonation. These conditions are described below:

- **Ordnance Safe to Transport** - These ordnance items will be relocated to a designated area within the grid that can withstand a high order detonation and disposal.
- **Ordnance Not Safe to Transport and the area can withstand a high order detonation** – These ordnance items will be disposed of in place by high order detonation. Engineering controls will be instituted, if required. The SUXOS will notify CEHNC Safety Representative and Fort McClellan Transition Force Operations if these ordnance items are encountered. These items will be marked and left in place until site conditions permit disposal operations, in accordance with procedures outlined in sec. 2.7.2, Explosive Disposal Operations.
- **Ordnance Not Safe to Transport and the area cannot withstand a high order detonation** - These ordnance items will be prominently marked and the area evacuated to the distances advised in EODB 60A-1-1-4. CEHNC and Fort McClellan Transition Force Operations will be notified and may request Army EOD assistance.

2.7.1.5.2 The following procedures will be initiated when potential UXO items are located:

- UXO team locating potential UXO:
  - Notify SUXOS and the Foster Wheeler Environmental command center of the anomaly where potential UXO is located.
  - Mark the item for disposal at the end of the days operation.
  - At the end of each days operations, evacuate personnel in accordance with the safe separation distance of 200 ft based on the MPM established for the M2 Parcel. However, if the item is other than the practice items described in sec. 1.0 of this work plan, then the evacuation distance will be the actual fragmentation distance of the item encountered per EODB 60A-1-1-4 or IAW distance provided by CEHNC.
  - Identify item, measure length, width and determine condition. Complete UXO Acquisition and Accountability Log (Attachment 2-1).
- Senior UXO Supervisor:
  - Verify UXO item identification;
  - Document anomaly number and location;
  - Photograph UXO item; and
  - Schedule disposal operations for 1430.

- Foster Wheeler Environmental command center:
  - Notify CEHNC Safety Representative and Fort McClellan Transition Force Operations; and
  - Request fire, medical, and security teams to be located as necessary at the edge of the new exclusion zone.

### 2.7.1.6 Handling, Transportation, and Storage of UXO/OE

All handling of UXO/OE will be in accordance with accepted safety precautions found in AR 385-64, ETL-385-1-1, EODB 60A-1-1-31 and EODB 60A-1-1-22. All located UXO should be disposed of in the location found and transportation should not be required. Vehicles used to transport will meet the requirements of 49 CFR 100-199 for transporting explosive materials.

### 2.7.1.7 Disposition of Located Anomalies

2.5.1.7.1 UXO that can be safely blown in place will be disposed on-site by Foster Wheeler Environmental UXO personnel or its major subcontractor, USA Environmental. UXO that is unsafe to move and the area cannot withstand a detonation will be appropriately marked and the area evacuated. The CEHNC Safety Representative will be notified and Army EOD assistance will be requested to eliminate the hazard.

2.7.1.7.2 Non-UXO/OE items will be categorized and disposed as outlined below:

- Non-Ordnance and Explosives Metal Debris – If visual inspection determines the item does not contain waste residue, the item is non-hazardous scrap metal and will be collected and stored in a locked container within the M2 Parcel for later recycling (see sec. 2.8).
- Ordnance and Explosive Metal Debris – If visual inspection determines the item was not in contact with energetic materials, the item is non-hazardous scrap metal and will be collected and stored in a locked container within the M2 Parcel for later recycling (see sec. 2.8).
- Ordnance and Explosives – If visual inspection determines the item was in direct contact with energetic materials (explosives/pyrotechnics) the item will be vented or flashed, containerized and managed in the OE scrap staging area (see sec. 2.8 OE Scrap Management) until final disposition. Recovered UXO/OE will be tagged and tracked from discovery until final disposition. Each aspect of UXO/OE handling and disposal will be documented using the UXO Acquisition and Accountability Log.

### 2.7.1.8 Demobilization

Following intrusive clearance within the M2 Parcel, all signs and barricades will be removed and the excavated areas will be back-filled. Backfill material will consist of native soil from the excavation.

### 2.7.2 Explosive Disposal Operations

This section provides guidance for the safe disposal of recovered OE/UXO.

#### 2.7.2.1 Safety Precautions

The following specific safety precautions for disposal operations will be observed:

- The two-man rule will be in effect in all disposal operations. In addition, a third person (safety) shall be available near the disposal site to act as a safety observer and communications watch in the event of an accident.
- Loose initiating explosives include lead azide, mercury fulminate, lead styphnate, and tetracene. These explosives manifest extreme sensitivity to friction, heat, and impact. Extra precautions may be required when handling these types of explosives. Keep initiating explosives in a water-wet condition at all times until ready for final preparation for detonation. The sensitivity of these explosives is greatly increased when dry.
- Demolition operations will not be conducted during dust, wind, rain, snow, electrical storms or when cloud cover is less than 200 meters.
- Only condition code “A” or “C” military explosive items, or commercial explosives within their shelf life limit, shall be used as donor explosives for disposal operations.
- Exercise extreme care in handling and preparing high explosives for detonation. They are subject to detonation by heat, shock, or friction.
- Do not pack bomb fuze wells with explosives unless it can be positively confirmed that the fuze well does not contain any fuze components.
- Photo flash bombs must be handled with the same care as black powder filled munitions.
- UXO containing white phosphorous shall not be detonated into the ground. The UXO shall be counter-charged on the bottom center line (CCBC) when possible.
- Carry blasting caps in approved containers and keep them out of the direct rays of the sun, and located at least 25 feet from other explosives, until they are needed for priming.
- Do not handle, use, or remain near explosives during the approach or progress of an electrical storm. All persons should retire to a place of safety.

- Do not use explosives or accessory equipment that are obviously deteriorated or damaged. They may cause a premature detonation or fail completely.
- Always point the explosive end of blasting caps, detonators, and explosive devices away from the body during handling.
- Use only standard blasting caps of at least the equivalent of a commercial No. 8 blasting cap.
- Use electric blasting caps of the same manufacturer for each demolition shot involving more than one cap.
- Do not bury blasting caps. Use detonating cord to position blasting caps above the ground. Buried blasting caps are subject to unobserved pressures and movement, which could lead to premature firing or misfires.
- Test electric blasting caps for continuity at least 50 feet downwind from any other explosives prior to connecting them to the firing circuit. Upon completion of testing, the lead wires will be short-circuited by twisting the bare ends of the wires together. The wires will remain shunted until ready to be connected to the firing circuit.
- In the event of a misfire when disposing of explosives by detonation, do not approach the disposal site for at least thirty minutes after the expected detonation time when firing electrically. When conducting non-electric procedures, the wait time shall be one hour from the expected time of detonation.
- A post-search of the detonation site shall be conducted to assure complete disposal was accomplished.
- If the situation dictates, protective measures to reduce shock, blast, and fragmentation shall be taken. All exclusion zones for UXO operations will be in accordance with CEHNC directives. For this project, based on the MPM (M15 white phosphorous hand grenade) the exclusion zone has been determined by the CEHNC to be 200 feet (see Appendix D). This exclusion zone will be reevaluated if items other than the items described in sec. 1.0 of this work plan are discovered.
- Items with lugs, strong backs, tail plate sections, etc., should be oriented away from personnel locations as fragmentation from these items tends to travel farther than normal. Consideration should be given to tamping the UXO to control fragments, if the situation warrants. Fragments shall be minimized not only to protect personnel but also property, such as buildings, trees, etc.
- Open burning of explosives and smokeless powder or chemical decomposition of explosives shall not be accomplished without approval of the contracting officer.
- Do not inhale the smoke or fumes of burning pyrotechnic or incendiary materials. The fumes and dust from many of these materials are irritating and/or toxic if inhaled.
- Do not use water on incendiary fires. Water may induce a violent reaction or be completely ineffective, depending on the mixture.

- Do not handle white phosphorous without proper protection including a welders glove and face shield. If encountered, cover smoking white phosphorous with sand and avoid further contact.
- Anticipate a high order detonation when burning pyrotechnic or incendiary-loaded UXO. Safety measures for personnel and property must be based upon this possibility.
- Each UXO disposal team will carry water sprayers in the event a small brush fire should erupt due to detonation operations. Each team will have two five-gallon containers of water with them at all times during demolition operations. Each vehicle will be equipped with a fire extinguisher.
- Inert ordnance will not be disposed of or sold for scrap until the internal fillers have been exposed and unconfined. Heat generated during a reclamation operation can cause the inert filler, moisture, or air to expand and burst the sealed casings. Venting or exposure may be accomplished in any way necessary to preclude rupture due to pressure from being confined.

### 2.7.2.2 Handling, Transportation, and Storage

2.7.2.2.1 All handling of UXO/OE and donor explosives will be in accordance with accepted safety precautions found in AR 385-64, ETL-385-1-1, TM 60A-1-1-31, TM 60A-1-1-22 and state requirements. Prior to the actual handling operations, the exclusion zone will be adjusted for the actual fragmentation range of the OE/UXO encountered.

2.7.2.2.2 For BIP operations, donor explosives will be transported from the magazine area, Fort McClellan Ammunition Supply Point (ASP), to the M2 Parcel via motor vehicle. All motor vehicle transportation of explosive materials will be in accordance with the provisions of 49 CFR Parts 100 to 199, state and local requirements. Blasting caps and/or detonators may be transported in the same vehicle as long as they are packed in a MK 663 MOD 0 container or equivalent container (DA PAM 385-64) and secured away from other items. Prior to transport from the site and upon completion of operations, the Foster Wheeler Environmental command center will notify the Fire Department and Security/Police of the expected transport time and route of travel to the magazine area.

2.7.2.2.3 Fort McClellan has an ASP operated by the Alabama National Guard (ANG). Figure 1-1 shows the location of the ASP. Within the ASP, Magazine 10 will be provided Foster Wheeler Environmental to store explosives required for the M2 Parcel project. Physical custody will be maintained by the ANG. Foster Wheeler Environmental will perform weekly inventories and maintain all records of usage. The explosives material will be purchased by Foster Wheeler Environmental for the use of Foster Wheeler Environmental. Magazine storage sites are approved by Department of Defense Explosives Safety Board, certified by the installation/state safety manager, and approved by the site commander. Explosive Storage Limits and License certificates for the magazine including QD's are included in Appendix E. No recovered UXO will be stored in the magazine. All recovered UXO will be disposed of at the M2 Parcel site. Refer to the Explosives Safety Submission for additional and more specific information concerning the types, quantities and hazard classifications for stored explosives.

### 2.7.2.3 OE/Ordnance and Explosive Waste (OEW) Disposal Procedures

2.7.2.3.1 Open Detonation will be the method of disposal used at the M2 Parcel. This method uses a donor explosive charge placed in contact with the ordnance, and when detonated results in a sympathetic detonation of the energetic material. Specific guidance on donor charge placement for the specific ordnance type encountered is contained in TM 60A-1-1-31.

2.7.2.3.2 If ordnance is discovered which contains white phosphorous (WP), and conditions permit, it shall be CCBC to disperse the WP in the air and complete combustion. Care must be taken when returning to the disposal site after detonation to ensure that all WP was consumed. Do not approach the area until all smoke has cleared and the SUXOS has declared the area safe. Protective equipment including face shield, leather gloves and flame retardant clothing such as the type worn by welders will be available and worn when handling suspect WP ordnance. Water and sand will be readily available when handling suspect WP ordnance.

### 2.7.2.4 Blow In Place (BIP) Operations

2.7.2.4.1 When UXO is discovered that cannot be safely moved, and the area can withstand a high order detonation, then the item will be blown in place. Demolition procedures will be conducted after authorization has been granted by CEHNC and after:

- Appropriate exclusion zone for the UXO item encountered has been established and evacuation of the area has been confirmed.
- Emergency support services: fire, security, and medical have been notified and are standing by.
- Adequate protective works/engineering controls to reduce the damage caused by the detonation are in place, if required.

2.7.2.4.2 Every effort should be made to establish the firing point in a location where the SUXOS can visually observe the entire hazard area. All detonations will be fired by electric initiation so positive control can be maintained up to the point of detonation. The primary firing system for the M2 Parcel project will be the non-electric (NONEL) system.

### 2.7.2.5 Communications

Communications equipment consisting of cellular phone and a hand held transceiver will be available for emergency communications with fire and medical support activities. Radio and cellular phone communications will be terminated whenever blasting caps are exposed.

### 2.7.2.6 Safety Signals

Explosive disposal procedures shall not be initiated until the Bravo Flag (RED Flag) is prominently displayed from a position that is visible from all approaches to the area, and the following audible warning signals are sounded:

- SUXOS/UXOSO will request a 5-minute window through the CEHNC Safety Specialist (SS).
- CEHNC SS will then notify the Transition Force Base Operations that there will be x# of demolition shots within the next 5 min.
- When the TF Base Operations approves the 5-minute window, the CEHNC SS will notify the SUXOS/UXOSO that they have their 5-minute window.
- The SUXOS/UXOSO will then give a 1-minute notification to all teams over the radio.
- Prior to firing the shot, 3 fire-in-the-hole warnings, voice and radio, will be given.
- 

#### 2.7.2.7 Vehicles

There shall be a sufficient number of vehicles at the site to provide seating equipped with seat belts for each member of the Disposal Team. The vehicle will be parked in a protected area free of vegetation, facing away from the detonation site with the keys left in the ignition. The vehicles designated to transport explosives shall not be used to transport passengers when explosives are on board and must comply with the provisions of 49 CFR 177.835 (e) and (f). Smoking, or flame producing devices are not permitted within 50 ft of the vehicle transporting explosives. The vehicle operator will avoid driving in areas of dry vegetation that could possibly be ignited by the heat generated from the catalytic converter.

#### 2.7.2.8 Weather and Environmental Considerations

Disposal operations will only be conducted during daylight hours. Vegetation including dry grass, leaves, and other combustible materials shall be removed within a radius of 500 feet or the firebrand distance, whichever is greater around the disposal site. Prior to commencing disposal operations the SUXOS will obtain a local weather report. Disposal operations will not commence during periods of heavy, low total overcast, or during electrical storms.

#### 2.7.2.9 Emergency Medical Support

Ambulance service is available by calling the Anniston Police Department (256-237-8572). A complete first aid kit will be maintained on site by a person trained in cardiopulmonary resuscitation (CPR) and first aid procedures.

#### 2.7.2.10 Fire Support

The Fire Department (256-231-7644) will be notified when disposal operations are to be performed. When the fire hazard is high due to dry conditions, disposal operations will not commence unless mobile fire-fighting equipment is standing by in a safe location, or Fire Department support can reach the disposal site within 5 minutes. Upon completion of disposal operations the site will not be secured if any probability of fire exists.

#### 2.7.2.11 Two-Man Rule

The Two-Man Rule is a concept of failsafe, where two knowledgeable individuals perform potentially hazardous operations where each is the safety for the other. The Two-Man Rule shall apply whenever explosives are handled, transported or during disposal operations. No one will handle or assemble explosive components alone.

#### 2.7.2.12 Personnel Protective Equipment

Operations described herein will be conducted in Level "D" Personnel Protective Clothing, to include non-static producing clothing, gloves, and safety glasses.

#### 2.7.2.13 Engineering Controls

Engineering controls or protective works will be employed where required to minimize the damage from blow in place operations. These controls may consist of earthen works, sandbags, trenching, buttressing, taping of glass, mounding, flooding, and venting to reduce the effects of detonations.

#### 2.7.2.14 Recordkeeping

The SUXOS, or his delegate, the UXO Disposal Supervisor/Demolition Team Leader, will complete the UXO Acquisition and Accountability Log (Attachment 2-1) which tracks the OE/UXO from cradle to grave, Explosive Disposal Activities Checklist (Attachment 2-2), and the Explosive Disposal Log (Attachment 2-3).

#### 2.7.2.15 Electrical Firing Demolition Procedures

- Preparation of donor explosives. The primary donor explosives for use in disposing OE items will be the one pound pentolite booster, Jet Perforators, detonating cord and electrical blasting caps.
- One Pound Pentolite Booster-Insert 80 grain detonating cord into the detonator well all the way through and back through other hole and tie a over hand knot to secure it from coming out. When using more than one booster insert detonating cord through each of the boosters detonator well and secure to keep them from sliding along the detonating cord.
- Jet Perforator-Using the detonating cord clip secure detonating cord to the Jet Perforator. Place the Jet Perforator on the OE item using tape or other suitable methods to prevent Jet perforator from moving.

#### 2.7.2.15.1 Preparation and Priming, Electrical Firing System

2.7.2.15.1.1 An electric firing system consist of two electric blasting caps, firing wire and a remote controlled firing device. The methods and sequence of operations of electric priming are described below.

2.7.2.15.1.2 Telephone or radio communications will be established with emergency response personnel. No radio transmissions will take place during positioning or connecting of electrical initiating devices.

2.7.2.15.1.3 Control of the site must be maintained during disposal operations. All personnel who are not essential to disposal operations must evacuate to a safe area. Access roads which enter the blast area will be blocked during explosive disposal operations to ensure that unsuspecting individuals are not placed in jeopardy by the explosion.

2.7.2.15.1.4 The Senior UXO Supervisor will assure the area is clear of personnel and equipment prior to permitting attachment of the initiation devices to the priming charge.

2.7.2.15.1.5 The Senior UXO Supervisor will conduct a 360 degree visual search for aircraft, boats or personnel near the exclusion before initiating any explosives.

2.7.2.15.1.6 Prior to conducting an On-site disposal operations, safety briefings will be conducted which will include, as a minimum, phases of the operation, review of explosive handling and EMR precautions, location of safe area, emergency notification procedures, site specific characteristics, type of OEW/UXO being destroyed, placement and quantity of counter charge, misfire procedures, post clean up of site, care and handling of explosive materials, personal hygiene, two man rule, potential trip/fall hazards, location of On-Site vehicle, wind direction, location of first aid kit and fire extinguisher.

2.7.2.15.1.7 A minimum of two qualified personnel, one of which will be the assigned UXO Supervisor/Demolition Team Leader, will conduct disposal operations. Control initiation devices will remain with the supervisor until attachment to the firing circuit.

2.7.2.15.1.8 Positive control is required, initiation devices will be limited to those requiring electrical current.

- Prepare and place all explosive charges as prescribed above.
- Locate a safe position for receiver, cut off a length of wire (less than 100 feet) that will reach receiver and charges.
- Conduct a continuity check of the wire with a galvanometer. Twist free ends of wire together to prevent an electric charge from building up in firing wire.
- Test each blasting cap with a galvanometer and twist free ends of cap lead wires together to prevent electric charge build-up in lead wires.

- Connect blasting caps in a parallel circuit and connect to extension wires.
- Connect extension wires to receiver.
- Secure caps onto detonating cord.
- Retreat to safe area.
- Senior UXO Supervisor verify that exclusion zone is clear.
- Warning Signal - A one minute series of long audible signals 5 minutes prior to blast signal.
- The SUXOS will give a five minute warning on the hand held radio.
- Blast Signal - A series of short audible signals 1 minute prior to the detonation.
- The SUXOS will give a one minute warning on the hand held radio.
- Arm command firing device.
- UXO Demolition Team Leader give three loud fire in the hole.
- Sound siren.
- SUXOS give fire command on the hand held radio.
- SUXOS gives permission to fire shot.
- Demolition Team Leader fire demolition shot.

#### 2.7.2.15.2 Electric Misfire Procedures

A thorough check of all equipment, firing wire and detonators will prevent most misfire situations. In order to prevent electric misfires, one technician must be responsible for all electrical wiring in the circuit. If a misfire does occur, it must be cleared with extreme caution. One technician will investigate the misfire and correct the situation.

- Check connections and make a second attempt to initiate charge.
- If unsuccessful, disconnect and connect to another blasting machine (if available) and attempt to initiate charge.
- If unsuccessful, disconnect power source and shunt the firing wires.
- Wait 1 hour from the last initiation attempt.
- After the wait time has expired a designated technician will proceed down range to inspect the firing system; a safety observer must watch from a safe area.
- Connect a new electric firing system and prime the charge without disturbing the original firing system.
- Follow normal procedures for initiating charges.

### 2.7.2.15.3 NONEL Firing Procedures

The NONEL Firing System utilized at Fort McClellan by Foster Wheeler Environmental and sub-contractors will be the Shock Tube Firing System. The shock tube is a thin plastic tube of extruded polymer with a layer of special explosive material deposited on its interior surface. This special explosive, which is normally contained within the plastic tubing, propagates a detonation wave from the initiating end (safe zone) to the demo area.

Shock tube provides the instantaneous action of electric initiation without the risk of accidental initiation of an electrical blasting cap (and the charge) by radio transmitters in the area. The system also reduces the amount of detonating cord required which helps reduce range fires caused by the detonating cord. The NONEL system can be initiated electrically if desired.

- Lay out required length of shock tube to reach from demo site to initiating area.
- At UXO, place perforator or booster attached to 2-3' detonating cord in position- secure with sand bags.
- At UXO attach detonating cord to shock tube lead line with cap on end and tape connection.
- NOTE!!! The lead line could run straight to the safe area or to a bunch block if multiple shots are being fired. If multiple shots are being fired the shock tube lead line would run from the safe area to a bunch block to additional lead lines to additional shots. The procedure is illustrated in the SOP for UXO Disposal Operations.
- Check system when complete and depart for safe area (firing point).
- Attach shock tube to firing device.
- Ensure area is clear, give verbal warning and activate firing device.

### 2.7.2.15.4 NONEL Misfire Procedures

- The most common cause of a misfire in a shock tube firing system is the initiating element (igniter).
- If two or three retries with the igniter does not initiate the shock tube, cut the shock tube, replace the igniter with a new one and repeat the firing procedure.
- If the igniter appears to have fired (primer pops and smokes) but the charge did not fire, cut a one foot section from the shock tube lead in starting 6" from the igniter. Hold the one foot piece of shock tube so that one end is over the palm of your hand and gently blow through the other end. If a fine powder is blown from the shock tube, it has not fired. In this case install a new igniter and repeat the firing procedure.
- If the igniter functioned properly and no fine powder was blown from the shock tube, then the suspect cause would be the non-electric blasting cap at the OE side of the shock tube.
- Wait one hour.

- After the one hour waiting period has passed go to the OE end of the shock tube. Check each component in the train until the cause of the failure is identified. Replace the component that failed. Lay out another firing system and repeat the firing procedure.

#### 2.7.2.15.5 Post Demolition Procedures

- At the conclusion of detonation and after a five minute wait time, the UXO Supervisor/Demolition Team Leader will inspect the site prior to allowing other personnel to enter the blast area. UXO Specialists will conduct a shoulder to shoulder sweep of the detonation site to gather fragments and explosive residue if present. Intact ordnance items that failed to detonate will be counter-charged and blown in place. Explosive residue will be collected and detonated. Metal fragments will be examined to ensure complete detonation of explosive material.
- An all clear signal, consisting of a prolonged audible signal, will be given following the inspection of the blast area.

## 2.8 OE Scrap Management

### 2.8.1 Purpose And Scope

This plan describes the methods and procedures to be used for collection, inspection, segregation, marking, transportation, processing and disposal of OE scrap located during the M2 Parcel removal activities. The objectives for this plan are to perform these tasks in a safe and environmentally sound way. Some of the materials have no inherent value and therefore are waste, others are recyclable property of the Department of Defense, and will be processed for sale as scrap. The principal categories of materials will be metal parts associated with military munitions, including practice munitions, targets, and components of munitions systems; concrete, bricks and construction rubble; and tires used for marking targets.

### 2.8.2 Applicable Regulations

Disposal of recoverable and recyclable materials which are the property of the Department of Defense is generally governed by the Defense Reutilization and Marketing Service (DRMS). DOD 4160.21M provides guidelines on the classification, and procedures for the disposal of AEDA material. Where the disposal of materials with limited or minimal value is most economically and practically performed by other than sale through DRMS, such as the disposal of many waste materials, the disposal may be included as part of the service provided by the contractor collecting and processing the material. One such procedure is for contractors to sell or dispose of marginal materials as an offset to the cost of the contract. DoD has instituted requirements that all waste materials which are gleaned from ranges, must be examined and certified as safe when there is no danger of detonation or explosive reaction. The certification must be performed by individuals who have defined training and experience, and are therefore qualified to determine that the items are safe.

### 2.8.3 DRMS Restrictions

The DRMS has developed special procedures to limit the possibility that ammunition and dangerous articles can be contained in other materials sold by the DRMS to the general public, and the Department of Defense is preparing new regulations to regulate the inspection, transportation and disposal of military munitions related scrap materials. The procedures described herein will fulfill the intent of those restrictions. The procedures outlined below used to certify that disposed materials do not contain hazardous substances, including explosives, are equivalent to those required by DRMS.

### 2.8.4 Definitions

#### 2.8.4.1 Ammunition, Explosives And Other Dangerous Articles (AEDA) Residue

Any explosive or chemical-based munitions, such as small and large caliber ammunition, aerial bombs, grenades, mines, missiles, and rockets. AEDA residue consists of fired cartridge cases, shell fragments, packing material, wooden boxes, metal cans and fiber containers.

#### 2.8.4.2 Construction and Building Demolition Wastes

All materials from demolition of military structures which were constructed for support of military training activities.

#### 2.8.4.3 Trash and Garbage Waste

All materials generated as a result of activities to remove residual materials from the site.

#### 2.8.4.4 Expended Ordnance

A munition that has functioned as designed, leaving the shell or container behind. This shell or container may or may not contain explosive/pyrotechnic/toxic residue. This material would not be considered inert, and could not be salvaged as scrap without appropriate visual inspection, sampling, and/or treatment.

#### 2.8.4.5 Explosive Ordnance Disposal (EOD) Personnel

Active duty military personnel who have completed the training course at the U.S. Naval School, Explosive Ordnance Disposal (EOD), Indian Head, Maryland and are currently assigned to a military EOD unit.

#### 2.8.4.6 Foster Wheeler Environmental Command Center

A designated location staffed by personnel to relay and control all communications/activities of field personnel and other units.

#### 2.8.4.7 Inert Ordnance

Ordnance that never contained explosives (e.g., munitions manufactured for classroom instruction).

#### 2.8.4.8 Ordnance and Explosives

Bombs, guided and ballistic missiles, artillery, mortars, rocket ammunition, small arms ammunition, antipersonnel and antitank mines, demolition charges, pyrotechnics, grenades, sea mines, torpedoes, depth charges, containerized and non-containerized high explosives and propellants, depleted uranium rounds, military chemical agents, and all similar components related to munitions that were designed to cause damage to personnel or material through explosive force, incendiary action, or toxic effects. Non-containerized high explosives, propellants, or soils contaminated with explosive constituents are considered explosives if the concentration of explosive material is 10 percent or higher.

#### 2.8.4.9 Ordnance Related Materials

These materials include the following:

- All expended, inert, practice and unexploded ordnance on Fort McClellan, including high explosive and practice munitions, components of military munitions, including tail fins, guidance mechanism, mounting and dispensing hardware, ammunition and ammunition parts;
- Target Materials, including metal and other objects which were used as targets; and
- Target Marking Materials - Principally used automotive tires.

#### 2.8.4.10 Practice Ordnance

Munitions that demonstrate similar characteristics as their high explosive counterparts, and may or may not contain pyrotechnic, explosive, or chemical (e.g., titanium tetrachloride) spotting charges.

#### 2.8.4.11 Trash and Garbage Waste

All materials generated as a result of activities to remove residual materials from the site.

#### 2.8.4.12 Unexploded Ordnance (UXO)

Military munitions that have been primed, fuzed, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material, and remain unexploded either by malfunction, design, or any other cause.

#### 2.8.4.13 UXO Personnel

Any former member of the United States Armed Forces who has graduated from the U.S. Naval School, Explosive Ordnance Disposal, Indian Head, Maryland or the U.S. Army Bomb Disposal School, Aberdeen Proving Ground, Maryland, served in EOD billets and assignments while on active military duty, and now works as a civilian specialist with UXO items/materials.

#### 2.8.5 Procedures

##### 2.8.5.1 Field Collection, Segregation and Inspection of Ordnance Related Waste Materials

Materials which are to be removed from the M2 Parcel will be found randomly throughout the site.

###### 2.8.5.1.1 Grid Clearance Operations

UXO Clearance Teams will locate, identify and mark ordnance related materials where they are located. Clearly identifiable inert materials will be consolidated in designated locations on each marked grid. Other waste materials not associated with ordnance will be collected in a separate location for appropriate disposal. Suspected dangerous items will be inspected and classified as safe to move or not safe to move by a qualified UXO Specialist. These items will be handled in accordance with appropriate, approved procedures to assure the safety of workers. As described in the OE Operations sec. 2.7, items which are not safe to move will be marked for later explosive detonation in place (Blow in Place). Items which are safe to move will be relocated by a UXO Specialist using approved procedures to a designated staging area within the M2 Parcel for explosive detonation to assure that no explosive materials remain.

###### 2.8.5.1.2 Consolidation Operations

The leader of the UXO Removal Team will re-inspect the clearly inert items and mark each item in accordance with approved general marking procedures. These items will be separated into categories of like items, loaded into movable containers, and transported to the M2 Parcel on-site staging area.

###### 2.8.5.1.3 Inerting Operations

Items which are not safe to move will be Blown in Place. Procedures are described in sec. 2.7 OE Operations. Residual materials from Blow in Place operations are inspected, and if found to be free of explosive contamination are removed to the on-site staging area for re-inspection, certification, packaging and disposal as inert ordnance items or scrap.

#### 2.8.5.1.4 Staging Area Operations

2.8.5.1.4.1 In the staging area, the designated UXO specialist will remove the items from the containers transported from the grids. He will re-inspect each item to assure that inert items are certifiably inert, and then segregate the items into Group 1a or 1b as defined below:

- Group 1 includes munitions components or casings that previously contained explosives or related materials, or property that does not contain items of a dangerous nature. Group 1 material can be certified inert and/or free of explosives or other related materials such as shrapnel, casings, cartridge cases, targets, bomb fins, or certain expended ordnance.
- Group 1a. Firing range expended small arms cartridge cases and inert metals gleaned from range clean up. Metals gleaned include material for which the only use is for its basic material content (e.g.: clean shrapnel, target metal, etc.) and does not include material with any residual utility or capability. Such material is eligible under the Resource Recovery and Recycling Program for disposition by a Qualified Recycling Program (QRP) in accordance with DoD 7514.1, Pollution Prevention. DoD components may exercise direct sale authority for firing range expended small arms cartridge cases provided they are crushed, shredded or otherwise rendered unusable for their intended purpose prior to release from DoD control.
- Group 1b. Any certifiable material or item not meeting the criteria in 1a above. A determination shall be made as to whether the material/item requires demilitarization (see DoD 4160.21-M-1). Damage sustained does not necessarily constitute demilitarization. Destruction shall, at a minimum, satisfy the provisions of the DoD 4160.21-M-1. This material is not eligible for a QRP.

2.8.5.1.4.2 The segregated items will be placed in lockable inert material containers. The designated UXO specialist will maintain sole custody of the locked inert material containers. He will control access to the inspection and classification area to assure that no items other than those that are clearly inert will be added to these inert containers. Prior to sealing the containers the Foster Wheeler UXOQCS will inspect the contents of each container in the presence of the designated UXO specialist and the UXOQCS will close, seal and mark the containers, prepare a certification of inspection and sign this certification.

#### 2.8.5.2 Transportation/Storage

Materials scheduled for disposal will be detonated in place. Demolition operations will be conducted between 1430 and 1615 daily.

#### 2.8.5.3 Disposal and Processing

##### 2.8.5.3.1 Range Related Materials

The DRMS has developed special procedures to limit the possibility that ammunition and dangerous articles can be contained in other materials sold by the DRMS to the general public,

and the Department of Defense is preparing new regulations to regulate the inspection, transportation and disposal of military munitions related scrap materials.. The procedures used to certify that disposed materials do not contain hazardous substances, including explosives, are equivalent to those required by DRMS. Certified lots of range related materials will be transported to a waste processor/disposer. A copy of the certification will be attached to the container, and will be provided to the CEHNC Safety Representative and the waste treater. All metal containing range residual materials will be certified and processed for sale (or waste disposal fee) through the waste processor.

#### 2.8.5.3.2 Certifying Officials

Highly qualified UXO personnel will be designated as the Certifying Official. The individuals so designated will be graduates of the U.S. Naval School, Explosive Ordnance Disposal, Indian Head, Maryland or the U.S. Army Bomb Disposal School, Aberdeen Proving Ground, Maryland, and/or must have served in EOD billets and assignments while on active military duty. Copies of the designated individual's certificate of graduation and summary of experience will be maintained by the Project Office. Specimen of the signatures of certifying officials will also be maintained in these records.

#### 2.8.5.3.3 Certification Forms

2.8.5.3.3.1 A Requisition and Turn-In Form, DD Form 1348-1A, will be completed for each container of material proposed for sale or disposal. The form will be completed as a container is filled, and as items are individually inspected to assure that no danger of detonation or explosion remains. Copies of the form will be attached to the container, provided with the bill of lading for shipment, and in the project files. The forms will be used as the principal tool for maintaining accountability for materials and for inspection to assure that the items are in fact safe for unlimited release to the public.

2.8.5.3.3.2 The personnel certifying and verifying the inspection shall certify on the form, as follows:

2.8.5.3.3.3 "This certifies and verifies that the AEDA residue, Range Residue and/or Explosive Contaminated property listed has been 100 percent properly inspected and to the best of our knowledge and belief, are inert and/or free of explosives or related material."

2.8.5.3.3.4 Certifications require dual signatures. The first signature (certifier) may be either qualified DoD personnel or qualified contractor personnel. The second signature (verifier) must be a technically qualified DoD person, and U.S. citizen. Where Government contract requires contractor verification (in addition to Certification), this requirement may be waived. However, appropriate DoD quality assurance controls must be established.

2.8.5.3.3.5 The certification and verification signatures must be directly above the typed or clearly stamped or legibly printed full name, rank/rate, complete organization name and address, and phone number (commercial and DSN) of the personnel that certified and verified the inspection. Each generating activity shall ensure that its servicing DRMO has a current list of the

personnel and their sample signatures who are qualified and authorized to inspect, certify and verify AEDA Residue, Range Residue and ECP.

#### 2.8.5.3.4 Material Storage

Residue will be maintained in a secure area until sale can be completed. Containers of materials will be locked and sealed to assure that no uninspected items are added to the containers.

#### 2.8.5.3.5 Sale

Offers for sale will include the “Dangerous Property” Clause stipulated by DoD Memorandum dated 15 May 1998.

#### 2.8.5.3.6 Post Sale Activities

Foster Wheeler Environmental Corporation will provide, when required, escorts for vehicles transporting materials to the salvage location. UXO personnel will brief the purchasers personnel on the hazards of unexploded ordnance and actions to be taken if unexploded ordnance items are discovered.

### 2.8.6 Construction Debris

Containers of construction debris will be transported to a State approved construction debris landfill.

**ATTACHMENT 2-1**  
**UXO ACQUISITION AND ACCOUNTABILITY LOG**

## UXO ACQUISITION AND ACCOUNTABILITY LOG

Delivery Order No. \_\_\_\_\_  
 UXO TEAM \_\_\_\_\_

Report No. \_\_\_\_\_  
 DATE \_\_\_\_\_

Sample Area Number	
Ordnance Length (inches)	
Ordnance Diameter (inches)	
Weight (lb./oz)	
Ordnance Type (bomb, rocket, projectile, hand grenade, mortar, rifle grenade, pyrotechnics, small arms, etc.)	
Photo roll number/disk number	
Photo exposure number/digital file number	
Video Marker – Start	
Video Marker – Stop	
Ordnance description	

### UXO DISPOSITION

SAFE AREA	HOLDING	DATE	INITIAL	TRANSFERRED TO	DATE	SIGNATURE

DESTROYED BY	DATE	SIGNATURE

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Senior UXO Supervisor** \_\_\_\_\_

**ATTACHMENT 2-2**  
**EXPLOSIVE DISPOSAL ACTIVITIES CHECKLIST**

## EXPLOSIVE DISPOSAL ACTIVITIES CHECKLIST

Date \_\_\_\_\_

Team \_\_\_\_\_

FUNCTION	DATE/TIME	SIGNATURE
<b>Senior UXO Supervisor</b>		
Assign Disposal Team		
Brief Disposal Team Review emergency procedures Discuss OE/UXO to be disposed Describe Disposal procedures		
Inspect Range/Exclusion zone upon completion of operations		
<b>Disposal Supervisor</b>		
Verify Bravo Flag is hoisted		
Verify roads are closed		
Verify exclusion zone boundaries in place		
Complete health and safety and equipment checklists		
Ensure command center has completed the verification checklist Fort McClellan Transition Force Operations CEHNC Safety Representative Medical Facility Fire Department Security/Police Department		
Disposal Supervisor tailgate safety brief: Designate emergency vehicles Designate emergency evacuation route Review emergency response procedures		
Verify daily equipment inspection		
Verify that detonators are separated from explosives		
Verify that area has been evacuated		
Notify command center that operations are commencing		
Start Disposal activities		
Inspect shot after 5 min wait time		
Collect all metal fragments for later disposal		
QC check performed		
Stop disposal activities		
QA check by CEHNC (if required)		
Foster Wheeler command center notify upon completion: CEHNC  Medical Facility Fire Department Security/Police Department		
Complete OE/UXO Accountability Log		
Demobilize		
Record data in Explosive Disposal Log		

**ATTACHMENT 2-3  
EXPLOSIVE DISPOSAL LOG**



### **3.0 EXPLOSIVES MANAGEMENT PLAN**

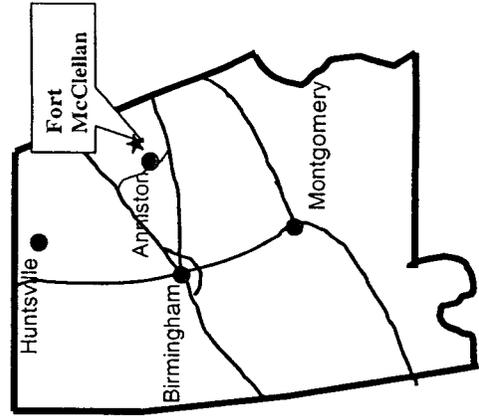
See sec. 3.0, EXPLOSIVES MANAGEMENT PLAN, of the Site-Wide WP. An Explosives Management Plan was prepared in accordance with DID OE-005-03 (Explosives Management Plan), Federal Acquisition Regulation (FAR) 45.5, ATFP 5400.7, DoD 6055.9-STD, Army Regulation (AR) 190-11, DOT Regulations, and Alabama Explosive Safety Act of 1993.

#### **4.0 EXPLOSIVES SITING PLAN**

An Explosives Siting Plan was prepared in accordance with DID OE-005-4, Explosives Siting Plan. See Explosives Siting Plan (sec. 4.0), in the Site-Wide WP.

Figure 4-1 shows the location of planned OE operations at the M2 Parcel and Quantity-Distance (QD) arcs for safe separation distances.

— M-2 Parcel Boundary  
 - - - Installation Boundary



ALABAMA

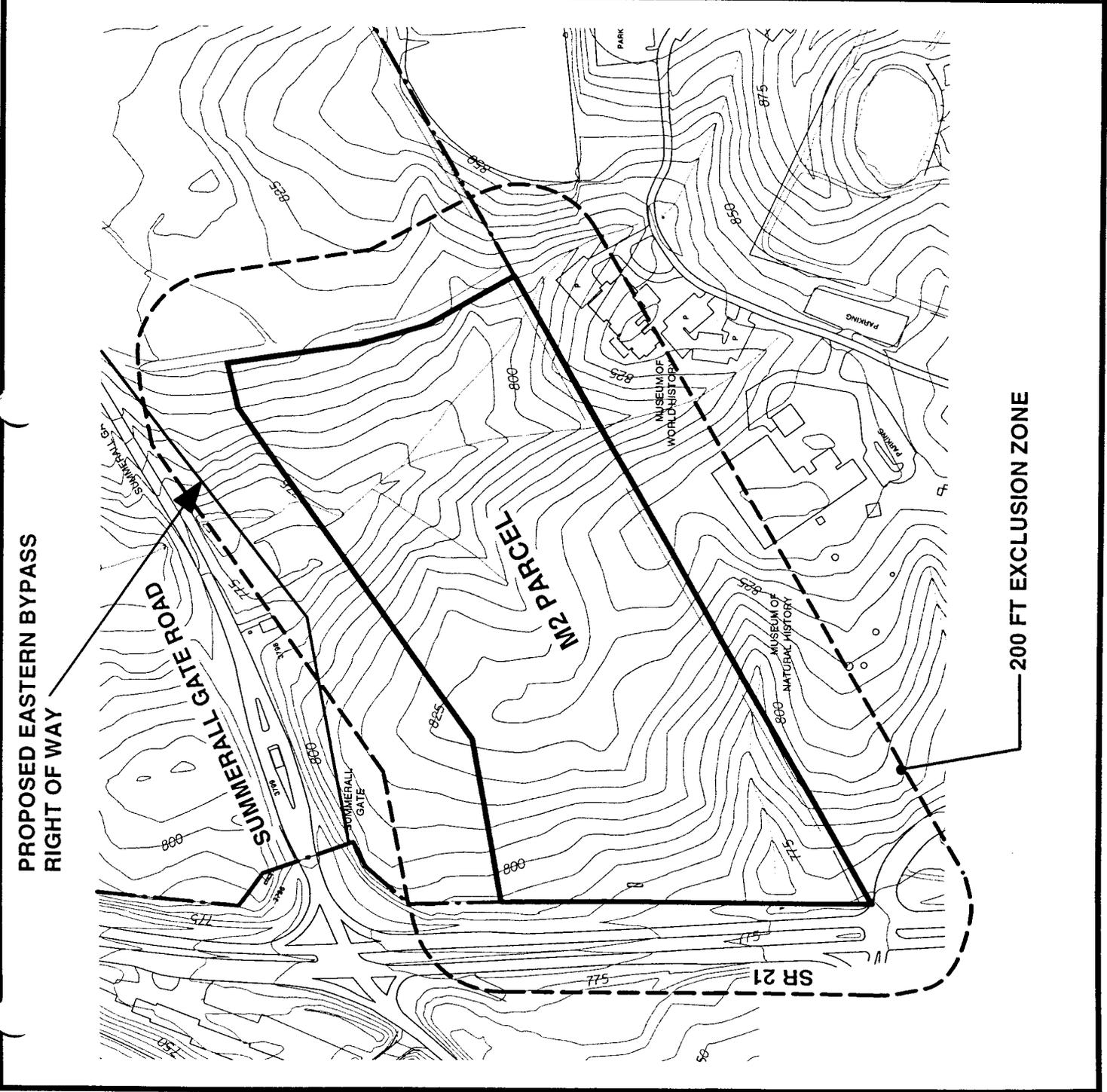


**FIGURE 4-1**

M-2 Parcel and QD Arc  
 U.S. ARMY ENGINEERING  
 AND SUPPORT CENTER  
 HUNTSVILLE, ALABAMA  
 CONTRACT No DACA87-99-D-0010  
 FORT McCLELLAN, ALABAMA



FOSTER WHEELER  
 ENVIRONMENTAL CORPORATION



## **5.0 GEOPHYSICAL INVESTIGATION PLAN**

### **5.1 Pre-survey Surface Inspection and Sweep (UXO Safety)**

This information is reviewed in sec. 5.0.1 of the Site-Wide Plan.

#### *5.1.1 Personnel Qualifications*

All geophysical investigations shall be supervised by a qualified geophysicist meeting the qualification requirements listed in DID OT-025. At all times during the geophysical investigation of the M2 parcel, a degreed geophysicist will be present in the field during data acquisition operations.

### **5.2 Site Description**

#### *5.2.1 Geophysical Investigation Program Objectives*

5.2.1.1 The objective of this task order is to perform a removal action of all OE (UXO and inert ordnance) for the M2 Parcel at Fort McClellan, Alabama, which consists of approximately 20 acres of land. This clearance is a final removal action prior to transfer of this property to the JPA for possible commercial development. The specific objective of the geophysical program is a 100 % survey of the M2 parcel to detect, accurately locate, and select anomalies that have the highest potential to be OE.

5.2.1.2 Based on the proveout test performed in the summer of 1999, as well as recent testing performed by Foster Wheeler Environmental geophysicists, it is anticipated that the primary geophysical sensor technology that will be used to meet the program objectives at the M2 parcel is time domain electromagnetics (TDEM) using the Geonics Limited EM61. Due to the heavy vegetation throughout the M2 parcel, the positioning technology that is proposed to accurately locate the geophysical sensor systems is the USRADS.

#### *5.2.2 Area of Investigation*

The M2 parcel consists of approximately 20 acres of heavily vegetated, sloping terrain located on the western boundary of FMC just south of Summerall Gate Road. Several previous and ongoing site investigations in and around the M2 Parcel have indicated the presence of OE training items within the M2 parcel. These activities as well as potential OE items that may be found within the M2 Parcel are described more completely in sec. 1.0.

#### *5.2.3 Past, Current, and Future Use*

Previous investigations conducted in and around the M2 parcel indicate that it was primarily used as a training area. It is anticipated that the items used during troop exercises are all training

items with minimal penetration potential into the soil (< 18 inches). The land is not currently being used for public activities, however, the M2 task order represents a final removal action prior to transfer of this property to the JPA for possible commercial development.

#### *5.2.4 Anticipated UXO Type, Composition, and Quantity*

5.2.4.1 Due to the nature of training that is suspected to have occurred on the M2 Parcel, OE training items are expected to be found on the ground surface or within the top eighteen inches of the subsurface. Potential items that may be found include: WP hand Grenades, 60mm practice mortars (M69), Rifle smoke grenades (burning type), 2.36-inch practice rockets, rocket propelled ground signals (slap flares), surface trip flares (M48), practice hand grenades (MK II), practice mine activators (M1), and practice anti-personnel mines (M8). See Table 1-1 in sec.1.4 for additional details concerning Potential OE at the M2 Parcel.

5.2.4.2 CWM and related items were also historically used at Fort McClellan. Operations involving CWM are discussed in detail in the ASR (July 1999). There is no evidence to suggest that CWM will be encountered during the investigation of the M2 parcel.

#### *5.2.5 Anticipated Depth of UXO*

The anticipated depth of the training items specified in sec. 5.2.4 is less than eighteen inches below the ground surface.

#### *5.2.6 Topography*

The M2 parcel trends northeast - southwest and is characterized by two relatively small hills transected by a northwest – southeast trending drainage area. The topographic gradient at the site generally increases towards the southwest.

#### *5.2.7 Vegetation*

This information is reviewed in the Site-Wide Plan, sec. 5.1.7.

#### *5.2.8 Geologic Conditions*

This information is reviewed in the Site-Wide Plan, sec. 5.1.8.

#### *5.2.9 Soil Conditions*

This information is reviewed in the Site-Wide Plan, sec. 5.1.9.

#### *5.2.10 Shallow Groundwater Conditions*

This information is reviewed in the Site-Wide Plan, sec. 5.1.10.

#### *5.2.11 Site Utilities*

There are no subsurface utilities anticipated to exist in this area based on current information. However, if utilities are encountered during the initial surface sweep or detected during the geophysical investigation, they will be identified and their locations posted on the color-coded geophysical map of the area to ensure that intrusive activities occur in the safest manner possible.

#### *5.2.12 Man-made Features Potentially Affecting Geophysical Investigations*

Man-made features such as power lines, buildings/foundations, storage tanks (above and below ground), fences, landfills/disposal areas, roads, and any other features that may influence the geophysical investigation will be documented with specific information on the location, extent, and nature of the feature. For the M2 parcel, this information will be documented on a site features map.

#### *5.2.13 Site-Specific Dynamic Events*

This information is reviewed in the Site-Wide Plan, sec. 5.1.13.

#### *5.2.14 Overall Site Accessibility and Impediments*

Due to the dense vegetation over most of the M2 parcel, brush clearance will be necessary prior to the commencement of the geophysical survey.

#### *5.2.15 Potential Worker Hazards*

This information is reviewed in the Site-Wide Plan, sec. 5.1.15.

### **5.3 Geophysical Investigation Methods**

#### *5.3.1 Equipment*

5.3.1.1 The EM61 TDEM instrument utilizes two coaxial receiver coils to measure the residual magnetic field generated by conductive and/or magnetic materials. The primary factors that affect the detectability of objects or features with TDEM methods include volumetric size and orientation, distance from the sensor, and the material properties contrast between the object or feature and the surrounding materials. Based on the results of the 1999 proveout test and recent testing by Foster Wheeler Environmental geophysicists at Fort McClellan, a modified EM61 TDEM instrument coupled to an USRADS positioning system will have the best chance to meet the overall program objectives for the M2 parcel.

5.3.1.2 The EM61's anticipated for use at the M2 parcel will employ an earlier time gate than a standard EM61. The use of the earlier time gate is more sensitive to smaller objects at shallower depths, which is consistent with the anticipated OE materials at the M2 parcel. The use of the earlier time gate will be substantiated and documented during a brief test program to be conducted prior to data acquisition activities. This process is covered more thoroughly in sec. 5.3.5.

5.3.1.3 An additional benefit of the specific design of the EM61 system is that it permits a more focused observation of the subsurface in areas of cultural interference, as well as areas characterized by a high spatial density of subsurface objects. This is due to both the mechanical design and operational parameters of the instrument, as well as the inherent nature of active EM fields, which diminish in magnitude at a much higher rate than other sensor technologies such as magnetometry.

5.3.1.4 The EM61 is relatively insensitive to nearby surface cultural interference such as buildings, power lines, and fences, and has the ability to record digital data at 0.10 second intervals (using USRADS recording system), which translates to a spatial sample density of approximately 0.25 to 0.75 feet along the ground surface. The USRADS positioning system is reviewed in sec. 5.4.

### 5.3.2 Procedures

5.3.2.1 It is anticipated that two data acquisition teams will be used to perform the geophysical survey over approximately 20 acres using Geonics EM61 TDEM and USRADS instrumentation. Because of the diversity and density of site features such as vegetation and topography, it may not be possible to survey some areas. Areas that may not be surveyed include those characterized by aggregates of large rocks and boulders, dense / thick vegetation taller than approximately 1 ft, felled - trees, aboveground manmade obstructions; highly variable localized topography, and slopes in excess of approximately 55 degrees.

5.3.2.2 Prior to the geophysical survey, the M2 parcel will be divided into approximately 20 survey grids that are each 1-acre in size. A civil survey will provide relative slope distance and state planar coordinate data for seven locations per 1 acre grid. The survey data will be used to ensure accurate positioning with the USRADS system, as well as a method for easily tracking anomalies and excavation data on a per grid basis.

5.3.2.3 The primary method used to provide position information for the EM61 instruments will be USRADS. In general, approximately 15 transponders (i.e., stationary receivers) will be positioned over a 0.5-acre area; a minimum of two (three, if possible) transponders will occupy known, surveyed locations. After the USRADS setup and EM61 instrumentation have passed the quality control checks (sec. 5.10) the instrument operator will commence the geophysical survey. The operator will divide the survey area into regions based on the vegetation density. For heavily treed areas, regions will be approximately 2,500 square feet in size (50 ft by 50 ft). Within this region, the operator will utilize multiple visual markers (e.g., traffic cones, survey lathe, etc.) as waypoints to navigate each transect line. For less vegetated areas, the same

procedure will be followed using larger regions, however, at no time will the distance between waypoints exceed approximately 50 ft. The development of these acquisition procedures is based on the analysis of different acquisition procedures during the execution of numerous projects. The stated procedure has been found to be the most effective method to ensure that the EM61 operator does not deviate significantly from the specified line spacing, thereby ensuring an adequate sample density is obtained based on the size of the OE items of interest.

5.3.2.4 Each geophysical survey team will use a portable computer with the most current version of the USRADS data acquisition software to record the EM61 and position data. These data will be viewed on the computer screen in real-time by the USRADS technician.

5.3.2.5 If necessary, simplistic site features maps will be completed for each survey grid to achieve a more complete understanding of the relationships between the site characteristics and the geophysical data.

5.3.2.6 At the end of each day's field activities, all pertinent geophysical and intrusive data will be transferred to a CDROM or other computer media (e.g., Iomega zip media), and stored in a fireproof safe at the Foster Wheeler Environmental on-site trailer. Two backup copies of the data will be generated in the field, and one at the centralized processing center in Lakewood, Colorado. This procedure will ensure that the data can be reconstructed at a future date, if necessary. Reference information that may be recorded and stored for each survey area include:

- Installation;
- Site identification (file name and survey coordinates);
- Survey area conditions;
- Acquisition personnel;
- EM61 data value(s);
- Elapsed and sample to sample distance;
- Weather conditions; and
- Instrument serial numbers.

5.3.2.7 Logbooks will be used by each field team leader to document all pertinent site activities. Logbooks will be available to the client at any time during or after the field investigation of the M2 parcel.

### **5.3.3 Personnel**

5.3.3.1 The geophysical survey staff for the M2 parcel will consist of an on-site Geophysical Task Manager, USRADS technicians, geophysical survey crews, and data processors/interpreters. All of these individuals proposed have a combination of science, engineering, and computer science backgrounds, or will be trained in the specific use of the instrumentation employed. The USRADS technicians will have experience and training in

USRADS equipment operation, maintenance, and supporting software. It is anticipated that up to two geophysical survey teams will be used to survey the M2 parcel. Each geophysical survey team will include a minimum of one geophysical survey specialist, one USRADS specialist, and one data acquisition specialist. The USRADS positioning data will be pre-processed in the field by an experienced USRADS software specialist and checked by a degreed geophysicist. The geophysical data interpretation will result in anomalies selected for intrusive excavation.

5.3.3.2 A more thorough description of the responsibilities of the field personnel conducting the investigation is provided in the Site-Wide Plan (sec. 5.2.3).

#### **5.3.4 Production Rates**

Factors affecting production rates for the M2 parcel include severe weather, topography, near-surface vegetation and tree density, accessibility, and the data density and resolution requirements (line spacing), and dynamic events. Based on reconnaissance of the M2 area by Foster Wheeler Environmental personnel, it is anticipated that each data acquisition team can acquire 1 to 1.5 acres of geophysical data per day at an approximate line spacing of 2 ft. The actual line spacing employed will be selected based on the test program to be conducted prior to data acquisition activities.

#### **5.3.5 Data Resolution, or Line/Grid Width Requirements**

5.3.5.1 Our past experience has shown that to ensure adequate coverage and sample density for the detection of small targets (e.g., slap flares, practice hand grenades, etc.) with a high degree of confidence, the requisite sample density is approximately 2-3 measurements per square foot (ft). This density is consistent with a line spacing of approximately 2 ft and a station spacing of approximately 0.25 to 0.5 ft with the EM61. These line and station spacings are the maximum allowable to ensure adequate sample density of the survey area and to maximize the likelihood of detection of smaller OE items. Increased line and/or station spacing can significantly increase the acreage that can be surveyed by a geophysical team in a given time frame; however, the likelihood of detecting smaller items decreases drastically for any increase in these parameters.

5.3.5.2 A brief test program is warranted prior to data acquisition activities at the M2 parcel. The test will provide useful information on the applicability of the EM61 earlier time gate for the site specific geologic and soil conditions present at the M2 parcel, as well as provide information on the spatial sample density required to detect the OE items of interest.

5.3.5.3 The first phase of the test program will consist of a geophysical survey of a generally linear transect path not to exceed several hundred ft in length with the early and late (standard) EM61 time gates. These data represent "background", or the statistical mode of the data, and are characterized by an appropriate "noise" level, which is the standard deviation of the readings for the instrument while it is in motion. Several of each of the OE items of interest will then be buried along the transect line to a depth not to exceed eighteen inches, or as agreed to with the client. In addition, rocks with increased magnetism ("hot rocks") and scrap metal will also be

buried along the same transect line. Data will be acquired over the transect line with the early and late time gates to determine their relative signal intensities for each OE and non-OE item.

5.3.5.4 The second phase of the test will involve determining the necessary spatial sample density by analyzing the signal intensity as the center of the coil is moved laterally away from the smaller OE items of interest. The signal intensity data can be represented as x – y graphical images with the x-axis representing distance (lateral distance at a specific depth of burial) from the target and the y-axis representing the respective instrument intensity at that distance. A horizontal line can be drawn that intersects the y-axis and represents the standard deviation of the instrument readings while the instrument is in motion. When the response of the instrument (target present) decreases to the level of the line representing the standard deviation, in theory, the natural variation of the instrument is equal to or greater than the target response and thus does not represent the most optimum environment for target selection.

5.3.5.5 This type of dual-phase test program is also designed to provide useful data when attempting to discriminate between the OE items of interest and other non-OE items at the site such as scrap metal and rocks with increased magnetism. The selection of the appropriate time gate and transect spacing necessary to meet the objectives for the M2 parcel will be primarily based on the following:

- the relative strength of the response between the early and late time gates at different lateral offsets from the OE items of interest; and
- the early time gate signal intensity resulting from non-metallic magnetic items (e.g., rocks with increased magnetism). An earlier time gate is more susceptible to record measurable signals from features or objects with increased natural magnetism; this factor is site-specific and has the potential to increase the number of "dry holes" during intrusive activities.

5.3.5.5.1 The 1999 Field Demonstration results were used to evaluate the effectiveness of the navigation, detection, and data processing technologies/methodologies proposed for the M2 Parcel. For the evaluation, the Pd criteria was based on a navigational error of less than 2 meters, the ability to detect items to a depth of 4 feet, the ability to discriminate between multiple targets greater than 3 feet apart, and the ability to discriminate between target anomalies and items too small to be target anomalies (i.e. a target anomaly was defined as an item with a mass greater than 0.5 pounds and a dimension greater than 3.89 inches). A false positive was defined as any target selected that was less than the size or mass criteria specified, had a navigational error greater than 2 meters, and could not be distinguished from another target which was outside a critical radius of 3 feet from the first target. The criteria-specific results for the Proveout were a 98 % Pd with a false alarm rate of 2.1:1.

5.3.5.5.2 A more in-depth review of the Proveout Test results indicates that implementation of certain procedures may improve the performance achieved during the Proveout Test. In order to achieve this level of detection and associated size discrimination, the following procedures will be implemented during the M2 parcel geophysical program:

- 1) UXO personnel will excavate all metallic contacts within a 1 m radius of the interpreted target location. Target locations likely to contain multiple targets that could possibly be outside the critical radius of 1 meter will be identified as such on the digsheet in the comment column (e.g., "multiple targets probable") and the radius will be increased accordingly.
  
- 2) USRADS will be used to re-acquire the target locations selected for excavation. The same survey control (i.e., fixed points) will be used during anomaly acquisition as those used for data acquisition. This procedure will minimize position errors resulting from differences between the state plane coordinates and the USRADS position, which is based on slope (not planar) distance.
  
- 3) The target selection threshold will be adjusted in the interpretation software based on the "learning curve" associated with the Proveout Test and through data validation during excavation of anomalies identified in the M2 Parcel. This procedure will ensure the M2 data interpretation will be consistent with those attained in the Proveout Test.

### 5.3.6 Data Density

5.3.6.1 The amount of geophysical data acquired at the M2 parcel will ensure that the following CEHNC EM61 performance goals for detection are achieved:

$\log(d) = 1.002 \log(\text{dia}) - 1.961$ , where

dia = diameter of minor axis of UXO, in millimeters.

d = required depth of detection to top of buried UXO, in meters.

5.3.6.2 Foster Wheeler Environmental will demonstrate and document the capabilities of the proposed geophysical system (sensor platform, navigation equipment, data analysis, data management and associated equipment and personnel) to operate as an integrated system capable of meeting the stated project performance goal. If the specified performance goals cannot be met based on the results of the proposed test program, the client will be notified, and an alternate performance objective suggested.

### 5.3.7 Data Processing

5.3.7.1 A Foster Wheeler Environmental geophysicist will perform preliminary geophysical and navigation data processing and QC checks on a daily basis at the on-site processing center. The final analysis and interpretation of the data will be performed at a centralized processing center located at the Foster Wheeler Environmental Lakewood, Colorado office. Processing, QC, and analysis and interpretation of the data are performed with internally developed software that has been specifically produced to integrate and interpret digital geophysical data acquired with USRADS and EM61 instrumentation. Several steps are performed to process the geophysical data prior to analysis. An example of the EM61 and USRADS positioning processing flow is similar to the following:

- USRADS coordinate and EM61 signal intensity data are divided into separate files for the top (channel 1) and bottom (channel 2) coils. The track path is edited, if necessary, to account for substantial, localized deviations from the true track path. Files for the top and bottom coils are output and combined into a single file (x, y, c1, c2), and the mode of the data is calculated and subtracted from the top and bottom coil readings.
- Small timing offsets (position shifts) are removed from the data by interactively adjusting the position based on a linear surface target surveyed at the start and end of each data acquisition session. The position-corrected data are output to a file (x, y, c1, c2, c3, c4, sample distance, elapsed distance, position quality factor). If the data is acquired in a relative coordinate system (due to extreme localized variations in topography), the relative x-y locations are also included in the file output along with the state planar coordinates.
- Positioning and EM61 signal statistics are calculated for each data acquisition session; erroneous measurements are identified (if any) and archived to a designated file.
- No filtering or other data manipulation is usually applied to the data, however, any filtering operation applied (e.g., convolution filters, smoothing, etc.) will be documented in a log file for the specific data acquisition session.
- Data are interpreted using two independent modes of target prediction (profile data and color-coded image data) to provide x, y, and z location information for each target, as well as the target's approximate size. As necessary, color-coded images are generated to assist intrusive excavation personnel with digsheet information.

5.3.7.2 It is anticipated that approximately two to four data acquisition sessions will occur per day for each acquisition crew. Each acquisition session will have a unique identifier and consist of position and EM61 signal data over an area of approximately 0.25 – 0.5 acres. The EM61 signal and position data from each acquisition session will be appended to a master project database, which can be used to create color-coded data images of the EM61 data on a daily basis and track the progress of the survey in the M2 parcel. Each data acquisition session will also be interpreted and appended to the master project database on a daily basis. A digital master target file will be generated that contains a unique identifier for each target, as well as its easting and northing coordinates (absolute and/or relative), approximate depth and size, and the digital signal values for the EM61 data.

5.3.7.3 The Foster Wheeler Environmental computer workstation at the on-site processing center will be used to store all finalized project data for the geophysical survey. Digital processing/interpretation portfolios will be maintained for the survey so that the processing/interpretation sequence can be reproduced at a future date, if necessary. The format of the digital geophysical data, as well as the graphics produced, will be compatible with the existing project database protocols (CEHNC ASCII ADF space delimited x,y,z file format). Foster Wheeler Environmental shall preserve the integrity of the raw, positionally corrected data and ensure that these data are provided to a CEHNC representative on a weekly or bi-weekly basis, or as requested.

5.3.7.4 The geophysical and navigation data supplied to CEHNC will allow for corrections such as navigation (position shifts) and instrument bias, but there will be no filtering or

normalization of this data. All corrections to the data and pertinent field activities will be documented in a Microsoft Word file that will be delivered to CEHNC with the numerical data. No individual data file will be more than 4 megabytes in size and no more than 60,000 lines long. Each grid of data shall be logically and sequentially named so that the file name can be easily correlated with the grid name used by other project personnel. No later than 36 hours after data collection, Foster Wheeler Environmental will deliver each day's data to CEHNC via Internet, FTP, or other reliable method for inspection. Within 14 days of completion of survey activity, Foster Wheeler Environmental will provide CEHNC all final geophysical maps, digital dig-sheets and supporting geophysical interpretations.

5.3.7.5 All pertinent geophysical data will be transferred to a CDROM or other computer media (e.g., Iomega zip media) on a daily basis, and stored in a fireproof safe at the onsite and centralized processing center in Lakewood, Colorado.

## **5.4 Location Surveying, Mapping & Navigation**

### *5.4.1 System Description*

5.4.1.1 USRADS is a positioning and data acquisition system that automates the measurement and mapping of data collected for site investigations. This system can determine the instrument operator's x-y location and transmit this data along with the instrument response to an in-field computer, where the data is digitally recorded and displayed. USRADS includes software to check transponder operation and calibrate the location system based on the geometric arrangement of the transponders. The system uses ultrasonic technology to measure travel times and compute coordinate positions between a mobile instrument(s) and numerous stationary units (stationary receivers or transponders). The instrument is fitted with a transmitter that emits acoustic signals to numerous stationary receivers where positions are known or calculated by the instrument setup software. The system also uses radio frequency pulses at 1 time per second to transfer instrument data to a portable field computer.

5.4.1.2 A standard USRADS consists of a data acquisition backpack, approximately 15 transponders (stationary receivers), and a portable computer with a customized computer interface. The setup of the system is automated, whereby the ultrasonic signal travel times between all of the receivers are measured. These travel times are used, along with information gathered on the velocity of sound for a particular area to compute the x-y coordinate position of all of the receivers. The geophysical instrumentation is linked to the USRADS data acquisition backpack, which use radio frequencies to transfer the instrument measurement(s) and position to the portable field computer, where the data is displayed in real time.

## **5.5 Instrument Standardization**

### *5.5.1 Instrument Drift (DC offset)*

For the EM61 instrumentation, the DC offset will not be adjusted in the field, but analyzed and corrected in the processing sequence. In general, the drift is corrected for each data acquisition

session. It should be mentioned that a small amount of drift is common, and has no bearing on the ability of the interpreter to select targets for excavation.

### **5.5.2 Standardization Procedures**

No calibration or standardization will be made to the instrument since it is calibrated prior to leaving the factory. However, measurements will be recorded over a representative linear surface target and for a specified time interval (usually 30 seconds) prior to commencement of each data acquisition session to provide information on the precision and repeatability of the measurement process.

### **5.5.3 Abbreviated Standardization Checks**

When no metal is present, the standard deviation of the readings for the top and bottom coils should not be in excess of 1 millivolt (mV) when the instrument is not in motion. These repeatability data are collected prior to each data acquisition session and analyzed during processing.

### **5.5.4 Instrument Response to a Known Standard**

Prior to data acquisition activities at each grid a metallic target will be placed on the ground surface (e.g., 3 ft length of rebar). Data is acquired over the target at least three times in an alternate direction. This procedure ensures that the timing differences can be accounted for in data processing. These data can also be analyzed to provide information on the characteristic response of the instrumentation provided the surface material is firm and the lower coil is 16 inches above the ground surface.

## **5.6 Data Processing, Correction and Analysis**

### **5.6.1 Instrument Drift Correction**

This information is provided in sec. 5.5.1.

### **5.6.2 Diurnal Drift Correction**

This effect is not applicable to the investigation at the M2 parcel when using the EM61 instrumentation.

### **5.6.3 Digital Filtering and Enhancement**

If digital filtering and other data enhancement algorithms are applied to the data they will be referenced in the data processing portfolio for each grid surveyed. No filtering or data enhancement routines will be applied to the data delivered to CEHNC for QC purposes unless specifically noted in the Microsoft Word document that will accompany each data transmittal.

#### **5.6.4 Correlation With Ground Truth**

This information is reviewed in the Site-Wide Plan, sec. 5.5.4.

### **5.7 Quantitative Interpretation and Dig Sheet Development**

This information is reviewed in the Site-Wide Plan, sec. 5.6.

### **5.8 Anomaly Reacquisition**

This information is reviewed in the Site-Wide Plan, sec. 5.7.

### **5.9 Feed-Back Process (Comparison Of Dig-Sheet Predictions With Ground-Truth)**

This information is reviewed in the Site-Wide Plan, sec. 5.8.

### **5.10 Quality Control**

This information is reviewed in the Site-Wide Plan, sec. 5.9.

### **5.11 Corrective Measures**

This information is reviewed in the Site-Wide Plan, sec. 5.10.

### **5.12 Records Management**

This information is reviewed in the Site-Wide Plan, sec. 5.11.

### **5.13 Interim Reporting**

This information is reviewed in the Site-Wide Plan, sec. 5.12.

### **5.14 Final Reports and Maps**

This information is reviewed in the Site-Wide Plan, sec. 5.13.

## 6.0 SITE SAFETY AND HEALTH PLAN

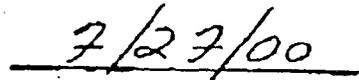
### 6.1 Introduction

This Site-Specific Safety and Health Plan Addendum has been prepared to address the hazards associated with clearance activities at the M2 Parcel at Fort McClellan in Anniston Alabama. By their signatures, the undersigned certify that this SSHP will be utilized for the protection of the health and safety of workers during clearance activities at the M2 Parcel.

#### APPROVALS:



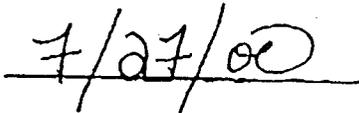
David Moccia, Delivery Order Manager



Date



Cheryl L. Polios  
Project Environmental and Safety Manager



Date



James Ennis  
Senior UXO Site Safety and Health Officer



Date

#### 6.1.1 Scope and Applicability

6.1.1.1 This SSHP has been prepared in conformance with the Foster Wheeler Environmental, Health and Safety programs, policies and procedures; the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1; and the U.S. Army Corps of Engineers Safety and Occupational Health Document Requirements for HTRW and OEW Activities, ER 385-1-92. This SSHP contains the requirements for protection of site personnel and the general public during clearance activities at the M2 Parcel Fort McClellan and will be implemented by the UXO Site Safety and Health Officer (UXOSO) or his designee during site work. The content of this SSHP may change or undergo revision based upon additional information made available to safety and health personnel, monitoring results, or changes in the technical scope of work. Any changes proposed must be reviewed by the Foster Wheeler Environmental UXOSO and are subject to the approval of the Foster Wheeler Environmental Project Environmental and Safety Manager (PESM). Changes are also subject to the approval of the U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville (CEHNC). The Field Change Request Form provided in Attachment 6-1 will be used to initiate such changes.

6.1.1.2 The protection of site workers and environmental safety and health are major concerns during site operations. The purpose of this plan is to ensure safe and healthful working conditions at the M2 Parcel. The safety and health organization and procedures contained in this SSHP have been established based upon an analysis of the potential hazards, and personnel protection measures have been chosen based on these risks.

6.1.1.3 Compliance with this SSHP is required by all Foster Wheeler Environmental employees and their contractors, subcontractors and visitors who may participate in activities at the M2 Parcel at Fort McClellan. Refusal or failure to comply with the SSHP or violation of any safety procedures by field personnel and/or subcontractors may result in their immediate removal from the site following consultation with the Foster Wheeler Environmental PESH and the Project Manager (PM).

6.1.1.4 This plan has been developed to address health and safety concerns during the UXO clearance activities at the M2 Parcel.

The plan addresses the following activities:

- Mobilization/demobilization;
- OE surface survey;
- Brush clearance;
- Survey study areas, establish corners and boundaries;
- Establish geophysical test lines and grids;
- Conduct geophysical surveys; and
- Manually excavate anomalies.

Major risks associated with clearance activities at the M2 Parcel include:

- Possible exposure to UXO; and
- Heat stress.

## **6.2 Staff Organization, Qualifications, and Responsibilities**

The responsibilities of the health and safety staff are described in the following sections.

### **6.2.1 Project Manager (PM)**

The Project Manager is Jack McIlrath. It is the responsibility of the Program Manager to:

- Ensure that full corporate resources are made available to the program, as needed;
- Serves, as necessary, as an intermediary between the CEHNC contract officer and Foster Wheeler's corporate management; and

- Assist the Delivery Order Manager in problem resolution/corrective action implementation.

### **6.2.2 Delivery Order Manager**

The Delivery Order Manager is Dave Moccia. It is the responsibility of the Delivery Order Manager to:

- Provide the major point of control to ensure that the program's technical, financial and scheduling objectives are achieved;
- Ensures implementation of this program through coordination with the responsible Project Environmental Safety Manager (PESM);
- Conducts periodic inspections;
- Participates in incident investigations;
- Ensures the SSHP has all of the required approvals before any site work is conducted;
- Ensures that the PESM or UXO Site Safety and Health Officer (UXOSO) is informed of project changes which require modifications of the site safety plan; and
- Has overall project responsibility for Project Health and Safety.

### **6.2.3 Project Environmental and Safety Manager (PESM)**

The Project Environmental and Safety Manager is Cheryl L. Polios. The responsibilities of the PESM are outlined and described in sec. 6.2.2 of the Site-WideWork Plan.

### **6.2.4 Senior UXO Supervisor (SUXOS)**

The Senior UXO Supervisor is Danny Paul, USA Environmental. The responsibilities of the SUXOS are outlined and described in sec. 6.2.3 of the Site-WideWork Plan.

### **6.2.5 UXO Site Safety and Health Officer (UXOSO)**

The UXO Site Safety and Health Officer is Jim Ennis. The responsibilities of the UXOSO are outlined and described in sec. 6.2.4 of the Site-WideWork Plan.

### **6.2.6 Field Crew Personnel**

Field crew personnel include all other persons entering the site for the purpose of assisting in the completion of the project. This includes, but is not limited to geophysicists, client representatives, subcontractors, regulatory personnel, and site workers. The responsibility of all field crew personnel are outlined and described in sec. 6.2.5 of the Site-WideWork Plan.

### **6.3 Site Description and OE Contamination Characterization**

The former FMC main post is bounded to the south and west by the City of Anniston and to the northwest by the City of Weaver and consists of 18,929 acres. Adjoining the former main post to the east is the Choccolocco Corridor, which connects the post to the Talladega National Forest.

#### **6.3.1 Site Description**

The M2 Parcel consists of approximately 20 acres and is located on the western boundary of FMC just south of Summerall Gate Road. The M2 Parcel has been identified as part of a much larger undocumented training area for OE. Although the full extent of the training area has not been delineated, other site investigations have determined that the potential presence of OE extends east from Summerall Gate along the proposed route of the Eastern Bypass as well as encompassing the M2 Parcel. The potential OE that is suspected to be on the M2 Parcel and its associated hazards are identified in Table 6-1. Although most of the potential items have small explosive hazards, no evidence of high explosives or Chemical Warfare Materiel has been associated with the M2 Parcel. The period and duration of training that was conducted in the M2 Parcel is unknown.

#### **6.3.2 Previous Site Investigations**

6.3.2.1 The US Army Corps of Engineers, St. Louis District, compiled an ASR in 1996. The ASR was prepared by reviewing available records and reports documenting the history of the site. Historical information pertaining to site operations, including a listing of site investigations conducted before 1996, is contained within this document. In 1998, the US Army Corps of Engineers, St. Louis District, revised the ASR to include suspect CWM areas. The ASR was finalized in July 1999.

6.3.2.2 The Final Archives Search Report (prepared by the US Army Corps of Engineers, St. Louis District) presented the findings of the site inspection and evaluation of potential ordnance and explosives occurrence at former Fort McClellan. Numerous areas suspected of being used for chemical warfare training or chemical warfare material storage were inspected. No indication of OE training, chemical training or chemical materiel storage was noted in the document to be within the boundaries of the M2 Parcel.

6.3.2.3 Barge, Waggoner, Sumner and Cannon, Inc. conducted an EA for the ALDOT in August 1998. This document identified the economic and environmental impacts of the proposed eastern bypass and evaluated right-of-way alternatives for the bypass. A Finding of No Significant Impact was finalized in December 1999. The corridor of study for the proposed eastern bypass also encompassed the M2 Parcel. Threatened and endangered species were not anticipated within the M2 Parcel. Isolated wetlands associated with streams were described in three separate areas within the right-of-way, none of which is located in the M2 Parcel.

**Table 6-1  
Potential OE at M2 Parcel**

Munition/Component	Explosive/Incendiary Hazard	Source
WP Hand Grenades	15 oz. White Phosphorus filler, incendiary	During ground reconnaissance by CEHNC in Feb. 2000, the remains of one WP grenade was identified adjacent to the M2 Parcel.
60mm practice mortars ( M69)	None	During sampling conducted for the Eastern Bypass EE/CA in May 1999, 2 M69s were found in Grid 5 of Area 5.
Rifle (Burning type) smoke grenades	Smoke filler, Incendiary	During sampling conducted for the Eastern Bypass EE/CA in May 1999, 3 expended rifle smoke grenades were found, 1 in Area 1, grid2 and 2 in Area 5, Grid 5. Also, 2 more were found during March 2000 removal action for the Eastern Bypass within 100' of the northern M2 Parcel boundary.
Rocket propelled ground signals (slap flares)	Small explosive charge	During sampling conducted for the Eastern Bypass EE/CA in May 1999, 2 expended slap flares were found in Area 4, Grid 10.
Surface trip flares (M48)	75 grain propelling charge, explosive	During sampling conducted for the Eastern Bypass EE/CA in May 1999, one expended trip flare was found in Area 1, Grid 1.
Practice hand grenades ( MK II)	28.35 g black powder, explosive	During sampling conducted for the Eastern Bypass EE/CA in May 1999, 2 expended practice grenades were found in Area 4, Grid 5.
Mine Activator, practice ( M1)	Small explosive charge	During sampling conducted for the Eastern Bypass EE/CA in May 1999, an unexpended M1 was found in Area 5, Grid 4.
Mine, anti-personnel, practice (M8)	11 g black powder, explosive	During sampling conducted for the Eastern Bypass EE/CA in May 1999, 1 expended mine was found in Area 1, Grid 1.
Practice Rockets, 2.36-inch	None	During sampling conducted for the Eastern Bypass EE/CA in May 1999, 2.36 inch practice rockets were found.

6.3.2.4 An Historical Aerial Photography Investigation of the Fort McClellan East By-Pass Study Area (1998) was prepared by ORNL for the US Army Engineering and Support Center, Huntsville. It provided an analysis of land usage over a span of more than 50 years and potential areas of OE occurrence. Part of the M2 Parcel was included in the photographic coverage investigated by ORNL. There were also anomalies identified in photographic coverage overlapping the M2 Parcel that were recommended for further investigation.

6.3.2.5 Zapata Engineering conducted a non-intrusive ground reconnaissance in August 1998. The purpose of the ground reconnaissance was to resolve anomalies resulting from the Historical Aerial Photography Investigation and to visually identify areas of possible OE occurrence, which may not have been previously characterized within the proposed eastern bypass right-of-way. As documented in Zapata Engineering's Ground Reconnaissance Trip Report dated September 1998, no evidence of ordnance impact areas were identified within the areas in and adjacent to the M2 Parcel. However, several areas revealed evidence of possible training activities and were identified as potential sample locations. The most notable locations were in the northern portion of the proposed eastern bypass right-of-way, near Summerall Gate. In particular, possible training areas were located north and south of Summerall Gate Road, approximately 200 to 300 yards inside the installation boundary. These areas adjoin and overlap the M2 Parcel.

6.3.2.6 In February of 1999, Zapata Engineering conducted a geophysical survey of six areas encompassing 8.56 acres in and adjacent to the M2 Parcel. Approximately half of the geophysical data collected in Area 6 overlaps the M2 Parcel. Several subsurface anomalies were identified as potential OE.

6.3.2.7 In May of 1999, intrusive sampling was conducted in several of the areas previously geophysically mapped. Several OE items used for training were found in sampling grids near the M2 Parcel. The items found included 60mm practice mortars, expended smoke rifle grenades, expended rocket propelled ground signals (slap flares), expended practice anti-personnel mines (M8), expended ground trip flares (M48), and an unexpended M1 mine activator. No intrusive sampling was performed within the M2 Parcel.

6.3.2.8 In February of 2000, Mr. Hank Hubbard, a safety specialist with CEHNC, performed visual ground reconnaissance within and adjacent to the M2 Parcel, identifying the remains of a White Phosphorus grenade on the ground surface adjacent to the M2 Parcel.

6.3.2.9 Currently EODT is performing a one foot clearance over the proposed footprint of the Eastern Bypass to support pre-construction activities. Expended rifle smoke grenades, smoke grenades and parts of an expended white phosphorus hand grenade were found in grids adjoining the M2 Parcel on the northern boundary.

### **6.3.3 Source and Nature of Contamination**

The data presented below was obtained during previous archival research, remedial investigations, and remedial designs. The suspected types of OE associated with the M2 Parcel are presented in Table 6-1. The previous investigations conducted in and around the M2 Parcel

indicate that it was used primarily as a training area. There is no indication that high explosives were ever used in this area. However, most of the items suspected to have been used in this area may contain a small explosive charge as well as incendiary material that could still function if the item is not expended. The types of OE used at this site are all training items with minimal penetration (less than 6 inches). Through erosion and accumulation of organic material over the site, all OE is anticipated to be encountered at depths of less than one foot unless disposed of in a burial pit. Burial pits are generally created to dispose of multiple items making them easily detectable.

## **6.4 Hazard Analysis and Risk Assessment**

This section presents an assessment of the potential hazards associated with the site activities including chemical hazards (CWM and OE), physical hazards, and biological hazards.

### **6.4.1 Chemical Hazards**

6.4.1.1 It is not anticipated that CWM will be encountered at the M2 Parcel. However, in the event of CWM material discovery all personnel will evacuate the area immediately in an upwind direction. The SUXOS will notify Foster Wheeler Environmental Command Center and the CEHNC Safety Representative. Foster Wheeler Environmental UXO personnel will standby the area until response elements arrive on scene or until directed by the CEHNC safety representative. The Foster Wheeler Environmental Command Center will notify the Ft. McClellan Transition Force Operations and other personnel listed on Table 6-2 as required.

6.4.1.2 The likelihood of employee exposure to incendiary compounds is low as the amount of dust that would need to be generated for an exposure to occur is above visible dust. However, should an OE item suspected to potentially contain incendiary chemicals be encountered, the item will be marked and the area evacuated. Before re-entering the area, an Activity Hazard Analysis will be performed and an evaluation and upgrade of PPE made and approved.

### **6.4.2 Physical Hazards**

The principal safety hazards, including physical hazards, are discussed in the Activity Hazard Analysis (AHA) in Attachment 6-7 for the different phases of the project. In addition to the AHAs, standing work rules and other safety procedures are described in sec. 6.15 of the Site-Wide Work Plan.

#### **6.4.2.1 Heat Stress**

Potential hazards posed by heat stress and the recommended and/or required measures to control these hazards are addressed in sec. 6.14.1 of the Site-Wide Work Plan.

**Table 6-2  
Emergency Telephone Numbers**

<b>Contact</b>	<b>Firm or Agency</b>	<b>Telephone Number</b>
Police	Anniston Police Dept.	(256) 238-1800
Fire	Anniston Fire Dept.	(256) 237-3541
Ambulance	Anniston Rescue Squad	(256) 237-8572
Hospital	Stringfellow Memorial	(256) 235-8900
HAZMAT Response	Anniston Police Dept.	(256) 237-3541
BRAC Environmental Coordinator, Mr. Ronald Levy	Fort McClellan	(256) 848-6853
Project Manager, Mr. John McIlrath	Foster Wheeler Environmental Corporation	(256) 830-4100
D.O. Manager, Mr. Dave Moccia	Foster Wheeler Environmental Corporation	(256) 830-4100
PESM, Ms. Cheryl L. Polios	Foster Wheeler Environmental Corporation	(215) 702-4123
Project Manager, Mr. David Skridulis	CEHNC	(256) 895-1468
Poison Control Center	Poison Control Center	(800) 462-0800
Chemtrac	CHEMTRAC	(800) 424-9300
National Response Center	National Response Center	(800) 424-8802
Fort McClellan Transition Force Operations	Transition Force Operations	(256) 848-5178

#### 6.4.2.2 OE/Explosives

The M2 Parcel may contain OE; there also is a possibility that personnel may encounter ordnance-related items (small arms, cartridges, etc.). Only UXO-trained personnel are authorized to handle OE material. The recommended and/or required measures to control these hazards are described in sec. 6.4.2.2 of the Site-Wide Work Plan.

#### 6.4.2.3 Cold Stress

Cold stress is not anticipated to pose a serious, potential hazard at this site; however, potential hazards posed by cold stress and the recommended and/or required measures to control these hazards are described in sec. 6.14.2 of the Site-Wide Work Plan.

#### 6.4.2.4 Equipment Safety

Potential hazards posed by heavy equipment operations and the recommended and/or required measures to control these hazards are described in sec. 6.4.2.4 of the Site-Wide Work Plan.

#### 6.4.2.5 Hand and Power Tools

Potential hazards posed by the use of hand and portable power tools and the recommended and/or required measures to control these hazards are described in sec. 6.15.9 of the Site-Wide Work Plan. Safety measures for the use of these tools used for clearing and grubbing are as follows:

##### *Power Saws*

- The engine shall be started and operated only when all co-workers are clear of the saw.
- The operator will shut off the saw when carrying it over slippery surfaces, through heavy brush, and when adjacent to personnel; the saw may be carried running (idle speed) for short distances (less than 50 feet) as long as it is carried to prevent contact with the chain or muffler.
- The engine shall be stopped for all cleaning, refueling, adjustments and repairs to the saw or motor, except where manufacturer's procedures require otherwise.
- All chain saws shall have an automatic chain brake or kick back device.
- The idle speed shall be adjusted so that the chain does not move when the engine is idling.
- The operator will hold the saw with both hands during all cutting operations.
- A chain saw must never be used to cut above the shoulder height.

##### *Chopping Tools*

- Chopping tools that have loose or cracked heads or splintered handles shall not be used.
- Chopping tools shall be swung away from the feet, legs, and body, using the minimum power practical for control.
- Chopping tools shall not be driven as wedges or used to drive metal wedges.

#### 6.4.2.6 Noise

Potential hazards posed by noise stress and the recommended and/or required measures to control these hazards are described in sec. 6.8.4 of the Site-Wide Work Plan.

#### 6.4.2.7 Traffic/Public

Potential hazards posed by traffic and public control activities and the recommended and/or required measures to control these hazards are described in sec. 6.4.2.7 of the Site-Wide Work Plan.

#### 6.4.2.8 Fire and Explosion

Potential hazards posed by fires and/or explosions and the recommended and/or required measures to control these hazards are described in sec. 6.4.2.8 of the Site-Wide Work Plan. Gasoline powered equipment will be used during work activities at the M2 Parcel. Fire protection measures that will be used on site in addition to those in the Site-Wide Work Plan are as follows:

- Gasoline powered equipment shall be refueled only after the engine has stopped. Any spilled fuel shall be removed from the equipment before starting.
- Gasoline powered equipment shall not be operated within 10 feet of any refueling operation or any area in which refueling has recently taken place.
- Flammable liquids shall be stored, handled, and dispensed only from National Environmental Policy Act approved safety containers. Plastic containers shall not be used.
- Smoking is prohibited when handling or working around any flammable liquid.
- Workers wearing clothing on which flammable liquid has been spilled shall avoid open flame and other sources of ignition, and change the contaminated clothing as soon as possible.

#### 6.4.2.9 Slips, Trips, and Falls

Potential hazards posed by slips, trips, and falls and the recommended and/or required measures to control these hazards are described in sec. 6.4.2.9 of the Site-Wide Work Plan.

#### 6.4.2.10 Manual Lifting

Potential hazards posed by manual lifting and the recommended and/or required measures to control these hazards are described in sec. 6.15.10 of the Site-Wide Work Plan.

#### 6.4.2.11 Electrical Hazards

Potential electrical hazards and the recommended and/or required measures to control these hazards are described in sec. 6.15.11 of the Site-Wide Work Plan.

#### 6.4.2.12 Excavation Operations

Potential hazards posed by excavation operations and the recommended and/or required measures to control these hazards are described in sec. 6.4.2.12 of the Site-Wide Work Plan.

#### 6.4.2.13 Clearing and Grubbing Operations

Clearing and grubbing operations pose many potential hazards. These hazards include, but are not limited to being struck by falling debris, damaging equipment, tools, personnel and supplies as a result of improper tree felling and brush clearing activities. All clearing and grubbing activities shall be conducted in accordance with EM 385-1-1, Section 31, Tree Maintenance and Removal and ANSI Z133.1-1994, Pruning, Trimming, Repairing, Maintaining, and Removing Trees, and Cutting Brush – Safety Requirements. A copy of ANSI Z133.1-1994 can be found in Attachment 6-8. These requirements include, but are not limited to, the following:

##### *Tree felling:*

- Ensure footing before starting to cut, clear away brush and other materials that might interfere with cutting operation.
- A notch and back cut shall be used in felling trees over 5 inches in diameter, no tree shall be felled by “slicing” or “ripping “ cuts.
- The employee shall work from the up hill side when ever possible.
- The work area shall be cleared to permit safe working conditions.
- Just before the tree or limb is ready to fall an audible warning shall be given to all those in the area: all persons shall be safely out of range when the tree or limb falls.
- Persons shall be kept back from the butt of a tree that is starting to fall.

##### *Brush removal and chipping:*

- Rotary drum and disk-type tree or brush chippers not equipped with a mechanical in-feed system shall be equipped with an in-feed hopper not less than 85 in. (the sum of the horizontal distance from the chipper blade out along the center of the chute to the end of the chute and the vertical distance from the chute down to the ground) and shall have sufficient height on its side members to prevent personnel from contacting the blades or knives of the machine during normal operations.
- Rotary drum and disk-type tree or brush chippers not equipped with a mechanical in-feed system shall have a flexible anti-kickback device installed in the in-feed hopper for the purpose of protecting the operator and other persons in the machine area from the hazards of flying chips and debris.
- Disk-type tree or brush chippers equipped with a mechanical in-feed system shall have a quick stop and reversing device on the in-feed: the activating mechanism for the quick-stop and reversing device shall be located across from the top, along each side of, and as close as possible to the feed end of the in-feed hopper and within easy reach of the operator.
- The feed chute or feed table of a chipper shall have sufficient height on its side members to prevent operator contact with the blades or knives during normal operation.
- Brush chippers shall be equipped with an exhaust chute of sufficient length or design to prevent contact with the blade.

- All workers feeding brush into chippers shall wear eye protectors; loose clothing or hair, gauntlet-type gloves, rings and watches shall not be worn by workers feeding the chipper.
- Employees shall never place hands, arms, feet, legs or any other part of the body on the feed table when the chipper is in operation or the rotor is turning; push sticks – of material which can be consumed by the chipper – shall be used.
- Brush chippers should be fed from the side of the feed table centerline, and the operator shall immediately turn away from the feed table when the brush is taken into the rotor or feed rollers.

#### 6.4.2.14 Steam, Heat, Splashing

Potential hazards posed by steam, heat, and splashing and the recommended and/or required measures to control these hazards are described in sec. 6.15.12 of the Site-Wide Work Plan.

### 6.4.3 *Biological Hazards*

The following may be present at the M2 Parcel. The UXOSO will instruct the field crew in the recognition and procedures for encountering biological hazards at the site.

#### 6.4.3.1 Insect Bites and Stings

Potential hazards posed by insect bites and stings and the recommended and/or required measures to control these hazards are described in sec. 6.4.3.1 of the Site-Wide Work Plan.

#### 6.4.3.2 Lyme Disease

Potential hazards posed by Lyme Disease and the recommended and/or required measures to control these hazards are described in sec. 6.4.3.2 of the Site-Wide Work Plan.

#### 6.4.3.3 Wild Animals

Potential hazards posed by wild animals and the recommended and/or required measures to control these hazards are described in sec. 6.4.3.3 of the Site-Wide Work Plan.

#### 6.4.3.4 Plants

Potential hazards posed by poisonous plants and the recommended and/or required measures to control these hazards are described in sec. 6.4.3.4 of the Site-Wide Work Plan.

### 6.4.4 *Activity Hazard Analysis*

6.4.4.1 The AHA is a systematic way of identifying the potential health and safety hazards associated with major phases of work on the project and the methods to avoid, control, and

mitigate those hazards. The AHAs follow the guidance of the Foster Wheeler Environmental Corporate Program Manual Environmental Health and Safety (EHS) 3-5. AHAs will be developed for all activities as necessary, prior to start-up. The AHAs will be used to train workers in proper safety procedures during phase preparatory meetings.

6.4.4.2 AHAs are included in Attachment 6-7. AHAs have been developed for the following phases of work:

- Mobilization/demobilization;
- OE surface survey;
- Brush clearance;
- Survey study areas, establish corners and boundaries;
- Establish geophysical test lines and grids;
- Conduct geophysical surveys; and
- Manually excavate anomalies.

## **6.5 Training**

Written certification of completion of the required training and medical surveillance will be provided to the Foster Wheeler Project Manager and CEHNC prior to field mobilization. The Project Manager has the responsibility of ensuring that personnel assigned to this project comply with these requirements.

### ***6.5.1 Basic Health and Safety Training***

Basic health and safety training requirements are described in sec. 6.5.1 of the Site-Wide Work Plan.

### ***6.5.2 Manager/Supervisor Training***

Manager/Supervisor training requirements are described in sec. 6.5.2 of the Site-Wide Work Plan.

### ***6.5.3 Annual 8-Hour Refresher Training***

This requirement is described in sec. 6.5.3 of the Site-Wide Work Plan.

### ***6.5.4 Site Health and Safety Training***

Site health and safety training requirements are described in sec. 6.5.4 of the Site-Wide Work Plan.

#### **6.5.5 Off-Road Vehicle Training**

Off-road vehicle training requirements are described in sec. 6.5.4.1 of the Site-Wide Work Plan.

#### **6.5.6 Safety Briefings**

Requirements for on-site safety briefings are described in sec. 6.5.5 of the Site-Wide Work Plan.

#### **6.5.7 First Aid and CPR**

First Aid and CPR requirements are described in sec. 6.5.6 of the Site-Wide Work Plan.

#### **6.5.8 Bloodborne Pathogens Training**

Training requirements for bloodborne pathogens are described in sec. 6.5.7 of the Site-Wide Work Plan.

#### **6.5.9 Fire Extinguisher Training**

Training requirements for fire extinguishers are described in sec. 6.5.8 of the Site-Wide Work Plan.

#### **6.5.10 Subcontractor Training**

Training requirements for subcontractors are described in sec. 6.5.9 of the Site-Wide Work Plan.

#### **6.5.11 UXO Training**

Training requirements for UXO personnel (SUXOS, UXO Technician I, II, and III, UXOQCS, and UXOSO) are described in sec. 6.5.10 of the Site-Wide Work Plan.

#### **6.5.12 Medical Surveillance Procedures**

Medical surveillance procedures for contractor and subcontractor personnel are described in sec. 6.5.11 of the Site-Wide Work Plan.

#### **6.5.13 Documentation**

Documentation of training requirements is described in sec. 6.5.12 of the Site-Wide Work Plan.

#### **6.5.14 Visitors**

Requirements for visitors are described in sec. 6.5.13 of the Site-Wide Work Plan.

## **6.6 Personal Protective Equipment**

6.6.1 For the purposes of PPE selection, the PESM and UXOSO are considered competent persons. The signatures on the approval page of this SSHP constitute certification of the hazard assessment. For activities not covered, the UXOSO will conduct the hazard assessment and select the PPE using the form provided in Attachment 6-4. This shall be attached to a field change request form and the PESM shall certify the assessment by signing the form. PPE selection will be made in consultation with the PESM.

6.6.2 Modifications for initial PPE selection may also be made by the UXOSO in consultation with the PESM using the same form. A written justification for major downgrades will be provided to the PESM for approval on a field change request form. All changes to the PPE, once approved, must also be approved by the CEHNC. Provisions for adjustments of protection levels are described in sec. 6.6 of the Site-Wide Work Plan.

Table 6-3 lists the PPE for site tasks.

## **6.7 Medical Surveillance Procedures**

A description of the medical surveillance program and basic program requirements are described in sec. 6.7 of the Site-Wide Work Plan.

### *6.7.1 Medical Surveillance Requirements*

Specific medical surveillance requirements are described in sec. 6.7.1 of the Site-Wide Work Plan.

### *6.7.2 Medical Data Sheet*

A medical data sheet is provided in Attachment 6-3. Medical data sheet use recommendations are described in sec. 6.7.2 of the Site-Wide Work Plan.

## **6.8 Environmental and Personal Monitoring**

Requirements for environmental and personnel monitoring are described in sec. 6.8 of the Site-Wide Work Plan.

## **6.9 Site Control**

Specific zones shall be established on the work site when operations begin. Site controls are described in sec. 6.9 of the Site-Wide Work Plan.

**Table 6-3  
Personal Protective Equipment Selection**

<b>TASK</b>	<b>HEAD</b>	<b>EYE/FACE</b>	<b>FEET</b>	<b>HANDS</b>	<b>BODY</b>	<b>HEARING</b>	<b>RESPIRATOR</b>
Mobilization/ Demobilization	None	SG	Sturdy Work Boots	LWG as needed	WC	EP as needed	Level D
OE surface survey	None	SG	Sturdy Work Boots	LWG as needed	WC, tyvek as needed	EP as needed	Level D
Brush clearance	HH	SG, PFS as necessary	STB	LWG	WC, tyvek as needed, leather chaps as needed	EP	Level D
Survey study areas, establish corners and boundaries	None	SG	Sturdy Work Boots	LWG as needed	WC, tyvek as needed	None	Level D
Establish geophysical test lines and grids	None	SG	Sturdy Work Boots	LWG as needed	WC	None	Level D
Conduct geophysical surveys	None	SG	Sturdy work boots if STB interfere with geophysical survey	LWG as needed	WC, tyvek as needed	None	Level D
Excavate anomalies	None	SG	Sturdy Work Boots	LWG as needed, or Nit + Sur as needed	WC, tyvek as needed	EP	Level D

Legend:

HH = Hard Hat  
Nit = Nitrile Gloves  
EP = Ear Plugs  
SUR= Surgical Gloves

SG = Safety Glasses  
STB = Steel Toe Boots  
WC = Work Clothes  
Tyvek = Uncoated Tyvek Coveralls

PFS = Plastic Face Shield  
LWG = Leather Work Gloves  
OB = Overboots  
Poly = Polyethylene Coated Tyvek Coveralls

## **6.10 Personnel and Equipment Decontamination**

### *6.10.1 Contamination Avoidance*

Procedures for contamination avoidance are described in sec. 6.10.1 of the Site-Wide Work Plan.

### *6.10.2 Sampling/Monitoring Equipment*

Contamination avoidance procedures to be used with sampling/monitoring equipment are described in sec. 6.10.2 of the Site-Wide Work Plan

### *6.10.3 Personnel*

Contamination avoidance procedures to be used by site personnel are listed in sec. 6.10.3 of the Site-Wide Work Plan.

## **6.11 Waste Disposal Procedures**

Waste disposal procedures are listed in sec. 6.11 of the Site-Wide Work Plan. UXO disposal procedures are described in sec.s 2.0, 3.0, and 4.0 of the Site-Wide Work Plan.

## **6.12 Emergency Response and Contingency Procedures (On-Site and Off-Site)**

Emergency response and contingency procedures are described in sec. 6.12 of the Site-Wide Work Plan.

### *6.12.1 Responsibilities*

The PESH, UXOSO, Emergency Coordinator, and Site Personnel responsibilities for the Emergency Response/Contingency Plan are described in sec. 6.12.1 of the Site-Wide Work Plan.

### *6.12.2 Communication*

Communication methods (telephones and hand and audio signals) that will be used at the site in the event of an emergency situation are described in sec. 6.12.2 of the Site-Wide Work Plan.

### *6.12.3 Local Emergency Support Units*

Table 6-2 lists the emergency telephone numbers and will be posted prominently in the field office and where telephone service is available. Information concerning local emergency support is located in sec. 6.12.3 of the Site-Wide Work Plan.

#### **6.12.4 Pre-Emergency Planning**

Pre-emergency planning requirements are described in sec. 6.12.4 of the Site-Wide Work Plan.

#### **6.12.5 Emergency Medical Treatment**

Basic emergency medical treatment requirements and procedures are described in sec. 6.12.5 of the Site-Wide Work Plan.

#### **6.12.6 Emergency Site Evacuation Routes and Procedures**

Emergency site evacuation routes and procedures are described in sec. 6.12.6 of the Site-Wide Work Plan.

#### **6.12.7 Overt Personnel Exposure**

Procedures for the initial treatment of overt chemical exposures are described in sec. 6.12.7 of the Site-Wide Work Plan.

#### **6.12.8 Decontamination During Medical Emergencies**

Procedures for the initial decontamination of personnel during life-saving first aid and/or medical treatment are described in sec. 6.12.8 of the Site-Wide Work Plan.

#### **6.12.9 Accident/Incident Reporting**

6.12.9.1 As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone:

- John McIlrath, Project Manager;
- Dave Moccia, D.O. Manager;
- Cheryl L. Polios, PESM; and
- The employer of any injured worker who is not a Foster Wheeler Environmental employee.

6.12.9.2 Written confirmation of verbal reports are to be submitted within 24 hours. The accident/incident report is found in the Foster Wheeler Environmental Corporate Health and Safety Program EHS 1-7. If the employee involved is not a Foster Wheeler Environmental employee, his employer shall receive a copy of the report.

**6.12.10**      *In Event of Personnel Injury*

Procedures to be followed in the event of personnel injury are listed in sec. 6.12.10 of the Site-Wide Work Plan. A hospital route map has been provided in Attachment 6-6.

**6.12.11**      *In Event of Potential or Actual CWM Encountered*

Procedures to be followed in the event of an encounter with potential or actual CWM are described in sec. 6.12.11 of the Site-Wide Work Plan.

**6.12.12**      *Fire Prevention and Protection*

Fire prevention and protection requirements are described in sec. 6.12.12 of the Site-Wide Work Plan.

**6.12.13**      *In Event of Potential or Actual Fire or Explosion*

Procedures to be followed in the event of fire or explosion are described in sec. 6.12.13 of the Site-Wide Work Plan.

**6.12.14**      *Spill Control and Response (spread of contamination outside work site)*

Spill control and response procedures are provided in sec. 6.12.14 of the Site-Wide Work Plan.

**6.12.15**      *Spill/Release Reporting*

Reporting procedures in the case of spill/release are provided in sec. 6.12.15 of the Site-Wide Work Plan.

**6.12.16**      *Adverse Weather Conditions*

The procedures to be followed in the event of adverse weather conditions is described in sec. 6.12.16 of the Site-Wide Work Plan.

**6.12.17**      *Emergency Equipment*

Emergency equipment required to be kept on-site for use in the event of an emergency is described in sec. 6.12.17 of the Site-Wide Work Plan.

**6.12.18**      *Restoration and Salvage*

Restoration and/or salvage requirements and procedures are described in sec. 6.12.18 of the Site-Wide Work Plan.

### **6.13 Confined Space Entry**

Activities requiring confined space entries are not anticipated at this time. If confined space entry is required, the work will be conducted in accordance with 29 CFR 1910.146 and the Foster Wheeler EHS References.

### **6.14 Heat/Cold Stress Monitoring**

Heat/cold stress monitoring procedures are provided in sec. 6.14 of the Site-Wide Work Plan.

### **6.15 Standing Operation Procedures, Engineering Controls, and Work Practices**

#### *6.15.1 Forbidden Practices*

Practices forbidden on-site are provided in sec. 6.15.1 of the Site-Wide Work Plan.

#### *6.15.2 Heavy Equipment Operation*

Procedures for heavy equipment operations are provided in sec. 6.15.2 of the Site-Wide Work Plan.

#### *6.15.3 Excavations*

Safety requirements for excavation are provided in sec. 6.15.3 of the Site-Wide Work Plan.

#### *6.15.4 Housekeeping*

Housekeeping requirements are provided in sec. 6.15.4 of the Site-Wide Work Plan.

#### *6.15.5 Sanitation*

Sanitation requirements for water (potable and non-potable) and toilet facilities are described in sec. 6.15.5 of the Site-Wide Work Plan.

#### *6.15.6 Illumination*

Illumination requirements are provided in sec. 6.15.6 of the Site-Wide Work Plan.

#### *6.15.7 Fire Prevention and Protection*

Fire prevention and protection requirements and procedures are provided in sec. 6.15.7 of the Site-Wide Work Plan.

### **6.15.8 The Buddy System**

The buddy system is a safety practice in which each individual is concerned with the health and well being of coworkers. The buddy system will be implemented during all on-site activities and will be incorporated whenever workers may be isolated or as determined by the UXOSO. Two-way radio communication will be established when deemed necessary by the UXOSO.

### **6.15.9 Hand and Power Tools**

Hazards and protective measures for hand and power tool usage are described in sec. 6.15.9 of the Site-Wide Work Plan.

### **6.15.10 Safe Lifting Practices**

Safe lifting practices are described in sec. 6.15.10 of the Site-Wide Work Plan.

## **6.16 Logs, Reports, and Record Keeping**

Requirements for basic record-keeping including the preparation and maintenance of logs and reports are described in sec. 6.16 of the Site-Wide Work Plan.

### **6.16.1 Field Change Request**

Requirements for initiating a Field Change Request are described in sec. 6.16.1 of the Site-Wide Work Plan.

### **6.16.2 Medical and Training Records**

Medical and training record requirements are described in sec. 6.16.2 of the Site-Wide Work Plan.

### **6.16.3 On-Site Log**

On-site log maintenance requirements are described in sec. 6.16.3 of the Site-Wide Work Plan.

### **6.16.4 Weekly and Monthly Safety Reports**

Requirements for the preparation and submittal of a weekly and monthly safety reports are described in sec. 6.16.4 of the Site-Wide Work Plan.

### **6.16.5 Exposure Records**

Exposure record requirements are described in sec. 6.16.5 of the Site-Wide Work Plan.

#### **6.16.6 Accident/Incident Reports**

Requirements for the preparation and submittal of accident/incident reports are described in sec. 6.16.6 of the Site-Wide Work Plan.

#### **6.16.7 OSHA Form 200**

Requirements for the OSHA Form 200 are described in sec. 6.16.7 of the Site-Wide Work Plan.

#### **6.16.8 Health and Safety Logbooks**

The UXOSO will maintain logbooks during site work; requirements are described in sec. 6.16.8 of the Site-Wide Work Plan.

#### **6.16.9 Hazard Communication Program/MSDS**

The hazard communication program and materials safety data sheet (MSDS) requirements are described in sec. 6.16.9 of the Site-Wide Work Plan. MSDS will be maintained onsite in accordance with the Site-Wide WP.

#### **6.16.10 Work Permits**

All work permits, including confined space entry, hot work, lockout/tagout, and excavation and trenching permits will be maintained by the UXOSO in the project files.

#### **6.16.11 EHS Inspections**

Requirements for EHS Inspections are provided in sec. 6.16.11 of the Site-Wide Work Plan.

### **6.17 UXO Safety Considerations for Site Operations**

UXO safety considerations for site operations are provided in Attachment 6-10 of the Site-Wide Work Plan.

### **6.18 Radiological and Chemical Warfare Material (CWM)**

No CWM operations are expected at this time. In the event of CWM material discovery all personnel will evacuate the area immediately in an upwind direction. The SUXOS will notify the Foster Wheeler Environmental Command Center and the CEHNC Safety Representative. Foster Wheeler Environmental UXO personnel will standby the area until response elements arrive on scene or until directed otherwise by the CEHNC Safety Representative. The Foster Wheeler Environmental Command Center will notify Fort McClellan Transition Force Operations Center and other personnel listed on Table 6-2 as required.

**ATTACHMENT 6-1**  
**FIELD CHANGE REQUEST FORM**

**FOSTER WHEELER ENVIRONMENTAL  
FIELD CHANGE REQUEST FORM**

**PROJECT:**

**CHANGE NUMBER:**

**PROJECT LOCATION:**

**DESCRIPTION OF CHANGE:**

**REASON FOR CHANGE:**

**RECOMMENDED DISPOSITION:**

**SITE MANAGER:** \_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**PROGRAM HEALTH AND SAFETY MANAGER:**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**DISTRIBUTION:** Program Health and Safety Manager  
Site Health and Safety Officer  
Quality Assurance Representative  
Field Operation Leader

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SSHP FIELD CHANGE**

Field Change Number: \_\_\_\_\_ Date Effective: \_\_\_\_\_

Pen and Ink changes to be made in the HASP to alert the reader of this change:

Reason for the change to be incorporated into the HASP:

**TEXT OF CHANGE TO BE INCORPORATED:**



**ATTACHMENT 6-2**  
**EXCAVATION CHECKLIST**



# FOSTER WHEELER ENVIRONMENTAL CORPORATION

## DAILY EXCAVATION INSPECTION CHECKLIST

### EHA 6-2 ATTACHMENT A

**TO BE COMPLETED BY A "COMPETENT PERSON"**

Site location _____
Date _____ Time _____ Competent Person _____
Soil Type (s) _____
Soil Classification(s) _____ Excavation depth _____ Excavation width _____
Type of protective system used _____

*Indicate for each item by circling: Y (Yes), N (No), - Address in Comments, Not Applicable (N/A.)*

#### **I. General Inspection of Job Site**

- |  |   |   |     |
|--|---|---|-----|
| A. Surface encumbrances removed or supported   | Y | N | N/A |
| B. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation        | Y | N | N/A |
| C. Hard hats worn by all employees   | Y | N | N/A |
| D. Spoils, materials, and equipment set back at least 2 feet from the edge of the excavation                             | Y | N | N/A |
| E. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.                                      | Y | N | N/A |
| F. Walkways and bridges over excavations 4 feet or more in depth are equipped with standard guardrails                   | Y | N | N/A |
| G. Warning vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic | Y | N | N/A |
| H. Warning system established and utilized when mobile equipment is operated near the edge of the excavation             | Y | N | N/A |
| I. Employees prohibited from working on the faces of sloped or benched excavations above other employees                 | Y | N | N/A |

## II. Utilities

- |  |   |   |     |
|--|---|---|-----|
| A. Utility companies contacted and/or utilities located                              | Y | N | N/A |
| B. Exact location of utilities marked when approaching the utilities                 | Y | N | N/A |
| C. Underground installations protected, supported or removed when excavation is open | Y | N | N/A |

## III. Means of Access and Egress

- |   |   |   |     |
|---|---|---|-----|
| A. Lateral travel to means of egress no greater than 25 feet in excavations 4 feet or more in depth                     | Y | N | N/A |
| B. Ladders used in excavations secured and extended 3 feet above the edge of the trench                                 | Y | N | N/A |
| C. Structural ramps used by employees designed by a competent person  | Y | N | N/A |
| D. Structural ramps used for equipment designed by a registered professional engineer (RPE)                             | Y | N | N/A |
| E. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with a no-slip surface | Y | N | N/A |
| F. Employees protected from cave-ins when entering or exiting the excavation  | Y | N | N/A |

## IV. Wet Conditions

- |   |   |   |     |
|---|---|---|-----|
| A. Precautions taken to protect employees from the accumulation of water                    | Y | N | N/A |
| B. Water removal equipment monitored by a competent person                                  | Y | N | N/A |
| C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation | Y | N | N/A |
| D. Inspections made after every rainstorm or other hazard increasing occurrence             | Y | N | N/A |

## V. Hazardous Atmospheres

- |   |   |   |     |
|---|---|---|-----|
| A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful contaminant exposing employees to a hazard | Y | N | N/A |
| B. Ventilation  | Y | N | N/A |
| C. Testing conducted often to ensure that the atmosphere remains safe   | Y | N | N/A |
| D. Emergency equipment, such as breathing apparatus, safety harness and line, and basket stretcher readily available where hazardous atmospheres could or do exist                  | Y | N | N/A |

E. Safety harness and life line used and individually attended when entering deep confined excavations	Y	N	N/A
--	---	---	-----

**VI. Support Systems**

A. Materials and/or equipment for support systems selected based on soil analysis, trench depth and expected loads	Y	N	N/A
--	---	---	-----

B. Materials and equipment used for protective systems inspected and in good condition	Y	N	N/A
--	---	---	-----

C. Materials and equipment not in good condition have been removed from service	Y	N	N/A
---	---	---	-----

D. Damaged materials and equipment used for protective systems inspected by a RPE after repairs and before being placed back into service	Y	N	N/A
---	---	---	-----

E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses or from being struck by materials or equipment	Y	N	N/A
---	---	---	-----

F. Members of support system securely fastened to prevent failure	Y	N	N/A
---	---	---	-----

G. Support systems provided to insure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	Y	N	N/A
---	---	---	-----

H. Excavations below the level of the base or footing approved by an RPE	Y	N	N/A
--	---	---	-----

I. Removal of support systems progresses from the bottom and members are released slowly as to note any indication of possible failure	Y	N	N/A
--	---	---	-----

J. Backfilling progresses with removal of support system	Y	N	N/A
--	---	---	-----

K. Excavation of material to a level no greater than 2 feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth	Y	N	N/A
--	---	---	-----

L. Shield system placed to prevent lateral movement	Y	N	N/A
---	---	---	-----

M. Employees are prohibited from remaining in shield system during vertical movement	Y	N	N/A
--	---	---	-----

**VII. Comments**

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**ATTACHMENT 6-3**

**MEDICAL DATA SHEET**

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**

**MEDICAL DATA SHEET**

The brief medical data sheet shall be completed by all on-site personnel and will be kept in the Support Zone by the SSHO as a project record during the conduct of site operations. It accompanies any personnel when medical assistance is needed or if transport to a hospital is required.

Project: \_\_\_\_\_

Name: \_\_\_\_\_ Home Telephone: \_\_\_\_\_

Address: \_\_\_\_\_

Age: \_\_\_\_\_ Height: \_\_\_\_\_ Weight: \_\_\_\_\_ Blood Type: \_\_\_\_\_

Name and Telephone Number of Emergency Contact: \_\_\_\_\_

\_\_\_\_\_

Drug or Other Allergies: \_\_\_\_\_

Particular Sensitivities: \_\_\_\_\_

Do You Wear Contacts? \_\_\_\_\_

Provide A Check List Of Previous Illnesses: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What Medications Are You Presently Using? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Do You Have Any Medical Restrictions? \_\_\_\_\_

\_\_\_\_\_

Name, Address, And Phone Number Of Personal Physician: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**ATTACHMENT 6-4**

**PERSONAL PROTECTIVE EQUIPMENT SELECTION TABLE**



**ATTACHMENT 6-5**

**HEALTH AND SAFETY FORMS**



## **FOSTER WHEELER ENVIRONMENTAL CORPORATION**

### **GENERAL HEALTH AND SAFETY RULES**

1. All site personnel must attend each day's Daily Briefing.
2. Any individual taking prescribed drugs shall inform the HSO of the type of medication. The HSO will review the matter with the PHSM and the Corporate Medical Consultant (CMC), who will decide if the employee can safely work on-site while taking the medication.
3. The personal protective equipment specified by the HSO and in the EHS plan(s) shall be worn by all site personnel. This includes hard hats and safety glasses which must be worn at all times in active work areas.
4. Facial hair (beards, long sideburns or mustaches) which may interfere with a satisfactory fit of a respirator mask is not allowed on any person who may be required to wear a respirator.
5. All personnel must sign the site log and the exclusion zone log when used at the site.
6. Personnel must follow proper decontamination procedures and shower at the end of the work shift.
7. Eating, drinking, chewing tobacco or gum, smoking and any other practice that may increase the possibility of hand-to-mouth contact is prohibited in the exclusion zone or the contamination reduction zone. (Exceptions may be permitted by the PHSM to allow fluid intake during heat stress conditions.)
8. All lighters, matches, cigarettes and other forms of tobacco are prohibited in the Exclusion Zone.
9. All signs and demarcations shall be followed. Such signs and demarcation shall not be removed, except as authorized by the HSO.
10. No one shall enter a permit-required confined space without a permit. Confined space entry permits shall be implemented as issued.
11. All personnel must follow Hot Work Permits as issued.
12. All personnel must use the Buddy System in the Exclusion Zone.
13. All personnel must follow the work-rest regimens and other practices required by the heat stress program.

## HEALTH AND SAFETY WORK RULES

### CONTINUED

14. All personnel must follow lockout/tagout procedures when working on equipment involving moving parts or hazardous energy sources.
15. No person shall operate equipment unless trained and authorized.
16. No one may enter an excavation greater than four feet deep unless authorized by the Competent Person. Excavations must be sloped or shored properly. Safe means of access and egress from excavations must be maintained.
17. Ladders and scaffolds shall be solidly constructed, in good working condition, and inspected prior to use. No one may use defective ladders or scaffolds.
18. Fall protection or fall arrest systems must be in place when working at elevations greater than six feet for temporary working surfaces and four feet for fixed platforms.
19. Safety belts, harnesses and lanyards must be selected by the Supervisor. The user must inspect the equipment prior to use. No defective personal fall protection equipment shall be used. Personal fall protection that has been shock loaded must be discarded.
20. Hand and portable power tools must be inspected prior to use. Defective tools and equipment shall not be used.
21. Ground fault interrupters shall be used for cord and plug equipment used outdoors or in damp locations. Electrical cords shall be kept out walkways and puddles unless protected and rated for the service.
22. Improper use, mishandling, or tampering with health and safety equipment and samples is prohibited.
23. Horseplay of any kind is prohibited.
24. Possession or use of alcoholic beverages, controlled substances, or firearms on any site is forbidden.
25. All incidents, no matter how minor, must be reported immediately to the Supervisor.
26. All personnel shall be familiar with the Site Emergency Response Plan.

The above Health and Safety Rules are not all inclusive and it is your responsibility to comply with all regulations set forth by OSHA, the FWENC Environmental, Health and Safety Programs, the EHS plan(s), the client, FWENC Supervisors, and the HSO.

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**

**WEEKLY HEALTH AND SAFETY REPORT**

<b>Project Name:</b> _____		
<b>Location:</b> _____		
<b>SITE INFORMATION</b>	<b>INJURIES AND ILLNESSES</b>	
Week Ending _____	Yes _____	No _____
Hours _____	Describe: _____	
Worked: Craft: ____ PS: ____ Subs: ____	_____	
Check Level of Protection _____	_____	
For the week:        B ____ C ____ D ____	_____	
<b>MAJOR ACTIVITIES CONDUCTED THIS WEEK:</b> (drum handling, sampling, excavation, abatement/T&D, etc.)		
_____		
_____		
_____		
<b>SIGNIFICANT EVENTS THIS WEEK:</b> (regulatory visits, equipment malfunctions, process start-up or shutdown):		
_____		
_____		
<b>FUTURE ISSUES:</b> (schedule, manpower allocation, monitoring equipment, other resources needed)		
_____		
_____		
<b>SITE AUDIT/INSPECTIONS CONDUCTED</b> <span style="float: right;">Yes _____ No _____</span>		
(describe outstanding findings and attach results)		
_____		
_____		
_____		
<b>HIPO ACTIVITIES</b>		
Hot Work	Yes _____ No _____	Dates: _____
Lockout/Tagout	Yes _____ No _____	Dates: _____
Confined Space Entry	Yes _____ No _____	Dates: _____
Soils Analysis Classification	Yes _____ No _____	Dates: _____
Excavation Daily Check List	Yes _____ No _____	Dates: _____
Crane On-Site	Yes _____ No _____	Dates: _____
Critical Lift Plan Performed	Yes _____ No _____	Dates: _____

**FOSTER WHEELER ENVIRONMENTAL CORPORATION  
WEEKLY HEALTH AND SAFETY REPORT**

<b>REAL TIME AIR MONITORING</b>						
Major Activity	Location(s)	Worker Occupation Monitored	FID/PID Range and Readings	CGI/02 Range and Readings	PDM Range and Readings	Other
<b>PERSONAL AIR MONITORING</b>						
Activity Monitored	Location	Occupation	Type of Sample	Analyte	Result	
<b>SUBCONTRACTORS ON SITE</b>						
Company Name	Task or Function			Return to Site Next Week (Y/N)	Performed Subcontractor Review (Y/N)	
_____ Health and Safety Officer - Signature			_____ Date			

**ATTACHMENT 6-6**

**HOSPITAL ROUTE MAP**

## **Directions to Springfellow Memorial Hospital**

From the Main Entrance Gate of Fort McClellan, head South on 21.

21 S will eventually merge with 431 S. Stay on 431 S.

Turn left onto 19<sup>th</sup> Street.

Turn right onto Leithton Avenue.

The Hospital will be on the right side of the road.

**ATTACHMENT 6-7**

**ACTIVITY HAZARD ANALYSIS**

## ACTIVITY HAZARD ANALYSES

Project: <u>M2 Parcel, Clearance Activities</u>		Location: <u>Fort McClellan, Anniston, Alabama</u>
Activity: <u>Mobilization /Demobilization</u>		
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Mobilization/ demobilization of equipment and supplies.	1. Back Injuries	1. Site personnel will be instructed on proper lifting techniques; mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; instruct personnel on proper lifting techniques.
	2. Temperature Extremes	2. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.
	3. Slips/Trips/Falls	3. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.
	4. Vehicular Traffic	4. Spotters will be used when backing up trucks and heavy equipment; trucks and heavy equipment will be equipped with back up alarms; traffic cones/vests will be used when working in public traffic areas.
	5. Dropped Objects	5. Steel toe boots will be worn.
	6. Noise	6. Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn as needed during heavy equipment operations; all equipment will be equipped with manufacturer's required mufflers.
	7. Eye Injuries	7. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.
	8. Sharp Objects	8. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.
	9. Fire	9. 10 lb. ABC type fire extinguisher will be located adjacent to work area; all gasoline powered equipment will be grounded.
	10. Spills	10. Spill and absorbent materials will be readily available. All waste materials generated will be contained in 55-gallon drums.
	11. Biological Hazards	11. Follow procedures outlined in Section 6.4.3.
	12. Hand and Power Tools	12. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ol style="list-style-type: none"> <li>1. See Table 6-3 PPE Selection</li> <li>2. First Aid Kits</li> <li>3. Portable Eyewash</li> <li>4. Fire Extinguishers</li> <li>5. Heavy Equipment</li> <li>6. Hand and Power Tools</li> </ol>	<ol style="list-style-type: none"> <li>1. Pre-use inspection</li> <li>2. Monthly inspections will be performed on first aid kits.</li> <li>3. Portable eye wash will be inspected monthly.</li> <li>4. Monthly inspections will be performed on fire extinguishers</li> <li>5. Conduct pre-use inspections</li> </ol>	<ol style="list-style-type: none"> <li>1. Personnel have read and comply with SSHP</li> <li>2. Site specific training</li> <li>3. At least 2 individuals on-site will have current CPR and First Aid training</li> <li>4. Instruct personnel on proper use of fire extinguishers</li> <li>5. Competent operators will be used</li> <li>6. Instruct personnel on proper use of hand and power tools</li> </ol>

## ACTIVITY HAZARD ANALYSES

Project: <u>M2 Parcel, Clearance Activities</u>		Location: <u>Fort McClellan, Anniston, Alabama</u>
Activity: <u>OE surface survey</u>		
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Initial/surficial OE survey of study areas.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.6; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.
	5. Hand and Power Tools	5. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.
	6. Eye Injuries	6. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.
	7. Sharp Objects	7. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.
	8. Biological Hazards	8. Follow control measures outlined in Section 6.4.3. If poisonous plants are present, PPE will be upgraded to include tyvek and gloves.
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. See Table 6-3 PPE Selection 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Geophysical Survey Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections as per manufacturer's recommendations 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

## ACTIVITY HAZARD ANALYSES

Project: <u>M2 Parcel, Clearance Activities</u>		Location: <u>Fort McClellan, Anniston, Alabama</u>
Activity: <u>Survey study areas, establish corners and boundaries</u>		
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Conventional survey of study areas, establish corners and bounds.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.6; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.
	5. Hand and Power Tools	5. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.
	6. Eye Injuries	6. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.
	7. Sharp Objects	7. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.
	8. Biological Hazards	8. Follow control measures outlined in Section 6.4.3. If poisonous plants are present, PPE will be upgraded to include tyvek and gloves.
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. See Table 6-3 PPE Selection 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Conventional Survey Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections as per manufacturer's recommendations 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

## ACTIVITY HAZARD ANALYSES

Project: <u>M2 Parcel, Clearance Activities</u>		Location: <u>Fort McClellan, Anniston, Alabama</u>
Activity: <u>Establish geophysical test lines and grids</u>		
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Establish geophysical test lines and grids in study areas.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.6; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.
	5. Hand and Power Tools	5. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.
	6. Eye Injuries	6. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.
	7. Sharp Objects	7. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.
	8. Biological hazards	8. Follow control measures outlined in Section 6.4.3.
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. See Table 6-3 PPE Selection 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Conventional Survey Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections as per manufacturer's recommendations 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

## ACTIVITY HAZARD ANALYSES

Project: <u>M2 Parcel, Clearance Activities</u>		Location: <u>Fort McClellan, Anniston, Alabama</u>
Activity: <u>Conduct geophysical surveys</u>		
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Conduct geophysical survey in study areas.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.6; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.
	5. Hand and Power Tools	5. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.
	6. Eye Injuries	6. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.
	7. Sharp Objects	7. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.
	8. Biological Hazards	8. Follow control measures outlined in Section 6.4.3.
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. See Table 6-3 PPE Selection 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Geophysical Survey Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections as per manufacturer's recommendations 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel in proper use of hand and power tools

## ACTIVITY HAZARD ANALYSES

Project: <u>M2 Parcel, Clearance Activities</u>		Location: <u>Fort McClellan, Anniston, Alabama</u>
Activity: <u>Excavate anomalies</u>		
MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Manual excavation of magnetic anomalies in study areas.	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.6; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.
	3. Temperature Extremes	3. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.
	4. Slips/Trips/Falls	4. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.
	5. Noise	5. Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn as needed during heavy equipment operations; all equipment will be equipped with manufacturer's required mufflers.
	6. Eye Injuries	6. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.
	7. Sharp Objects	7. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.
	8. Fire	8. 10 lb. ABC type fire extinguisher will be located adjacent to work area; all gasoline powered equipment will be grounded.
	9. Spills	9. Spill and absorbent materials will be readily available; all waste materials generated will be contained in 55-gallon drums.
	10. Hand and Power Tools	10. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.
	11. Biological Hazards	11. Follow control measures outlined in Section 6.4.3. If poisonous plant are present, PPE will be upgraded to include tyvek and gloves.
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. See Table 6-3 PPE Selection 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Heavy Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections 6. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel in proper use of hand and power tools

## ACTIVITY HAZARD ANALYSES

Project: M2 Parcel, Clearance Activities  
 Activity: Brush clearance

Location: Fort McClellan, Anniston, Alabama

MAJOR STEPS	POTENTIAL HAZARDS	PROTECTIVE MEASURES/CONTROLS
1. Tree and Brush Trimming	1. Exposure to OE/chemical hazards	1. Wear Level D PPE per Section 6.0; follow procedures in the UXO/OE Operational Plan; practice contamination avoidance; follow good personal hygiene practices.
	2. Back Injuries	2. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques.
	3. Heavy Equipment Operation	3. Follow procedures in section 4.3.1; equipment will have rollover protective structures and seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; all slings chains and ropes will be rated for the load in which it is expected to lift; spills and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; avoid equipment swing areas; know hand signals; all equipment will be equipped with backup alarms.
	4. Temperature Extremes	4. Site personnel will be trained about signs and symptoms of heat and cold stress; FWENC Program EHS 4-6 will be followed.
	5. Slips/Trips/Falls	5. Maintain work areas safe and orderly; unloading areas should be on even terrain; watch for uneven terrain, stumps, vegetation in walk areas; mark tripping hazards and repair if possible.
	6. Vehicular Traffic	6. Spotters will be used when backing up trucks and heavy equipment; trucks and heavy equipment will be equipped with back up alarms; traffic cones/vests will be used when working in public traffic areas.
	7. Overhead Hazards	7. Personnel will be required to wear hard hats.
	8. Dropped Objects	8. Steel toe boots will be worn.
	9. Noise	9. Hearing protection with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs) will be worn as needed during heavy equipment operations; all equipment will be equipped with manufacturer's required mufflers.
	10. Eye Injuries	10. Safety glasses will be worn. A portable eye wash station will be located adjacent to work activities.
	11. Sharp Objects	11. Cut resistant work gloves will be worn; All hand and power tools will be maintained in safe condition; first aid kits will be available by work area.
	12. Fire	12. 10 lb. ABC type fire extinguisher will be located adjacent to work area; all gasoline powered equipment will be grounded.
	13. Spills	13. Spill and absorbent materials will be readily available; all waste materials generated will be contained in 55-gallon drums.
	14. Biological Hazards	14. Follow control measures outlined in Section 4.2. If poisonous plants are present, PPE will be upgraded to include tyvek and gloves.
	15. Hand and Power Tools	15. The proper tools will be used for each task, all tools will be inspected before each use, damaged tools will be removed from service, tools will be used in accordance with manufacturer's instructions.
EQUIPMENT USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. See Table 6-3 PPE Selection 2. First Aid Kits 3. Portable Eyewash 4. Fire Extinguishers 5. Heavy Equipment 6. Hand and Power Tools	1. Pre-use inspection 2. Monthly inspections will be performed on first aid kits. 3. Portable eye wash will be inspected monthly. 4. Monthly inspections will be performed on fire extinguishers 5. Conduct pre-use inspections	1. Personnel have read and comply with SSHP 2. Site specific training 3. At least 2 individuals on-site will have current CPR and First Aid training 4. Instruct personnel on proper use of fire extinguishers 5. Competent operators will be used 6. Instruct personnel on proper use of hand and power tools

**ATTACHMENT 6-8**

**ANSI STANDARD Z133.1-1994**

## **7.0 LOCATION SURVEYS AND MAPPING PLAN**

### **7.1 General**

Surveying and mapping requirements, prepared in accordance with DID OE-005-07 Location Surveys and Mapping Plan, are discussed in sec. 7.0 of the Site-Wide WP. Specific requirements for the M2 parcel are described below.

### **7.2 M2 Parcel**

Location surveys and mapping will be performed to establish the boundaries of the M2 Parcel and each corner of the sampling grids.

#### *7.2.1 Accuracies*

Boundary and grid corners will be referenced to the North American Datum of 1983 and the Alabama State Plane Coordinate System. Parcel boundaries will be located to the closest one-hundredth foot (0.01 foot). Each grid corner will be located to the closest one-foot (1 foot). Grids will be oriented so that the y-axis is approximately parallel to magnetic north. Corners will be marked by driving two to four foot long wooden stakes into the ground with a minimum of six inch stick-up above ground surface. The stick-up shall be labeled and marked with high visibility paint or flagging.

#### *7.2.2 Location of Recovered UXO and Inert Ordnance Items*

The coordinate locations of recovered UXO and inert ordnance items will be determined and recorded during the anomaly reacquisition process. Ordnance scrap, ordnance fragments, shrapnel, small arms ammunition and metallic debris will be recorded on a per-sampling grid basis and will not be located by coordinates.

### **7.3 Deliverables**

7.3.1 A tabulated list of the respective grid corners for each grid investigated and cleared will be provided. An electronic and hard copy of all drawing files and reference files used for and developed as part of this removal action will be provided. These files will meet the following requirements:

7.3.2 Each sheet will have a standard border, revision block, title block, complete index sheet layout, bar scale, legend, metric grid lines, grid tick layout, a magnetic north, a grid north, and a true north arrow, and be plotted at a horizontal scale of 1:2,400 (1"=200') minimum.

7.3.3 A copy of the design files will be provided on 8 mm 5.0 or 10.0 gigabyte magnetic tapes, 3 ½" HD floppy disks or on approved CD-ROM format. CD-ROMs will be the preferred format.

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**M2 Parcel OE Removal Action Plan**

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The data to be submitted will contain the final, corrected version of the design file. Tapes and/or disks will be labeled with the project name (i.e., Fort McClellan, M2 Parcel OE Removal Action), project number, date, company name, address and telephone number and the number of files.