

**Final**

**Work Plan / Site Safety Submission  
Volume II - Site Safety and Health Plan  
Chemical Warfare Materiel Site EE/CA  
Fort McClellan, Alabama**

**Contract No. DACA87 - 95 - D - 0018**

**Prepared for**

**U. S. Army Corps of Engineers  
Huntsville Center**

**Presented by**

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**FORT MCCLELLAN CHEMICAL SITE EE/CA  
WORK PLAN/SITE SAFETY SUBMISSION  
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## LIST OF ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
AELs	Airborne Exposure Limits
ASR	Archive Search Report
BRAC	Base Realignment and Closure
BZ	Incapacitating Agent – Psychoactive Compound
CAIS	Chemical Agent Identification Sets
CDTF	Chemical Decontamination Training Facility
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CG	Choking Agent
CK	Blood Agent
CRZ	Contaminant Reduction Zone
CWA	Chemical Warfare Agents
CWM	Chemical Warfare Material
D&I	Detection and Identification
DA PAM	Department of the Army Pamphlet
DAAMS	Department of Area Air Monitoring System
DANC	Decontaminating Agent Non-Corrosive
DCA	1,2 – Dichloroethane
DCE	1,2 – Dichloroethene
DERP	Defense Environmental Restoration Act
DOT	Department of Transportation
DS2	Decontaminate Solution #2
EBS	Environmental Baseline Survey
EDC	Ethylene Dichloride
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
ERDEC	Edgewood Research Development & Engineering Center
EZ	Exclusion Zone
FTIR	Fourier Transform Infrared Spectrometry
FUDS	Formerly Used Defense Sites
GA	(Tabun) Nerve Agent – Anticholinesterase Compound

GB	(Sarin) Nerve Agent – Anticholinesterase Compound
GFCI	Ground Fault Circuit Interrupters
GIS	Geographic Information Solutions
H, HD	Mustard, Distilled Mustard
HAZCOM	Hazard Communication
HEPA	High Efficiency Particulate Air
IDLH	Immediately Dangerous to Life or Health
IDW	Investigative Derived Waste
IHF	Interim Holding Facility
L	Lewisite
MCE	Maximum Credible Event
MP	Military Police
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NBC	Nuclear, Biological, and Chemical
NCP	National Contingency Plan
NIOSH	National Institute of Occupational Safety and Health
NOSE	No Significant Effects
NRT	Near Real-Time
OE	Ordnance and Explosive Wastes
OSHA	Occupational Safety and Health Administration
OVA	Organic Vapor Analyzer
PCBs	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PPE	Personal Protective Equipment
PS	Chloropicrin
PSHO	Project Safety and Health Officer
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RCWM	Recovered Chemical Warfare Material
RTAP	Real-Time Analytical Platform
SCBA	Self-Contained Breathing Apparatus

SI	Site Inspection
SOP	Standard Operating Procedure
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
STB	Super Tropical Bleach
TASC	Training Aids Support Center
TCE	Trichloroethene
TEU	Technical Escort Unit
TLV	Threshold Limit Values
USAESCH	U.S. Army Engineering Support Center – Huntsville
USATHAMA	United States Army Toxic and Hazardous Materials Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
VX	Nerve Agent – Anticholinesterase Compound
WBGT	Wet Bulb Globe Temperature
WP	White Phosphorous

## **SECTION 1 INTRODUCTION**

### **1.1 PURPOSE**

1.1.1 The purpose of this Site Safety and Health Plan (SSHP) is to establish personnel protection standards and mandatory safety practices and procedures for the site characterization to support the risk assessment and Engineering Evaluation/Cost Analysis (EE/CA) for work being conducted at chemical warfare materiel (CWM) sites located on Fort McClellan, Alabama. The plan assigns responsibilities, establishes standard operating procedures, and sets forth plans for contingencies that may arise while operations are being conducted at field work sites.

1.1.2 Chemical agents, such as *mustard, Lewisite, or the nerve agents – GB or VX were used in training and*, may be present at Fort McClellan. The toxic nature of these materials makes worker awareness/understanding of safety and health concerns critical to the safe conduct of this project. This plan is also intended to heighten this awareness/understanding.

1.1.3 This SSHP provides guidance for decision making during field activities. Sections address responsibilities and work procedures, physical and chemical risks, emergency procedures, and levels of required personal protection. Site-specific information such as a project description and site history, a contingency plan, a list of emergency contacts, and necessary health and safety equipment are also discussed. Attached to this plan are a number of appendices which address specific activities or safety and health procedures that are required for conduct of this project.

### **1.2 APPLICABILITY**

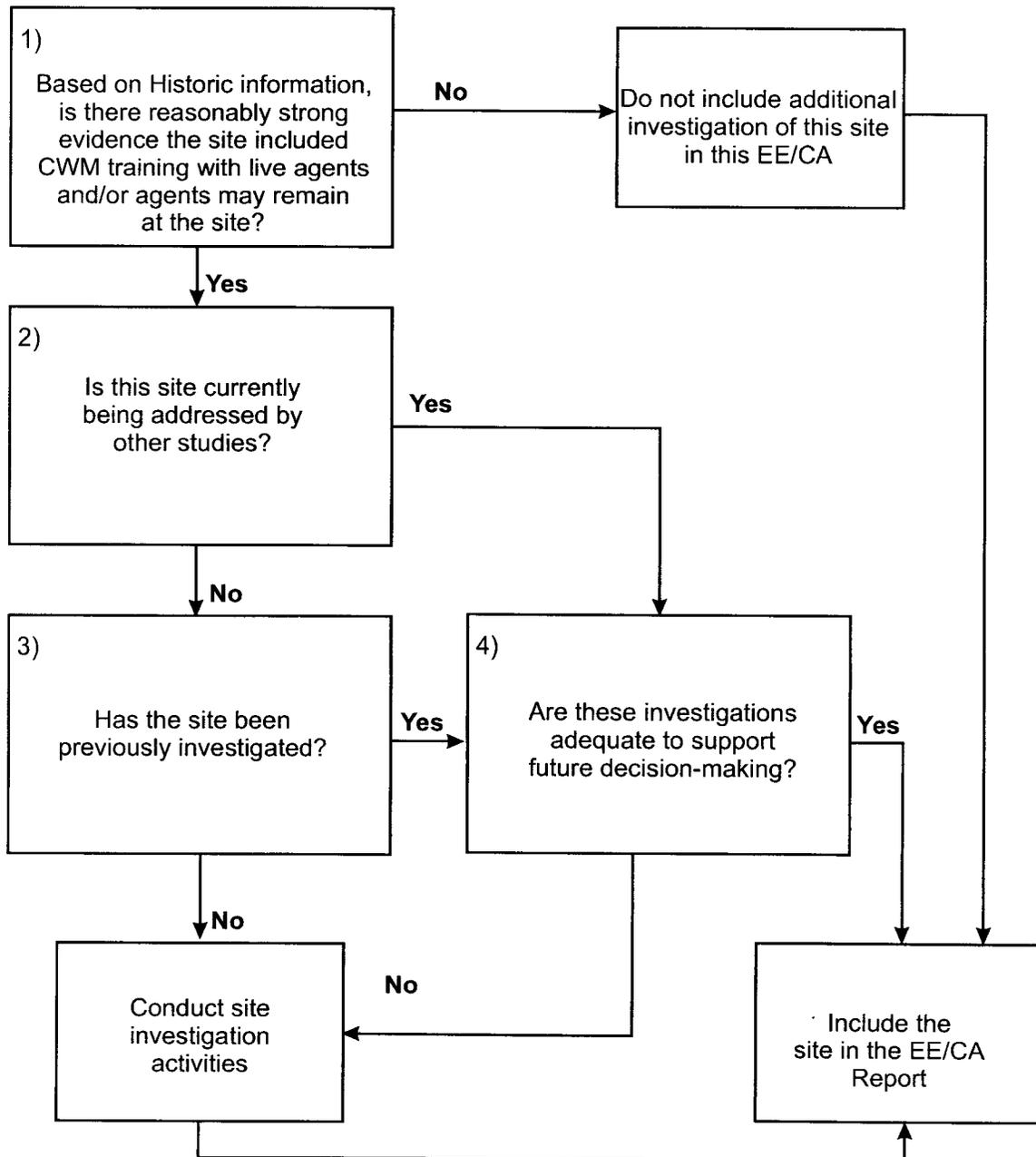
1.2.1 The plan provisions are mandatory for all on-site activities undertaken at Fort McClellan by Parsons Engineering Science, Inc. (Parsons ES) personnel. All site activities comply with the provisions of the Corporate Health and Safety (H&S) Policies and Procedures Manual and applicable Army regulations, and state and federal laws including 29 CFR Parts 1910 and 1926. As site activities change, this plan may need to be modified. Such modifications are submitted as SSHP addenda and are numbered sequentially. All SSHP addenda are reviewed and approved by the Project Health and Safety Officer (PHSO) and the USAESCH.

1.2.2 Subcontractors must choose to adopt this plan or submit SSHPs to the PHSO addressing hazards associated with their specific project activities. Subcontractor plans must comply with all applicable standards in 29 CFR Parts 1910 and 1926, and be reviewed by Parsons ES prior to commencing specific site tasks. Subcontractors' SSHPs

will be attached to the Work Plan as appendices. Government organizations such as the Edgewood Chemical and Biological Center (ECBC) and the Technical Escort Unit (TEU) will perform tasks in support of this project. These organizations will be responsible for activities such as on-site sample analysis/air monitoring, and CWM handling, respectively. Personnel from these organizations will abide by the Health & Safety procedures established by their own organizations. However, ECBC and TEU personnel are expected to comply with the provisions of this SSHP (as a minimum) unless their organizational procedure has other requirements - in which case ECBC or TEU requirements will govern.

1.2.3 All Parsons ES and subcontractor personnel must read this plan and sign the Plan Acceptance Form prior to the start of the work at this site. The Plan Acceptance Form is included in Appendix C containing Safety and Health forms.

**Figure 1.3  
Investigation Decision Tree**



## SECTION 2

### SITE DESCRIPTION

#### 2.1 PROJECT LOCATION

This project addresses chemical agent related training sites. All of these sites are located on Fort McClellan, Alabama. Fort McClellan is located just to the northeast of the City of Anniston, Alabama in Calhoun County (Figure 2.1). The Choccolocco Mountains provide a backdrop to the east of the main facility. This installation is to be closed by September 1999 under the Base Realignment and Closure Program (1995).

#### 2.2 HISTORY OF FORT McCLELLAN

Use of the Fort McClellan area for ordnance training activities may have begun as early as the Spanish American War (1898-1899), and continued through closure in 1999. Activities on this facility included a wide variety of ordnance and small arms training as well as training in the handling, detection and response to chemical agents. A more detailed description of the site history is provided in Section 1, Volume I of this three-volume Chemical Site Safety Submission.

#### 2.3 SITES TO BE INVESTIGATED

Training with chemical warfare agents and related materials has occurred at Fort McClellan for more than 80 years. As a result of this training, many sites/areas have potentially been contaminated with chemical agents. An Archive Search Report (ASR) which focused on potentially contaminated Fort McClellan CWM sites was completed in June 1998. Some of these sites are the focus of further investigations under this EE/CA. Volume I of this Chemical Site Safety Submission contains additional information on these sites. For purposes of this Safety and Health Plan, Table 2.1 summarizes pertinent information on the sites that will have field activities performed for this EE/CA. More detailed discussions are provided in Section 1 of Volume I. Figure 2.2 shows the locations of the sites.

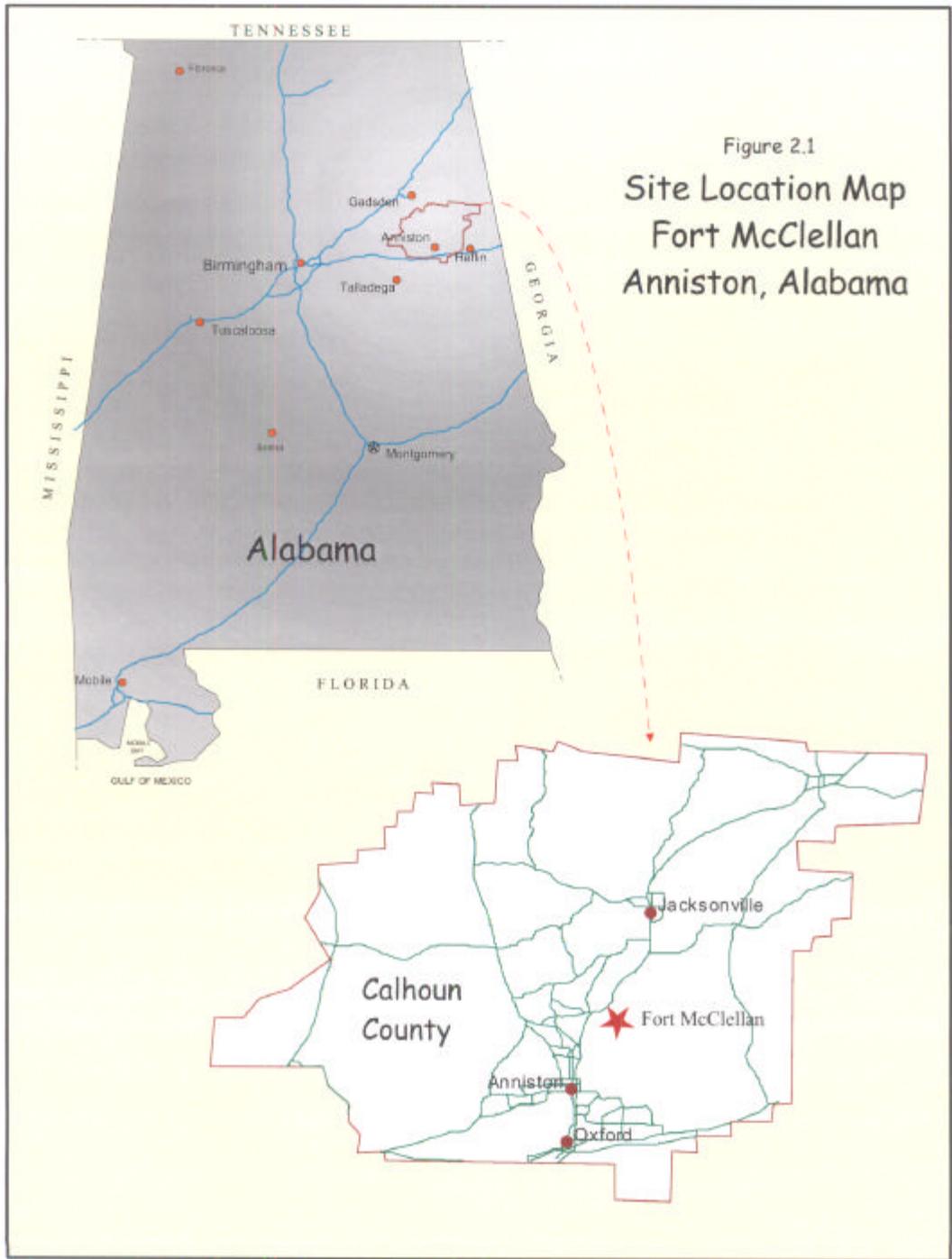


Figure 2.1  
Site Location Map  
Fort McClellan  
Anniston, Alabama

**Table 2.1  
Site Summary**

<b>Site Number(s) ID</b>	<b>Site Description</b>
<i>Training Area 31</i>	This training area and Range 31 may overlap somewhat – exact boundaries of Training Area 31 are not known. Toxic agents were used at this site to contaminate objects/areas with GB and HD. Students were then trained to react to and decontaminate objects and areas. Chemical munitions may have been burned in this area or adjacent to it as training exercise for Tech Escort. Six areas within this site were locations for training (3.4 acres).
<i>Area T-38</i>	Six (6) acre site used between 1961 and 1972 for training technical escort personnel in techniques of eliminating toxic hazards caused by mishaps to chemical munitions during transport (Technical Escort Reaction Area). Area was also used for storage of toxic agents and munitions, including GB, VX and HD. Storage included four 1-ton HD containers. In 1973, area was declared free of contamination. There are reports that a drum containing mustard was buried on the southern portion of site or possibly in the central or northeastern portion, and that a large disposal sump (10 x 20 x 10 feet deep) was reportedly used to dispose of decontaminants and other hazardous wastes.
<i>Smoke Ranges R and S</i>	ASR indicates that this is identified as a Chemical Area on the 1958 Range Map. An expended Livens round was found to the east of the site during ASR visit. ASR concluded it was unknown whether toxic agents were used in this area. This range area was identified as possible drum burial site. Site size 300 acres. The soil in portions of Range S were reportedly stained black with residual fog oil and appeared like asphalt.
<i>T-4 Biological Warfare Area</i>	This area was used from 1965 to 1971 for training in the detection of biological warfare agents through the use of simulants. Biological simulants that were used were Bacillus globigii (BG) and Serratia marcescens (SM). These types of simulants had been used previously in the 1950's at Fort McClellan and elsewhere and are generally considered short-lived in the open environment (less than a month). BG is considered relatively harmless with SM potentially more pathogenic in large quantities. Only small quantities of these simulants were employed in individual exercises and decontamination using STB and DS2 was conducted (USATHAMA), 1977). Area T-4 has also been noted as the possible site of an old HD storage area and may have been the location of a reported 110-gallon HD spill which may have occurred on 1955.
<i>Agent ID Area</i>	ASR indicates that this 2-acre area was on a 1969 Orientation Map in the Chemical Corps Student Guide. Exact use is unknown and no visual evidence exists of Chemical or Ordnance use.
<i>Cane Creek Training Area</i>	ASR states that area (2 acres) first appeared in 1956 on Map of Chemical Corps Training Areas. Reportedly used, in 1958, for training classes in decontamination. Use of toxic agents in this area is unknown. Cane Creek may have served as field water source.

**Table 2.1 (Continued)**  
**Site Summary**

Site Number(s) ID	Site Description
<i>Naylor Field</i>	10-Acre site used for training in the decontamination of equipment (field artillery pieces) contaminated with agent (Mustard). This area was originally known as the Howitzer Hill Decontamination Area. This area was closed in 1973. Signs were found during ASR site visit to indicate that warnings of a toxic area and prohibitions against digging had been posted since 1973. ASR states that contaminated equipment and/or agent may be buried in this area. The January 1998 Environmental Baseline Survey (EBS) identified this as another name for the Agent Decontamination Area: Training Area T-6.
<i>Blacktop Training Area</i>	This is a large (3-acre) blacktop site which is identified on both the 1956 Chemical Corps Training Areas Map and the 1969 Chemical School Orientation Map. Various demonstrations and training may have occurred in this area. Permanent bleachers were built at north and south ends of area. An old, high fence previously existed within this area(Fenced Yard in Blacktop Area) which may have been used to store agents or to conduct toxic agent training in conjunction with the decontamination training which took place on the blacktop. Use of agents in these areas (Blacktop and Fenced Yard) is unknown.
<i>Dog Training Area</i>	This area includes an inner fenced area with a high fence and severely eroded concrete pad. The inner yard may have been used to store agents or for "Transfer Operations" training.
<i>Old Burn Pit</i>	Pit was discovered during ASR site visit. The burn pit is 50 square feet in area and located behind a motor pool area, north of the dirt service road which runs along the northern border of the D&I Area. Contents or origin of this pit are unknown.
<i>Field Personnel Decontamination Area</i>	This area was identified from the 1969 orientation map and is located on the north side of 24th Street midway between 12th and 13th Avenues. Exact use of area and toxic agents, if any, in this area is unknown.
<i>Old Toxic Training Area</i>	Area was previously identified in the Installation Assessment by USATHAMA, and was identified as being 484 square feet with unknown contents. Suspected agent use was HD and area may have been a demonstration area. The EBS by ESE in January 1998, includes a site with the same name which contained a 480 square foot ditch used in training for detection of HD. Exact location of area was unknown and it was reported to be both to the east and to the south of Bldg. 3183. At this site, agent was placed on ground surface and likely decontaminated with STB and DS2.

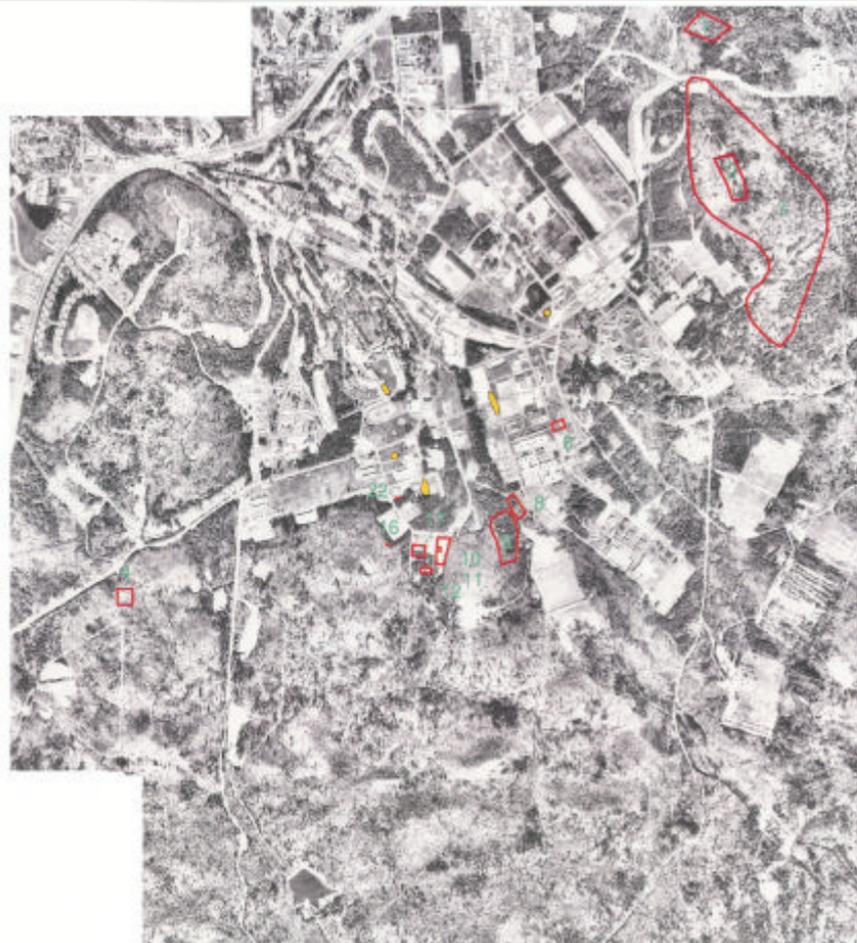
**Table 2.1 (Continued)  
Site Summary**

Site Number(s) ID	Site Description
<i>Mustard Spill Sites</i>	<p>There are four HD Spill Sites/Locations listed in the ASR:</p> <ul style="list-style-type: none"> <li>• South of Building 141,</li> <li>• North of TASC,</li> <li>• South of 23<sup>rd</sup> Street and east of MP Museum, and</li> <li>• West side of 10<sup>th</sup> Street either side of Summerall Gate Road.</li> </ul> <p>The EBS lists five (5) historical spill/burial sites and locates these on Parcel Maps included with EBS.</p>
<i>Range 24A</i>	<p>This range was originally called Range 24 and was built after World War II. Range 24 was used as a rifle range, sub-machine gun range and demolition area. By 1974 the name of the range had changed to Range 24A and in 1990, the range is listed as a multi-purpose (smoke, demo and flame field) range. This range is located within the World War I artillery impact area. Located within Range 24A is Area T-24A. This training area is 1.5 acres used formerly as an EOD training area. Training Area 24A was used until 1973 for chemical munitions decontamination and disposal, and training with phosgene (CG), BZ, GB and HD agents. Two square burning pits were used for training exercises. These pits were reportedly each 16 feet on a side and were enclosed by a fenced area measuring 130 by 260 feet. Approximately 183 pieces of 105 mm and 155 mm projectiles (used as training aids) required decontamination in April 1973.</p>

Figure 2.2

## EE/CA SITE AREA LOCATOR MAP

Boundaries Overlaid  
on 1994 Photo-mosaic



- |   |   |
|---|---|
| 1   | Training Area 31                        |
| 2   | T-38 (Reservoir Ridge)                  |
| 3   | Smoke Ranges R & S                      |
| 4   | T-4 Biological Warfare Area             |
| 6   | Agent ID Area                           |
| 8   | Cane Creek Training Area                |
| 9   | Naylor Field                            |
| 10  | Blacktop Training Area                  |
| 11  | Fenced Yard in Blacktop Area            |
| 12  | Dog Training Area                       |
| 16  | Old Burn Pit                            |
| 17  | Field Personnel<br>Decontamination Area |
| 22  | Old Toxic Training Area                 |
| 23  | Training Area 24A                       |
|  | Mustard Spills Areas                    |

Data Source: Oak Ridge National Laboratory

PERKINS ENGINEERING  
SCIENCE, INC.

U.S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT CENTER

Project No.  
Drawn By  
Checked By  
Revision No.

FORT McCLELLAN  
ANNISTON, ALABAMA  
CAL HOUN COUNTY

Scale: 1" = 2000'  
Date: 09/01/00  
Sheet: 1 of 1  
Project: F 15118

## SECTION 3

### PURPOSE AND SCOPE OF FORT McCLELLAN EE/CA PROJECT

#### 3.1 PURPOSE

The purpose of this EE/CA site investigation is to establish and characterize the presence of any chemical agent contamination at sites used historically at Fort McClellan, Alabama for CWM training, and to a lesser extent characterize the presence of ordnance and explosives (OE) detected during the investigation of the chemical warfare materiel sites. Included in the effort will be an evaluation of a wide range of strategies of risk abatement and recommendations for preferred alternative(s) for the selected sites. This work is being conducted in support of non-time-critical removal actions in a manner consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). The EE/CA will adhere to relevant U.S. Army regulations and guidance for CWM and OE programs.

#### 3.2 EE/CA SCOPE

3.2.1 During the EE/CA site characterization, efforts involving intrusive excavation, sampling, and data collection will be conducted to determine or classify those portions of the site that are contaminated or potentially contaminated with chemical agent, and to estimate the type and amount of contamination. The major components of the work that will be conducted to complete the EE/CA for the CWM sites at Fort McClellan include the following:

- Review previous reports, documents, and historical records, including the Archives Search Report (ASR), and other data that may be provided by the U.S. Army;
- Conduct a comparative assessment of historic aerial photography to determine specific locations of interest within the site areas.
- Visually inspect the sites, and collect any additional relevant data that may be locally available;
- Prepare planning documents for the field investigation that specifically address:
  - Management of the effort,
  - Intrusive excavation procedures,
  - Chemical data, laboratory, and field sampling procedures,
  - Geophysical investigation approach and equipment,

- Environmental protection,
  - Conventional ordnance handling,
  - Investigative derived waste (IDW) and scrap monitoring and disposal,
  - Site mobilization/demobilization and support,
  - Quality control,
  - Site Safety and Health (including training, monitoring, decontamination, emergency response and site control),
  - Implementation of the interim holding facility (IHF) by PM Non-Stockpile,
  - CWM transportation and TEU support,
  - Community Relations, and
  - Protective Action.
- Conduct brush clearing operations and surface debris removal prior to geophysical surveys;
  - Perform geophysical surveys;
  - Perform intrusive investigations into suspect chemical warfare materiel burial sites and handling areas based on results of geophysical surveys and historical site information;
  - Conduct location survey and mapping and develop the GIS data base;
  - Prepare a qualitative assessment of risk from chemical contamination;
  - Provide technical support to the government for meetings and public relations activities;
  - Evaluate site investigation results, assess institutional controls and other alternatives, and prepare the EE/CA report; and
  - Provide project management.

3.2.2 A more detailed overview of project activities is provided in Section 2 of the Workplan -- Volume I.

## **SECTION 4 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES**

Parsons ES' policy is to provide its employees, subcontractors, and authorized visitors with information and procedures in order to protect them and the adjacent community from any adverse effects that might result from work at a job site involving potentially hazardous substances. All personnel involved with this project will follow the Safety and Health procedures set forth in this plan. Visitors will not be permitted site access unless they read and agree to comply with this plan. The SSHP acknowledgment will be signed by all personnel required to enter contaminated work areas.

### **4.1 SITE SAFETY AND HEALTH OFFICER**

4.1.1 Parsons ES will designate a site safety and health officer (SSHO) to define, implement and enforce the site safety program and procedures at Fort McClellan sites. The SSHO, along with the UXO Safety Officer, conducts the daily safety meetings and interfaces with other site representatives. The SSHO takes the following action(s) when appropriate:

- Orders the immediate shut-down of site activities in the case of a medical emergency or unsafe practice.
- Ensures protective clothing and equipment are properly stored and maintained.
- Ensures that the environmental and personnel monitoring operations are on-going and in accordance with this SSHP.
- Restricts visitors from areas of potential exposure to harmful substances.

A daily log will be maintained on-site by the SSHO. This log will include:

- Date
- Daily safety meeting topic
- Training
- Area(s) checked
- Employees in each work area(s)
- Equipment being used by employees
- Protective clothing being worn by employees
- Protective devices being used by

- Subcontractor's personnel
- Visitors
- Designated state and federal representatives
- Air monitoring data (performed by both: ECBC - for chemical agent and Parsons ES - for industrial chemicals)
- First aid administered
- Visits by all outside personnel
- Any incidents of a Safety and Health nature
- Site Safety and Health Officer's signature

4.1.2 The SSHO has responsibility for implementing and enforcing the site safety program and procedures. He/she will oversee any personnel monitoring and will decide (in conjunction with the PHSO – if necessary) when action levels have been reached which require more stringent personnel protection. The SSHO enforces the protective equipment to be used for various site activities. The SSHO will maintain contact with the Parsons ES PHSO and keep him informed of all significant Safety and Health incidents/decisions.

4.1.3 The Site Safety and Health Officer will be responsible for safety inspection of the work sites, material and equipment. Safety and health deficiencies and the corrective action(s) taken will be recorded. All pertinent information will be recorded in the daily log.

4.1.4 The Site Safety and Health Officer will be responsible for compliance with Safety and Health issues at the project site. He/she will ensure that all air monitoring instruments (i.e., for industrial chemicals) are properly operated, calibrated, and maintained during operations, and will work closely with the QA/QC staff to ensure conformance with SSHP. He/she has the authority to stop work if any operation or activity threatens worker safety or public health.

## **4.2 UXO SAFETY OFFICER**

The primary hazards associated with the Fort McClellan field activities appear to be chemical agent or OE related. The Parsons ES SSHO will be assigned responsibility for monitoring/controlling these hazards. The UXO Safety Officer provided by HFA (the UXO subcontractor for the field activities associated with this project) will be responsible for ensuring safe procedures are followed for all UXO-related activities. This UXO Safety Officer will also be assigned other subcontractor responsibilities during field activities, and will report his activities/findings to both the Parsons ES Site Manager and SSHO.

### **4.3 PROJECT MANAGER, MR. KENNETH STOCKWELL, P.E.**

Mr. Stockwell is ultimately responsible for implementation and enforcement of the SSHP. He has the authority to access the required resources throughout Parsons ES and our subcontractors to ensure compliance with the contract requirements; to include operational, QA/QC, Safety and Health, and regulatory matters.

### **4.4 PROJECT HEALTH AND SAFETY OFFICER, ED GRUNWALD, CIH**

4.4.1 Mr. Grunwald, CIH will be responsible for oversight and direction to ensure full compliance with all health and safety issues at the project site. He will oversee all aspects of site safety, including: the preparation of the Site Safety and Health Plan, performance of the initial site specific training, and the periodic auditing of site operations to verify OSHA, COE, and SSHP compliance.4.4.2 Mr. Grunwald is the Corporate Health and Safety Manager for Parsons Infrastructure and Technology Group, Inc. He is a Certified Industrial Hygienist with over 18 years of experience in managing health and safety programs in the environmental services and construction industries. Mr. Grunwald has a M.S. in Environmental Health and a B.S. in Bacteriology and has extensive experience in the development and implementation of health, safety, and training programs. He has prepared and implemented hundreds of SSHPs for: CERCLA Phase I and II investigations, UST removals, drum removal and staging operations, soil incineration activities, mixed waste investigations, confined space entries, and bioremediation operations. He has worked at numerous Superfund sites and, in addition to OSHA regulations, is familiar with CERCLA, RCRA, and TOSCA guidelines and regulations. Mr. Grunwald has prepared and implemented SSHPs for sites with all types of safety and chemicals hazards, including pesticides, explosives, mixed wastes, buried ordnance and gas cylinders, lead and asbestos, petroleum hydrocarbons, and PCBs.

### **4.5 EQUIPMENT OPERATORS**

Equipment operators will be responsible for the maintenance, inspection, and safe operation of their equipment. Operators are responsible for daily inspection of their equipment and assuring it is in a safe operating condition. Heavy equipment inspection logs will be completed and maintained on-site (refer to Appendix Q).

### **4.6 EMPLOYEE SAFETY RESPONSIBILITY**

Each employee is responsible for his own safety as well as the safety of those around him. The employee shall use all equipment provided in a safe and responsible manner as directed by his supervisor. Personnel will follow the policies set forth in the Parsons Safety and Health procedures relevant to site operations which are included within or attached to this SSHP or appendices.

**4.7 RESPONSIBLE PARSONS ES SAFETY AND HEALTH PERSONNEL**

The following personnel are responsible for Safety and Health on site:

Project Manager:	Ken Stockwell, Parsons ES, Norcross, Georgia (678-969-2351)
Site Manager:	To Be Determined
Project Safety and Health Officer:	Ed Grunwald, Parsons ES Norcross, Georgia (678-969-2394)
Site Safety and Health Officer	To Be Determined
Subcontractors:	UXO – HFA (Human Factors Applications, Inc.) Surveying - To Be Determined

Figure 4.1 shows the overall program organization for the Fort McClellan project, and the other organizations and personnel working with Parsons ES. Table 4.1 provides a more detailed listing of responsibilities of personnel working on this project.

**NOTE:** Parsons ES and subcontractors personnel will be involved in potentially hazardous material activities at this site. The Edgewood Chemical and Biological Center (ECBC) will be responsible for on-site sample analysis and air monitoring associated with the Safety and Health aspects related to chemical agents. Parsons ES and subcontractor personnel will be trained in the Safety and Health hazards associated with the reported CWM buried at the site and the analyses/monitoring being performed by ECBC. Training will be accomplished both as part of initial on-site training and reemphasized during daily training.

**Table 4.1**  
**Responsibilities of Parsons ES Team Members**  
**Fort McClellan, Alabama**

Title	General Description	Responsibilities
Project Manager	Reports to upper-level management. Has authority to direct response operations. Assumes total control over site activities.	<ul style="list-style-type: none"> <li>• Prepares and organizes the background review of the situation, the Quality Assurance Plan, the SSHP, and the field team.</li> <li>• Obtains permission for site access and coordinates activities with appropriate officials.</li> <li>• Briefs the field teams on their specific assignments.</li> <li>• Uses the Project Health and Safety Officer to ensure that safety and health requirements are met.</li> <li>• Serves as a liaison with public officials.</li> </ul>
Project Health and Safety Officer (PHSO)	Advises Project Manager on all aspects of S&H and Supervises SSHO	<ul style="list-style-type: none"> <li>• Provides technical support concerning Safety and Health issues.</li> <li>• Manages/oversees the preparation of the SSHP.</li> <li>• Ensures that the Parsons ES Safety and Health protocols being followed conform with established industry protocols and standards.</li> <li>• Confirms each team member’s suitability for work based on a physician’s recommendation.</li> <li>• Conducts field Safety and Health audits to ensure SSHP conformance and Parsons ES policy compliance.</li> <li>• Certifies that all workers have proper training.</li> <li>• Reports all accidents to Parsons ES Corporate S&amp;H Manager and investigates each accident or reportable incident.</li> </ul>
Site Manager	Responsible for field team operations and safety.	<ul style="list-style-type: none"> <li>• Manages field operations.</li> <li>• Oversees subcontractors’ field operations.</li> <li>• Coordinates with the Site Safety and Health Officer in determining protection level.</li> <li>• Enforces site control.</li> <li>• Documents field activities.</li> </ul>

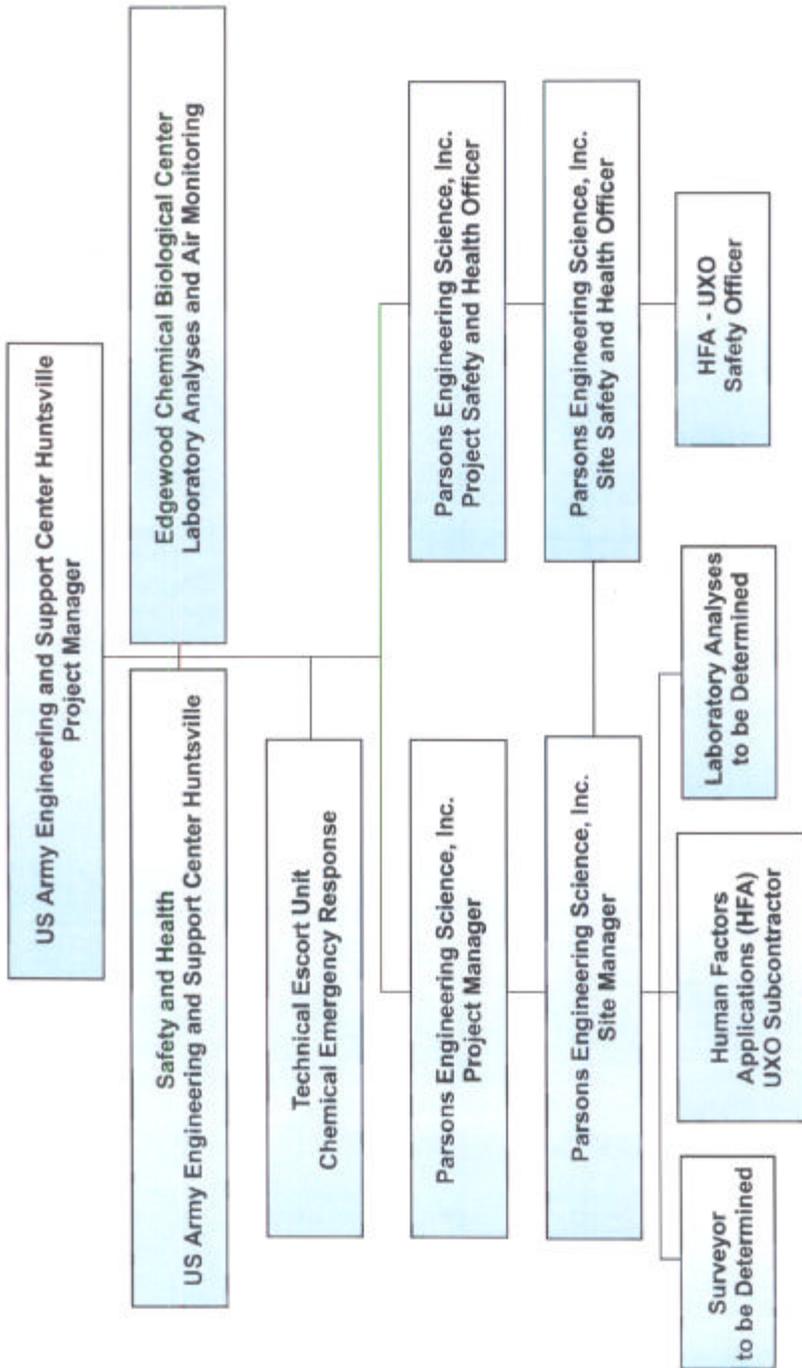
**Table 4.1 (Continued)**  
**Responsibilities of Parsons ES Team Members**  
**Fort McClellan, Alabama**

Title	General Description	Responsibilities
Site Safety and Health Officer (SSHO)	Reports to the PHSO on all aspects of Safety and Health on site. Performs day-to-day H&S tasks. Stops work if any operation threatens worker or public health and/or safety.	<ul style="list-style-type: none"> <li>• Ensures that Parsons ES and all subcontractors perform personal inspections of protective equipment and clothing prior to, during, and after each use.</li> <li>• Ensures that Parsons ES's and all subcontractors' protective clothing and equipment are properly stored and maintained.</li> <li>• Controls entry and exit at the Access Control Points.</li> <li>• Ensures personnel are monitored for signs of stress, such as cold exposure, heat stress, and fatigue.</li> <li>• Implements the SSHP.</li> <li>• Prior to each work event, conducts inspections to determine if the SSHP is being followed.</li> <li>• Knows emergency procedures, evacuation routes, and telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.</li> <li>• Coordinates decontamination procedures/provisions for medical care with U.S. Army Corps of Engineers (USACE) personnel.</li> <li>• Notifies USACE of emergency conditions.</li> <li>• Ensures that all required equipment is available.</li> <li>• Advises medical personnel of potential exposures and consequences.</li> <li>• Notifies emergency response personnel by telephone or radio in the event of an emergency.</li> <li>• Maintains log book for site workers and visitors.</li> <li>• Acts as spokesperson if OSHA inspector arrives on site.</li> <li>• Conducts on-site training concerning pertinent H&amp;S issues and new concerns.</li> <li>• Reports all accidents or H&amp;S incidents to the PHSO and USACE.</li> </ul>

**Table 4.1 (Continued)**  
**Responsibilities of Parsons ES Team Members**  
**Fort McClellan, Alabama**

Title	General Description	Responsibilities
UXO Safety Officer	Responsible for UXO/ demolition safety during field activities. Reports and advises Parsons ES Site Manager/SSHO.	<ul style="list-style-type: none"> <li>• Provides UXO safety oversight during intrusive activities conducted.</li> <li>• Conducts UXO safety briefings/training.</li> <li>• Oversees the identification, excavation, movement and disposal of all UXO discovered on the Suspect CWM sites – to ensure only the safest possible procedures are used.</li> <li>• Reports/investigates UXO accidents and incidents.</li> <li>• Advises SSHO and Site Manager on UXO safety.</li> </ul>
Field Team	The work party must consist of at least two people.	<ul style="list-style-type: none"> <li>• Safely completes the on-site tasks.</li> <li>• Complies with Site Safety and Health Plan.</li> <li>• Notifies SSHO/Site Manager or Supervisor of suspected unsafe conditions.</li> <li>• Inspects personal protective equipment prior to, during, and after each use.</li> </ul>

**Figure 4.1**  
**Fort McClellan EE/CA Team**  
**Safety and Health Organization**



## SECTION 5

### JOB HAZARD ANALYSIS

Both physical and chemical hazards will present a risk to workers at Fort McClellan. The level of risk is dependent upon the type of work being done. Table 5.1 presents a site by site listing of planned activities. Table 5.2 presents each activity, the associated hazards, and the control measures planned to prevent accident, injury or illness. The subsections that follow describe (in greater detail) the physical and chemical hazards associated with the planned activities at the Fort McClellan sites.

#### 5.1 IDENTIFICATION AND ANALYSIS OF PHYSICAL HAZARDS

Accident prevention for some additional physical hazards is discussed and described further in Section 6 (e.g., fire prevention, and fall protection).

##### 5.1.1 Underground Utilities Hazards

Before any intrusive hand auguring or excavation activities, efforts must be made to determine if underground utilities, including sewers, telephone, water, fuel, or electrical lines, will be encountered, and, if so, where such underground utilities are located. Utilities company personnel or a utilities locator service shall be contacted and information concerning buried utilities will be obtained before starting any subsurface activities. A digging or intrusive clearance will be obtained by the Parsons Site Manager prior to commencing any intrusive activities.

##### 5.1.2 Unexploded Ordnance (UXO)

5.1.2.1 Fort McClellan sites were used as a training area since the early 1900s. As a result, it is quite possible that personnel involved in field activities will encounter UXO that has been previously fired or disposed/abandoned and is still intact and live.

5.1.2.2 The UXO subcontractor will provide technical assistance in dealing with UXO and buried CWM. The Intrusive Excavation Plan is provided as Section 3 of the Work Plan, Volume 1. The UXO subcontractor's personnel will be involved in all intrusive/subsurface excavations and UXO recognition and avoidance training and support will be provided to all site personnel.5.1.3 Thunderstorms and Other Severe Weather

5.1.3.1 Operation of heavy equipment and fieldwork will cease during severe thunderstorms, rainstorms and other unsafe weather conditions (i.e., high winds, and tornado). The SSHO will provide site personnel with training on assembly areas for site

personnel during severe weather, and the individuals responsible for "head counts" at said assembly areas. The SSHO will use a radio, television, internet connection, or other means to determine when threatening weather conditions exist. Criteria indicating that severe weather conditions may exist include:

- High winds (30 to 45 miles per hour – depending on the tree cover and other site specific conditions);
- Tornado watch or warning in place for the area near or on the Fort;
- Visible lightning;
- Extreme temperatures (e.g., greater than 100 degrees or less than 0 degrees F); or
- Heavy rainfall that make footing treacherous/visibility difficult.

5.1.3.2 The SSHO is solely responsible for deciding if contractor/subcontractor field activities should cease due to severe/unsafe weather. However, on-site USACE personnel will be consulted (if time allows) prior to ceasing operations – as the “Personnel and Work Standards for Ordnance Response” prepared by USAESCH gives the USACE Safety Specialist the authority and responsibility for stopping work activities during adverse weather conditions.

5.1.3.3 In the event that work is suspended, the SSHO will notify personnel who have radios or cellular telephones. These individuals will be responsible for relaying the work suspension to other personnel in their areas.

**Table 5.1  
Anticipated Site Activities  
Fort McClellan, Alabama**

<b>Site Number and Name</b>	<b>Planned Activities</b>
Training Area 31	<ol style="list-style-type: none"> <li>1. Brush clearing.</li> <li>2. Geophysical surveys to identify suspect pits or trenches.</li> <li>3. Excavation and surface/subsurface soil sampling in suspect areas.</li> </ol>
Area T-38	<ol style="list-style-type: none"> <li>1. Brush clearing.</li> <li>2. Geophysical surveys to identify burial area.</li> <li>3. Excavate suspect pit locations and collect soil samples as appropriate to analyze for chemical agent onsite.</li> </ol>

**Table 5.1 (Continued)**  
**Anticipated Site Activities**  
**Fort McClellan, Alabama**

Site Number and Name	Planned Activities
Smoke Ranges R&S	<ol style="list-style-type: none"> <li>1. Brush clearing.</li> <li>2. Survey a portion of site using geophysical instruments.</li> <li>3. Perform “intrusive digs” into identified anomalies—to characterize anomalies.</li> </ol>
T-4 Biological Warfare Area	<ol style="list-style-type: none"> <li>1. Brush clearing.</li> <li>2. Geophysical surveys to identify burial area.</li> <li>3. Excavate suspect pit locations and collect soil samples as appropriate to analyze for chemical agent onsite.</li> </ol>
Agent ID Area	<ol style="list-style-type: none"> <li>1. Photo interpretation/geophysical surveys to identify suspect disposal pit or trench.</li> <li>2. Excavate suspect pit locations and collect soil samples as appropriate to analyze for chemical agents on site.</li> <li>3. Excavate and collect soil samples in suspect areas for analysis,</li> </ol>
Cane Creek Training Area	<ol style="list-style-type: none"> <li>1. Brush clearing.</li> <li>2. Photo interpretation/geophysical surveys to identify suspect disposal pit or trench.</li> <li>3. Excavate suspect area.</li> <li>4. Collect soil samples.</li> </ol>
Naylor Field	<ol style="list-style-type: none"> <li>1. Brush clearing.</li> <li>2. Geophysical surveys to identify suspect areas/anomalies.</li> <li>3. Excavate suspect pit locations and collect soil samples as appropriate to analyze for chemical agent onsite.</li> </ol>
Blacktop Training Area	Collect samples of soils below and around asphalt.

**Table 5.1 (Continued)  
Anticipated Site Activities  
Fort McClellan, Alabama**

Site Number and Name	Planned Activities
Dog Training Area	Collect soil samples for analysis.
Old Burn Pit	Trench into pit area and collect samples for analyses.
Field Personnel Decontamination Area	Collect soil samples for analysis.
Old Toxic Training Area	Collect soil samples for chemical agent analyses.
Mustard Spill Sites (5)	Collect soil samples from spill areas for analysis.
Training Area 24A within Range 24A	<ol style="list-style-type: none"> <li>1. Brush clearing.</li> <li>2. Geophysical survey of areas of interest.</li> <li>3. Intrusively dig geophysical areas of interest/anomalies.</li> </ol>

**Table 5.2  
Hazard Analysis By Site Activity  
Fort McClellan, Alabama**

Activity	Hazards	Control Measures
Brush Clearing, Geophysics Survey	Environmental Hazards: <ul style="list-style-type: none"> <li>• Storms – Tornadoes and Thunderstorms</li> <li>• Heat and Cold Injuries</li> <li>• Snakes/Spiders/Poisonous Plant</li> </ul> Slips, Trips and Falls Ordnance/CWM Items	Education as to hazard(s), Avoidance of hazard or injury  Education and Exercise of Caution  Recognition - Escort and Surface Clearance by EOD Specialist; No intrusive activities (e.g., putting stake into ground) without EOD clearance.
Mobilize and Construct Temporary Facilities	Slips, Trips and Falls Safety Issues Associated with Construction: <ul style="list-style-type: none"> <li>• Vehicle and Heavy Equipment Operation</li> <li>• Materials Handling</li> <li>• Electrical Hazards</li> <li>• Noise</li> <li>• Pressurized Cylinders</li> </ul> Environmental Hazards Ordnance and CWM Items	Educate and Exercise Caution Follow procedures outlined in the Appendices of SSHP. Provide Education/Training and SSHO monitors compliance.  Educate and Avoid No intrusive construction activities are permitted without utility clearance; and geophysical survey and EOD clearance.

**Table 5.2 (Continued)**  
**Hazard Analysis By Site Activity**  
**Fort McClellan, Alabama**

Activity	Hazards	Control Measures
Intrusive Excavation into Areas and Locations	<p>Slips, Trips and Falls</p> <p>General safety issues associated with tasks included within this activity are:</p> <ul style="list-style-type: none"> <li>• Vehicle and Heavy Equipment Operation</li> <li>• Noise</li> <li>• Materials Handling</li> <li>• Pressurized Cylinder Handling (if supplied air respiratory protective devices are used)</li> <li>• Confined Space</li> <li>• Fire Hazards</li> </ul> <p>Excavation and Trenching</p> <p>Ordnance and CWM Items:</p> <ul style="list-style-type: none"> <li>• UXO – uncontrolled explosion</li> <li>• chemical agent – dermal contact and/or inhalation</li> </ul> <p>Other (non-agent) Chemical Exposures to chemicals such as:</p> <ul style="list-style-type: none"> <li>• Decontamination solutions - DS-2, HTH or 5.25% calcium hypochlorite, and</li> <li>• Fuels/solvents used for maintenance.</li> <li>• Environmental Hazards</li> </ul>	<p>Housekeeping, Educating, and Exercising Caution</p> <p>Follow procedures outlined in the Appendices of SSHP. Education and training will be provided and SSHO/PSHO will monitor compliance.</p> <p>Education, PPE, Air Monitoring, Decontamination, Backup/Rescue Personnel, Access Controls, and Emergency Response Planning will be used to protect site workers and the public.</p> <p>Education, HAZCOM Program, obtaining/maintaining MSDSs for chemicals used onsite, and proper use of PPE.</p>
“Hot Box” Monitoring of scrap, soils and other materials	Contact with and inhalation of chemical agents and industrial chemicals.	Education, PPE, Air Monitoring and Decontamination.
Packaging of Agent Contaminated Materials	Contact with and inhalation of chemical agents and Industrial Chemicals.	Education, PPE, Air Monitoring and Decontamination. Use of proper PPE will be required.

### **5.1.4 Slip, Trip, and Fall Hazards**

5.1.4.1 Work sites may contain slip, trip, and fall hazards for site workers, such as:

- Holes, pits, or ditches;
- Slippery surfaces;
- Steep grades;
- Uneven grades;
- Sharp objects, such as nails, metal shards, and broken glass;
- Weather conditions, such as snow that will make surfaces slippery and obscure visibility.

5.1.4.2 Site personnel will be instructed to look for these potential safety hazards and immediately inform the SSHO or the Site Manager about any new hazards. If the hazard cannot be immediately removed, action must be taken to warn site workers about the hazard.

### **5.1.5 Motor Vehicles and Heavy Equipment**

5.1.5.1 Working with large motor vehicles and heavy equipment can be a major hazard. Injuries can result from equipment hitting or running over personnel, or overturning of vehicles. Vehicles and heavy equipment design and operation will be according to 29 CFR Subpart O, 1926.600 through 1926.602. The following precautions will be taken to help prevent injuries and accidents.

- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be checked and maintained in good working order throughout the duration of field activities.
- Large construction motor vehicles will not be backed up unless the vehicle has a reverse signal alarm audible above the surrounding noise level, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.
- Construction and heavy equipment will be provided with necessary safety equipment including seat belts, roll-over protection, emergency shut-off during roll-over, backup warning lights, and audible alarms.
- Blades and buckets will be lowered to the ground and parking brakes will be set before shutting off any heavy equipment or vehicle.
- Field support vehicles will be equipped with a first-aid kit and an appropriate fire extinguisher.

5.1.5.2 A daily inspection form for Heavy Equipment/Vehicles is included in Appendix Q. This form should be completed by operators of Heavy Vehicles and Equipment at Fort McClellan.

### **5.1.6 Noise-Induced Hearing Loss**

5.1.6.1 Planned activities will involve the use of heavy equipment, such as excavation equipment and generators. The unprotected exposure of site workers to this noise during activities can result in noise-induced hearing loss. Personnel working at this site will have been given an audiogram (hearing test) and hearing conservation training. The PHSO or SSHO will verify that these requirements have been accomplished for each site worker. The SSHO will ensure that either earmuffs or disposable foam earplugs are made available to, and used by, all personnel near operating heavy equipment, or other sources of high intensity noise. Hearing protection is required any time the noise level reaches 85 dbA or greater. Double protection is required anytime noise levels exceed 104 dbA. Hazardous Noise Placards will be posted as required.

5.1.6.2 Noise monitoring will be accomplished by field determination - if the whispered voice cannot be heard at a minimum three foot distance - hearing protection will be required.

5.1.6.3 Additional hearing conservation information is contained in Appendix H.

## **5.2 ENVIRONMENTAL HAZARDS**

### **5.2.1 Snakes**

Venomous snakes which may be encountered at Fort McClellan, AL include members of the “pit-viper” family, Copperheads, Rattlesnake species, and Water Moccasins. Descriptions and photographs of these snakes are shown below.

**Copperhead:** These snakes are commonly found near water sources in wooded areas. Copperheads are generally less than three feet in length and are not particularly aggressive. Coloration ranges from golden brown to tan. These snakes have a banded pattern.



*Copperhead*

**Timber Rattlesnake:** These are large, not particularly aggressive snakes (up to nearly six feet) with yellow through or gray to black, with dark back and side blotches on front of body and blotches fused to form crossbands on rear of body. Head unmarked and black tail. They can be found in many habitats, to include rocky hillsides, swampy areas, and canebrake thickets.



*Timber Rattlesnake*



*Pigmy Rattlesnake*

**Pigmy Rattlesnake:** These are very aggressive snakes that are usually about eighteen inches long. They are gray with brownish round markings. They are found in most habitats.

**Water Moccasin:** Also known as Cottonmouths, these snakes usually are encountered near water. They are black to greenish-brown and are up to five feet long.



*Water Moccasin*



**Eastern Diamondback Rattlesnake;** This is the largest snake native to North America, reaching 6 feet long. It has brown, black and beige diamond marks on its back and lives in forests near brush, typically in old animal burrows. It is a good swimmer. This snake does NOT always rattle before it strikes!

## 5.2.2 Insect/Arachnid Bites and Stings

A more likely problem for site personnel will be insect and spider bites and stings, as far more people commonly suffer this than get bit by snakes.

5.2.2.1 Poisonous insects and insect-like creatures that may be encountered at Fort McClellan, AL include the following:

- Bees (honeybees, bumble bees, wasps, and hornets);
- Fire ants;
- Scorpions;
- Caterpillars; and
- Beetles/Bugs.

Mild insect bites should be treated by applying a baking soda paste or ice wrapped in a wet cloth. Bee stingers should be gently scraped off the skin, working from the side of the sting.

5.2.2.2 The two poisonous spiders likely to be encountered on this project are the Brown Recluse and the Black Widow. The Brown Recluse is up to one inch long with a violin or “fiddle” shaped mark on the top of the head. The Black Widow is a smaller, bulbous black spider with a red hourglass-shaped mark on the underside. Photographs of these spiders are shown below.



*Black Widow*

Persons who are believed to have been bitten by a Brown Recluse or Black Widow spider should be immediately transported to a hospital. The spider should be collected (if possible) for confirmation of the species. Reactions to a Brown Recluse spider bite include mild to severe pain within two to eight hours and a star shaped area around the bite within three to four days. Significant tissue death and loss accompanies a Brown Recluse spider bite. Reactions to a Black Widow spider include intense pain at the site of the bite after approximately 15 to 60 minutes, followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils, and generalized swelling of face and extremities.



*Brown Recluse*

5.2.2.3 If insect bites become red or inflamed or symptoms such as nausea, dizziness, shortness of breath, etc., appear, medical care will be sought. Immediate care is needed if a person is allergic to insect bites/stings. Personnel with insect allergies should inform the Project Manager, Site Manager, Project Health and Safety Officer, and Site Safety and Health Officer (SSHO). If an allergic person receives a spider bite or insect bite/sting, seek immediate medical attention, keep the victim calm, and check vital

signs frequently. Rescue breathing should be given if necessary to supply oxygen to the victim. Swelling of the breathing passages may require extra hard blowing.

### **5.2.3 Poisonous Plants**

5.2.3.1 The majority of skin reactions following contact with offending plants are allergic in nature and are characterized by:

- General symptoms of headache and fever;
- Itching;
- Redness; and
- A rash.

5.2.3.2 Some of the most common and severe allergic reactions result from contact with poison ivy, poison oak, and poison sumac. Contact with the poisonous sap of these plants, or even exposure to pollen, droplets or various parts of the plants, produces a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim also may develop a high fever and may be very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

5.2.3.3 The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each. In certain seasons, both plants also have greenish-white flowers and berries that grow in clusters. Poison sumac is a tall shrub or small tree with 6-12 leaflets arranged in pairs with a single leaflet at the end. This plant grows in wooded, swampy areas.

5.2.3.4 Avoidance of plant/sap contact is the only effective means of preventing the poisoning. A person experiencing symptoms of poisoning should remove contaminated clothing; wash all exposed areas thoroughly with soap and water. Apply calamine or other poison ivy/oak lotion if the rash is mild. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity. Thorough washing of skin and clothing can be used after site work or after potential exposure to reduce severity of irritation.

### **5.2.4 Bloodborne Pathogens**

5.2.4.1 Bloodborne pathogens enter the human body and blood circulation system through punctures, cuts or abrasions of the skin or mucous membranes. They are not transmitted through ingestion (swallowing), through the lungs (breathing), or by contact with whole, healthy skin. However, under the principle of universal precautions (see below) all blood should be considered infectious, and all skin and mucous membranes should be considered to have possible points of entry for pathogens.

5.2.4.2 There are a number of infections that are transmitted by insects and arthropods where the infection cycle includes the human blood system. Examples include

malaria and Lyme disease, which are transmitted by mosquitoes and ticks, respectively. These diseases are serious, and the possibility for infection should be considered in planning field operations in areas where these disease vectors are present.

5.2.4.3 These diseases cannot be transmitted through personal contact with human blood, and are not covered by the OSHA *Bloodborne Pathogen Standard*.

5.2.4.4 Potential bloodborne pathogen exposure include:

- Contact with contaminated medical equipment or medical waste or sharps
- Medical emergency response operations such as administering first aid or CPR
- Contact with human wastes such as domestic sewage

5.2.4.5 Site personnel will be given bloodborne pathogens training. Training for this hazard is discussed in greater detail in Section 7

### **5.3 CHEMICAL HAZARD ASSESSMENT**

#### **5.3.1 Contaminants of Concern**

Table 5.3 lists contaminants of concern that have been detected or are suspected at Fort McClellan. Potential contaminants which are suspected based on reported disposal of CWM and chemical warfare agent-filled munitions are mustard and Lewisite and associated decontamination material. These compounds are included in Table 5.3 and MSDSs for these agents are included in Appendix D.

#### **5.3.2 Volatile Organic Compounds**

Table 5.3 contains several chlorinated volatile organic compounds often used or associated with decontamination solutions (e.g., DS-2) used to remove and/or neutralize chemical warfare agents.

#### **5.3.3 Chemical Properties**

Table 5.3 lists the potential routes of exposure and the symptoms for each contaminant. Other information such as Threshold Limit Values (TLVs), Permissible Exposure Limits (PELs), Immediately Dangerous to Life or Health (IDLH) values, and applicable properties are also included in this Table.

#### **5.3.4 Material Safety Data Sheets (MSDSs)**

5.3.4.1 The Hazard Communication Program (29 CFR 1910.1200) has as its stated purpose:

*"to ensure that the hazards of all chemicals produced or imported by chemical manufacturers or importers are evaluated and that information concerning their hazards are transmitted to affected employers and employees."*

5.3.4.2 Parsons ES and our subcontractors are responsible for providing initial HAZCOM training to our employees. During initial site-specific training, the HAZCOM will be reviewed for Parsons ES and subcontractor personnel. The SSO will ensure that hazardous chemicals present on-site are identified by appropriate warning labels or signs. The PHSO will evaluate the effectiveness of the hazard communication program for site work at Fort McClellan during site audits. Based on these evaluations, it may become necessary to provide additional employee training and/or establish specific operating procedures.

5.3.4.3 Material Safety Data Sheets (MSDSs) for the chemical warfare agents, e.g., mustard, Lewisite, Agent GB (Sarin) Agent BZ, and Agent VX are attached to this plan in Appendix D. MSDSs will also be provided to workers by Parsons ES for chemicals brought to the site for investigative work. They will be maintained in the field office for immediate access by site workers.

**Table 5.3**  
**Health Hazard Qualities of Hazardous Substances of Concern**  
**Former Fort McClellan Alabama**

Compound	PEL <sup>a/</sup> (ppm)	TLV <sup>b/</sup> (ppm)	IDLH <sup>c/</sup> (ppm)	Odor	Ionization	Physical Description/Health Effects/Symptoms	Last Updated
				Threshold <sup>d/</sup> (ppm)	Potential <sup>e/</sup> (eV)		
Benzene	1 <sup>j/</sup>	0.5 <sup>h/</sup> (skin)	3,000	2.0	9.24	Irritant to eyes, nose and respiratory system. Produces nervous system symptoms -- headaches, giddiness, staggered gait, fatigue, and unconsciousness at high concentrations. Known human carcinogen affecting the blood system.	1/8/98
Ethylbenzene	100	100	2,000	2.0	8.76	Irritant to eyes, mucous membranes, and can produce dermatitis. Nervous system symptoms include headaches, narcosis and coma.	1/8/98
Xylene	100	100 (skin) <sup>h/</sup>	1,000	0.5	8.56/8.44	Irritant to eyes, nose, throat and causes corneal blistering. Nervous system effects include dizziness, excitement, drowsiness, and staggering gait.	1/8/98
Toluene	100	50 (skin) <sup>h/</sup>	2,000	2.0	8.82	Fatigue, weakness, confusion, dizziness, headaches, insomnia and euphoria.	1/8/98
1,2-Dichloroethane (DCA)  (Ethylene Dichloride, EDC)	1	10	50	100	11.05	Colorless liquid with a pleasant, chloroform-like odor. Strong narcotic.  Irritates eyes. Causes corneal opaqueness, nausea, CNS depression, vomiting, dermatitis, and damage to liver, kidneys, and cardiovascular system. In animals, causes cancer of the forestomach, mammary gland, and circulatory system. Mutagen, experimental teratogen, and carcinogen.	1/8/98
1,2-Dichloroethene (DCE)	200	200	1000	1	9.65	Colorless liquid with a slightly acrid, chloroform like odor. Irritates eyes and respiratory system. Central nervous system depression	
Mustard (H, HD)	0.003 mg/m <sup>3</sup> <sup>f/</sup> (ceiling) <sup>v/</sup>	NA <sup>g/</sup>	NA <sup>g/</sup>	NA <sup>g/</sup>	NA <sup>g/</sup>	Blister agent. Yellow, oily liquid. Garlic odor. Reddening of skin or appearance of blisters may occur several hours after exposure.	1/8/98
Lewisite (L)	0.003 mg/m <sup>3</sup> <sup>f/</sup> (ceiling) <sup>v/</sup>	NA <sup>g/</sup>	NA <sup>g/</sup>	NA <sup>g/</sup>	NA <sup>g/</sup>	Blister agent. Dark oily liquid with geranium-like odor. Immediate pain on contact. Affects eyes, lungs, and blisters skin. Acts as a systemic poison, causing pulmonary edema, diarrhea, restlessness, weakness, subnormal temperature, and low blood pressure. Experimental teratogen.	1/8/98
*Tetrachloroethene (PCE) (Perchloroethylene)	25 <sup>j/</sup>	25	150	5	9.32	Colorless liquid with a mild chloroform odor. Eye, nose, skin and throat irritant. Causes nausea, flushed face and neck, vertigo, dizziness, headaches, hallucinations, incoordination, drowsiness, coma, pulmonary changes, and skin redness. Cumulative liver, kidney, and CNS damage. In animals, causes liver tumors. Mutagen, experimental teratogen, and carcinogen.	1/8/98

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**Table 5.3**  
**Health Hazard Qualities of Hazardous Substances of Concern**  
**Former Fort McClellan Alabama**

Compound	PEL <sup>a/</sup> (ppm)	TLV <sup>b/</sup> (ppm)	IDLH <sup>c/</sup> (ppm)	Odor	Ionization	Physical Description/Health Effects/Symptoms	Last Updated
				Threshold <sup>d/</sup> (ppm)	Potential <sup>e/</sup> (eV)		
1,1,2,2-Tetrachloroethane	1 (skin) <sup>h/</sup>	1 (skin) <sup>h/</sup>	100	50	11.10	Heavy, colorless to pale-yellow liquid with pungent, chloroform-like odor. Powerful narcotic and liver poison. Strong irritant to eyes and mucous membranes. Causes nausea, vomiting, abdominal pain, finger tremors, jaundice, hepatitis, liver tenderness, dermatitis, blood disorders, sleepiness, hallucinations, distorted perceptions, tearing, salivation, restlessness, dizziness, convulsions, coma, death, and kidney damage. In animals, causes liver tumors. Mutagen and carcinogen.	1/8/98
Trichloroethene (TCE)	50	50	1,000	20	9.45	Clear, colorless or blue liquid with chloroform-like odor. Irritates skin and eyes. Causes fatigue, giddiness, headaches, vertigo, visual disturbances, tremors, nausea, vomiting, drowsiness, dermatitis, skin tingling, cardiac arrhythmia, and liver injury. In animals, causes liver and kidney cancer. Mutagen, experimental teratogen, and carcinogen.	1/8/98
Phosgene (Agent CG)	0.1	0.1	8.1	2.0	11.45	Colorless gas (>47° F) or fuming liquid (<47°F) with odor like musty hay. Avoid contact with skin, eyes, and respiratory system. Component of CAIS kits.	
Chloropicrin (Agent PS)	0.1	0.1	13.44	7.0	NA <sup>g/</sup>	Colorless to yellow oily liquid. Strong, irritating odor. Avoid contact with eyes, skin, and respiratory system. Avoid ingestion. Component of CAIS kits and CNS.	
Agent GB (Sarin)	NA <sup>g/</sup>	NA <sup>g/</sup> (0.0001) <sup>m/</sup>	35-70 mg min/m <sup>3</sup>	None	NA <sup>g/</sup>	Odorless, lethal anticholinesterase (nerve) agent. Symptoms of exposure may include: constriction of pupils, headache, nose/nasal congestion, salivation, muscle twitches, tremors, weakness, and involuntary urination and defecation. Convulsions & respiratory failure.	
Agent VX	NA <sup>g/</sup>	NA <sup>g/</sup> (0.0001) <sup>m/</sup>	25 mg-min/m <sup>3</sup>	None	NA <sup>g/</sup>	Colorless or amber, odorless liquid which is soluble in water and many organic solvents. VX is a lethal anticholinesterase agent which is hazardous through inhalation, ingestion, skin exposure and contact with the eyes.	
Agent BZ	NA <sup>g/</sup>	NA <sup>g/</sup>	NA <sup>g/</sup>	None	NA <sup>g/</sup>	Odorless, white crystalline solid that is granular and is thermally disseminated after mixing with fuel. Potent psychoactive compound that is used as incapacitating agent.	

a/ PEL = Permissible Exposure Limit. OSHA-enforced average air concentration to which a worker may be exposed for an 8-hour workday without harm. Expressed as parts per million (ppm) unless noted otherwise.

b/ TLV = Threshold Limit Value - Time-Weighted Average. Average air concentration (same definition as PEL, above) recommended by the American Conference of Governmental Industrial Hygienists (ACGIH), *1998 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*.

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**Table 5.3**  
**Health Hazard Qualities of Hazardous Substances of Concern**  
**Former Fort McClellan Alabama**

Compound	PEL <sup>a/</sup> (ppm)	TLV <sup>b/</sup> (ppm)	IDLH <sup>c/</sup> (ppm)	Odor	Ionization	Physical Description/Health Effects/Symptoms	Last Updated
				Threshold <sup>d/</sup> (ppm)	Potential <sup>e/</sup> (eV)		

c/ IDLH = Immediately Dangerous to Life or Health. Air concentration at which an unprotected worker can escape without debilitating injury or health effects. Expressed as ppm unless noted otherwise. IDLH values are published in the *NIOSH Pocket Guide to Chemical Hazards*, 1994.

d/ Values published in *Fundamentals of Industrial Hygiene*, National Safety Council, Appendix C, 1979.

e/ Ionization Potential, measured in electron volts (eV), used to determine if field air monitoring equipment can detect substance. Values are published in the *NIOSH Pocket Guide to Chemical Hazards*, June 1994.

f/ mg/m<sup>3</sup> = milligrams per cubic meter.

g/ NA = Not available.

h/ (skin) = Refers to the potential contribution to the overall exposure by the cutaneous route.

j/ NIOSH recommends reducing exposure to the lowest feasible concentration, and limiting the number of workers exposed.

l/ (ceiling) = Ceiling concentration which should not be exceeded at any time.

m/ Airborne Exposure Limit (AEL) -- Occupational exposure standard developed by U.S. Army for exposure to this military unique agent. OSHA or other occupational health organizations have not developed standards for this agent.

**Note:** PEL values are not in all cases Federal OSHA, but in some cases are CAL/OSHA values.

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## **SECTION 6 ACCIDENT PREVENTION**

### **6.1 INTRODUCTION**

6.1.1 All field personnel receive a site-specific Safety and Health briefing before starting any site activities (see Section 7). On a day-to-day basis, individual personnel should watch for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Emergencies can be averted by rapid recognition of dangerous situations. Before assigning daily tasks, tailgate safety meetings will be held (see Section 7).

6.1.2 The Site Manager, SSHO, and UXO Safety Officer are responsible for ensuring that the field team meets safety and health requirements. If deficiencies are noted, work is stopped and corrective action is taken (e.g., obtain, purchase additional safety equipment). Reports of Safety and health deficiencies and the corrective action taken are forwarded to the Project Manager and PHSO.

### **6.2 ACCIDENT PREVENTION PROGRAM**

6.2.1 Parsons ES has a policy of compliance with all governing safety standards and regulations, and a safety performance goal of zero accidents, operational mishaps, and injuries/disease. The accident prevention program implemented at Fort McClellan will include:

- Daily safety and health inspections by the SSHO, UXO Safety Officer, and the Site Manager.
- Initial site-specific and daily tailgate safety and health training provided by the PHSO, SSHO and the Safety Officer from the UXO subcontractor. The topics for tailgate training include:
  1. Recent safety violations/problems or incidents;
  2. Seasonal topics (e.g., heat/cold injuries);
  3. Review of SSHP elements that inspections have indicated are needed; and
  4. Other topics identified in Appendix A of EM 385-1-1, 3 September 1996.
- Inspection dates/time, inspectors name and results of inspection are recorded in the SSHO's logbook.
- Sign-in sheets with dates/topics of tailgate training are completed for each session. The SSHO records each session in his logbook and files the sign-in sheets in project files.

- Reporting of safety hazards by site personnel.
- Aggressive reporting and follow-up on all safety violations, accidents, injuries, and illnesses. Forms for this reporting include those found in Appendix C and the SSHO's daily logbook.
- Compliance with the SSHP for all personnel working at Fort McClellan, AL.

6.2.2 Personnel responsible for implementing this accident prevention program are those previously identified in Table 4.1.

### **6.3 SURVEILLANCE OF SUBCONTRACTOR SAFETY**

#### **6.3.1 Requirements**

6.3.1.1 Achieving a high standard of safety where human life or property is involved requires full and complete compliance with and acceptance of requirements on the manner in which work is performed. All personnel, whether employers or employees, must share responsibility in performing work to preclude or minimize the possibility of damage to property or injury to themselves or others.

6.3.1.2 Subcontractors are responsible for their own safety and health programs and for their agents and employees. Safety equipment and safeguards suitable to the occupational hazards involved and conforming to the safety regulations at the work site must be furnished by each subcontractor.

6.3.1.3 In the event of an apparent violation of a safety standard, Parsons' SSHO or Site Manager calls the violation to the subcontractor's attention and requests that the situation be corrected. The seriousness of the violation dictates the abatement period allowed. In the event of imminent danger to life, limb, or property, the Parsons' SSHO or Site Manager will insist that the portion of the work affected be stopped until the situation is corrected to minimize the hazards relative to the specific area of work. The SSHO or Site Manager informs the subcontractor at the time a violation is noted, using the method applicable to the seriousness of the violation.

#### **6.3.2 Non-Serious Violation**

A non-serious violation is defined as a situation where an accident or an occupational illness resulting from a deviation from standard probably would not cause death or serious physical harm, but could adversely impact the safety or health of employees. For incidents that are considered non-serious, the subcontractor will be verbally advised and the violation entered in the SSHO's daily log and the project file.

#### **6.3.3 Serious Violation**

A serious violation is defined as having a high probability of death or serious physical harm to employees. In matters that the SSHO or the Site Manager deems serious, the subcontractor will be informed both verbally and by means of a violation form (Figure 6.1) citing the regulatory standard violated.

### **6.3.4 Imminent Danger Violation**

Imminent danger is defined as any condition or practice that could reasonably be expected to cause death or serious physical harm. In cases that the SSHO or Site Manager feels are immediately dangerous to life, limb, or property, the SSHO or Site Manager will insist that the subcontractor cease site activities until the hazardous conditions are minimized. In such cases, the SSHO or Site Manager issues a written statement of the standard or standards violated (Figure 6.1 or a letter) and must approve acceptable control measures to minimize the hazards prior to allowing the subcontractor to begin working again.

## **6.4 TRAINING**

Training at Fort McClellan CWM sites includes a site-specific initial training session prior to commencing field activities at these sites, a pre-operational survey to be conducted by U.S. Army, and daily “tailgate” training prior to beginning work each day. These training activities are outlined in Section 7.0.

## **6.5 DAILY SAFETY INSPECTIONS**

The UXO Safety Officer and the SSHO conduct daily inspections of sites and site operations. The UXO Safety Officer is responsible for inspecting UXO or explosive-related site activities and reports violations to the SSHO. The UXO Safety Officer also maintains a daily logbook and provides copies of his daily entries to the SSHO at the end of each day. The SSHO also conducts daily safety inspections which focus on all non-UXO/explosives safety aspects (e.g., PPE, general site safety practices, etc.). The results of the SSHO’s and UXO Safety Officer’s inspections are recorded in logbooks and provided to the PSHO at the end of each week.

## **6.6 TRAFFIC CONTROL**

Many vehicles will be used by site personnel during the investigation. An area near the site trailer and each work site will be designated for parking of vehicles. Site personnel must follow local vehicular laws, especially posted speed-limits.

## **6.7 SITE HOUSEKEEPING**

Personnel will maintain the site facilities in a clean, neat, and sanitary condition at all times. Facilities will be provided for personal hygiene.

**Figure 6.1**  
**Notification of Violation of Safety Policies**

<b>PARSONS</b>	
SUBJECT: SAFETY/HEALTH VIOLATION	Job No. _____
	Location: _____
In the interest of safety and health, the following violation/s were noted:	
Contractor _____	
Date _____	Date complied with _____
Representative _____	
Repeat Violation	Yes <input type="checkbox"/> No <input type="checkbox"/>
Violation:	
Recommendation:	
Abatement Period _____	
Standard Source _____	
OSHA	<input type="checkbox"/> STATE <input type="checkbox"/>
LOCAL	<input type="checkbox"/> ANSI <input type="checkbox"/>
OTHER	<input type="checkbox"/> NFPA <input type="checkbox"/>
SUBCONTRACTOR	

## 6.8 FIRE PREVENTION AND PROTECTION

Explosions and fires not only pose the obvious hazards of intense heat, open flames, smoke inhalation, and flying objects, but may also cause the release of toxic chemicals into the environment. Such releases can threaten both personnel on-site and members of the general public living or working nearby. Site personnel involved with potentially flammable material or operations must follow the guidelines listed below and in *EM 385-I-1*, Section 9, to prevent fires and explosions:

- Potentially explosive/flammable atmospheres involving gases or vapors are monitored using a combustible gas indicator;
- Prior to initiation of site activities involving explosive/flammable materials, potential ignition sources are removed or extinguished;
- Non-sparking and explosion-proof equipment are used whenever the potential for ignition of flammable/explosive gases/vapors/liquids exists;
- Dilution or induced ventilation may be used to decrease the airborne concentration of explosive/flammable atmospheres;
- Smoking is prohibited at OE work sites, or in the vicinity of, operations which may present a fire hazard, and the area will be conspicuously posted with signs stating "No Smoking or Open Flame Within 50 Feet";
- Flammable and/or combustible liquids must be handled only in approved, properly labeled metal safety cans equipped with flash arresters and self-closing lids;
- Transfer of flammable liquids from one metal container to another is done only when the containers are electrically interconnected (bonded);
- The motors of equipment being fueled are shut off during fueling; and
- Metal drums used for storing flammable/combustible liquids must be equipped with self-closing safety faucets, vent bung fittings, grounding cables and drip pans, and stored outside buildings in an area approved by the SSHO.

The following safe work practices are used to protect against fires:

- Vehicles and equipment are not fueled while running;
- At least one 4A:20:B:C fire extinguisher must be located within 25-75 feet of each flammable/combustible liquid storage area, and the storage area must be marked with the appropriate fire symbol and no smoking signs;
- Temporary offices are equipped with a fire extinguisher of not less than 10:ABC;
- At least one portable fire extinguisher having a rating of not less than 20:ABC must be located at each work site.

## **6.9 FALL PROTECTION**

6.9.1 Activities to be performed at Fort McClellan are not expected to require fall protection. However, a safety belt or body harness with lanyard will be worn by any personnel working at risk of falling more than 6 feet. The lanyard is adjusted to limit free-fall to no more than 6 feet. Lanyards must be secured to strong structural components or static lines.

6.9.2 If lanyards and safety belts/harnesses are deemed impractical, safety nets must be provided.

## **6.10 SAFE CLEARANCE**

Extra precautions will be taken when using heavy equipment near overhead electrical lines. The minimum clearance between overhead electrical lines of 50 kilovolts (kV) or less and any extended portion (e.g., boom/bucket on backhoe) is 10 feet. For lines rated over 50 kV, the minimum clearance between the line and any part of the heavy equipment is 10 feet plus 0.4 inches for each kV over 50 kV.

## **6.11 SEVERE WEATHER**

In the event of severe weather: high winds, thunderstorms, electrical storms, tornadoes, extremely hot weather (>100°F), or extremely cold weather (<0°F), it may be necessary to cease operations and evacuate the site. The SSHO will be responsible for monitoring the weather. Should severe weather threaten, the SSHO is responsible for deciding (in conjunction with the Site Manager) if site operations should cease.

## **6.12 ACCIDENT INVESTIGATION AND REPORTING**

6.12.1 In the event an accident occurs at the site, the SSHO will investigate the accident after all emergency actions have been taken. ENG Form 3394 (see Appendix C) will be filled out by the SSHO and submitted to the Parsons ES PHSO.

6.12.2 An accident will be reported immediately to the USACE if any of the following occur as a result of an accident, or if there is a resultant release of chemical agent:

- Fatal injury;
- Permanent disability;
- Injury to three or more persons who are admitted to the hospital;
- Property damage in the amount of \$2,000 or more; or
- May result in unfavorable criticism of the Army.

Other lost-time or OSHA reportable accidents will be reported in writing to the USACE within seven working days. The on-site HNC representative will be verbally notified within one day of any accident or injury.

### **6.13 HAZARD REDUCTION PROGRAM**

6.13.1 As identified and described in paragraph 6.1, the Hazard Reduction Program for work at Fort McClellan includes:

- Education of site personnel as to the hazards and measures to minimize/prevent these hazards;
- Inspections to determine compliance with required SSHP and general safety provisions – with reporting and retraining as needed; and
- Reporting and follow-up on safety violations, accidents, injuries and illnesses.

6.13.2 Another element of an effective hazard reduction program is the analysis of the safety hazards associated with new or previously unrecognized work tasks/activities. The UXO Safety Officer (subcontractor) and/or the SSHO will conduct these analyses using the following step-wise approach:

- Step 1: Identify the principal steps involved and the sequence of work activities;
- Step 2: Analyze each principal step for potential hazards;
- Step 3: Develop specific controls for each potential hazard;
- Step 4: Identify and list the protective equipment to be used, and training and inspection requirements for the work activity.

Results of new hazard analyses will be communicated to the PHSO.

## **SECTION 7 TRAINING**

### **7.1 SITE-SPECIFIC INITIAL TRAINING**

7.1.1 As required by OSHA, Parsons ES employees receive 40 hours of initial off-site training and a minimum of 3 days of supervised field experience before being permitted to work at hazardous waste sites. The Corporate Health and Safety staff performs initial training, consisting of classroom lectures and field exercises. Site supervisors responsible for employees engaged in hazardous waste operations receive eight hours of additional training on managing such operations.

7.1.2 Field workers and on-site management personnel receive eight hours of refresher training annually, emphasizing the types of operations performed by these personnel. The training generally includes the following topics:

- Review and retraining on relevant topics covered in the initial training;
- Updates on developments with respect to material covered in the initial training;
- Review of changes to pertinent provisions of EPA and OSHA standards or laws;
- Hands-on training of personnel on PPE, and decontamination equipment;
- Bloodborne Pathogens training; and
- Introduction of additional subject areas (i.e., First Aid, UXO, CWM) as appropriate.

7.1.3 In addition to the 40-hour initial training and 8-hour refresher training, site-specific training will be conducted.

7.1.4 The PHSO is responsible for developing a site-specific occupational hazard training program. This program will comply with the USAESCH approved Site Safety and Health Plan (SSHP) for the site. The PHSO ensures initial site-specific training is provided to all Parsons ES personnel and Parsons ES subcontractors. This training will cover the following topics:

- Names of personnel responsible for site safety and health;
- Safe work practices;
- Site history;
- Safety, health, and other hazards at site;
- Work zones and other locations;

- Emergency procedures, evacuation routes, emergency phone numbers;
- Proper use (e.g., donning and doffing) of personal protective equipment;
- Safe use of engineering controls and equipment on the site;
- Acute effects of compounds to include chemical agents (e.g., mustard and Lewisite) at the site;
- Ordnance recognition and reporting; and
- Prohibitions in areas and zones, including:
  - Site layout, and
  - Procedures for entry and exit of work areas and zones.

## **7.2 PRE-OPERATIONAL SURVEY AND TABLETOP EXERCISE**

7.2.1 A pre-operational survey and tabletop exercise will be satisfactorily completed prior to beginning intrusive activities at the site. Army personnel will conduct this survey and exercise in accordance with DA Pamphlet 385-61.

7.2.2 The tabletop exercise provides the pre-operational survey evaluators, personnel from support organizations (e.g., fire, security, etc.), and on-site contract personnel an opportunity to review, discuss, and critique the various planned (i.e., in the SSHP) procedures in emergency or contingency situations and scenarios. As the name implies, the tabletop exercise is conducted around a conference table and does not involve any significant physical activity.

7.2.3 The pre-operational survey is conducted to demonstrate on-site worker proficiency prior to performing hazardous operations and involves actual performance of site activities (e.g., evacuation of simulated injuries). Specifically, the pre-operational survey will evaluate and train on-site personnel on:

- Monitoring and recognition of chemical agent releases;
- Responses to accidental agent releases;
- Medical emergencies associated with chemical agent exposures; and
- Involving local medical and emergency support organizations.

## **7.3 TAILGATE SAFETY MEETINGS**

7.3.1 The SSHO is responsible for ensuring daily “tailgate” training is provided to all Parsons ES personnel and Parsons ES subcontractors that are to work at Fort McClellan. The SSHO is also responsible for providing initial site-specific training for Parsons ES and subcontractor personnel who are on-site when non-intrusive tasks are being performed. This training will cover the following topics:

- Tasks to be performed;
- Time constraints (e.g., rest breaks);

- Hazards that may be encountered, including their effects, how to recognize symptoms or monitor them, or danger signals;
- Emergency procedures; and
- Radio communication (when applicable).

7.3.2 The assembly point for emergencies or contingencies will be identified in the tailgate training each morning (based upon wind direction and the route providing the easiest egress from the site). All site personnel will immediately cease site activities and begin moving towards the assembly point when the alarm is sounded. The alarm for Fort McClellan will be either via direct voice communication or as three, five-second blasts on an air horn.

#### **7.4 TRAINING DOCUMENTATION**

The SSHO will keep written documentation for all training given to personnel including personnel present and subjects covered. Documentation will be kept by the Site Safety and Health Officer for site-specific initial training, tailgate training/subjects, and any other special or additional training.

#### **7.5 HAZARD COMMUNICATION**

All project work will be conducted in accordance with Parsons ES's standard policies for hazard communication. Copies of Material Safety Data Sheets (MSDSs) for any chemicals brought on site will be maintained at Parsons ES's field office. Site orientation and training will be provided to all new employees brought on site and this will include an overview of all known hazards associated with the site. A copy of Parsons ES's hazard communication program for this site is contained in Appendix J.

#### **7.6 UNEXPLODED ORDNANCE (UXO) AND CHEMICAL WARFARE AGENTS (CWA) TRAINING**

7.6.1 Prior to beginning site activities (and as part of the initial site-specific training), orientation training will be provided in aspects of both UXO and CWA to Parsons ES and subcontractor personnel. UXO subcontractor personnel will provide UXO recognition and awareness training which focuses on recognizing avoidance and reporting of UXO potentially present at Fort McClellan. Parsons ES personnel will provide CWA orientation training which focuses on CWA possibly present at Fort McClellan, their adverse health effects, symptoms of exposure, and measures to prevent/reduce adverse effects.

7.6.2 The occupational health and exposure requirements of DA Pam 40-173, 40-8, 50-6, and 385-61 as well as AR 50-6 and AR 385-61 will be addressed as part of this training. For example, employees will be informed of:

- Contamination control procedures;
- Respiratory protection; and

- Purpose and description of the medical surveillance program.

## **7.7 BLOODBORNE PATHOGEN TRAINING**

Personnel working on this project will be provided bloodborne pathogen training review. This training will be given initially at the same time as the site-specific initial training (paragraph 7.1). The topics covered in the training will include the following:

- An overview of the Bloodborne Pathogen Standard;
- Epidemiology and symptoms of bloodborne diseases;
- Modes of transmission of bloodborne pathogens;
- Discussion of Exposure Control;
- Tasks that may involve exposure to blood and other potentially infectious materials;
- Review of the methods that will prevent or reduce exposure;
- Selection and use of PPE; and
- Information on the post-exposure evaluation and follow-up program.

## **7.8 VISITOR TRAINING AND CONTROL**

All visitors to the site will be given a health and safety briefing prior to gaining access to the site. Following this briefing, visitors will be asked to sign SSHP - Plan Acceptance Forms (Appendix C). The Site Safety and Health Officer will also ensure that visitors have applicable health and safety equipment, medical surveillance, and training for the activities/areas they will be visiting. Should questions arise as to whether or not specific training or equipment is needed - the PHSO will be contacted.

## SECTION 8 PERSONAL PROTECTIVE EQUIPMENT

### 8.1 INTRODUCTION

Parsons ES staff will work onsite during land surveying, brush clearing, geophysical survey, trenching, and sampling. If at any point in the investigation chemical agents are detected, the level of protection will be re-evaluated by the SSHO/PHSO and the other actions outlined in the Emergency Response Plan, Appendix B will be taken immediately.

### 8.2 LEVELS OF PROTECTION

Different activities at the site will require different levels of protection. The possible levels of protection to be used at the site are outlined below. Table 8.1 shows a list of activities to be performed at the site and the associated Levels of PPE. Figure 8.1 is a flowchart that shows the process for deciding the appropriate level of protection to be worn for a given situation. Additional information concerning personal protective equipment and respiratory protection, can be found in Appendices E, G, I, and L.

#### 8.2.1 Level D

The minimum level of protection required of all personnel at the site is Level D. The following is Level D protection:

- Cotton coveralls or work clothing;
- Sturdy work boots/shoes, steel toe when working around heavy equipment. Geophysical survey personnel will not use steel toe boots;
- Safety glasses with side shields or goggles when an eye hazard exists;
- Hard hat, when a head hazard exists;
- Chaps for protection during brush clearing operations involving the use of hand held equipment (e.g., weedwackers);
- Nitrile gloves and rubber boot covers when conducting soil sampling in suspect CWM sites (Note: would require Modified Level D respiratory protection);
- Leather or canvas work gloves when a scrape/cut hazard exists; and
- Hearing protection, when working around heavy equipment or powered hand tools.

**Table 8.1  
Site Activities and Required Levels of Protection**

Site Activities	Level(s) of Protection	Notes
Brush clearing	Level D <sup>1</sup>	Eye and hearing protection, gloves and chaps will be worn during brush clearing. Eye protection should be worn when doing geophysics in “brushy areas.”
Geophysical Surveys	Level D <sup>1</sup>	
Site Mob/Demob	Level D <sup>1</sup>	
“Hot Box” Monitoring	Level D <sup>1</sup>	
Personnel Assisting in Decontamination	Level B <sup>4</sup>	With rubber apron for splash protection -- if Level A or B are worn in Exclusion Zone.
Soil Sampling, Excavation of anomalies based on Geophysics	Modified Level D <sup>2</sup>	Worn only until presence of chemical agent(s) is suspected. At first indication of presence of agent, escape APR is donned and work area is evacuated.
	Level C <sup>3</sup>	Air purifying respirator protection is worn <u>only</u> if airborne particulate or industrial chemical concentrations exceed action levels established in Section 10.
	Level B <sup>4</sup>	For backhoe operator and workers in Exclusion Zone -- after chemical agent has been confirmed.
	Level A <sup>5</sup>	Only TEU personnel will perform Level A operations after presence of liquid chemical warfare agent has been confirmed.

Notes:

- 1 **Level D** - Coveralls, safety boots, hardhat (if near heavy equipment).
- 2 **Modified Level D** - Coveralls, butyl boots, boot covers, gloves, hardhat and North 7600 or MSA Ultra-twin air purifying respirator (APR).
- 3 **Level C** - North 7600 APR or MSA Ultra-twin APR, Tyvek F, coveralls, boots/gloves and hardhat. **NOTE:** Used when industrial/volatile chemicals are Only Identified Chemical Hazard.
- 4 **Level B** - Tyvek F, CPU, butyl rubber gloves/boots, pressure demand Interspiro supplied air/SCBA.
- 5 **Level A** - Responder Suit, CPU, TAP boots, pressure demand Interspiro supplied air/SCBA.



### **8.2.2 Modified Level D**

For intrusive investigation activities (e.g., trenching with heavy equipment or digging geophysical anomalies using hand tools), or other activities considered to have risk of exposure to chemical agents, the minimum level of protection that will be worn by personnel at the site is Modified Level D. The following will be considered Modified Level D protection:

- Cotton coveralls or other work clothes;
- Butyl rubber safety boots (or TAP boots for TEU) with rubber boot covers;
- North 7600 full-face air purifying respirator with organic vapor/acid gas/ P-100 cartridges (NIOSH approved) or MSA Ultra-twin full-facepiece APR with GME super cartridges/P-100 filter (NIOSH approved) or M40 series mask (TEU)--slung;
- Nitrile gloves for soil sampling, leather or canvas work gloves when a scrape/cut hazard exists;
- Safety glasses with side shields or goggles when an eye hazard exists
- Hard hat (as required when adjacent to heavy equipment); and
- Hearing protection (as required when near heavy equipment).

***NOTE: APR will be donned and worn to exit the work area when observations or air monitoring indicate the presence of a chemical agent.***

### **8.2.3 Level C**

- North 7600 full-face air purifying respirator with organic vapor/acid gas/ P-100 cartridges or MSA Ultra-twin full-facepiece air purifying respirator with GME super cartridges/P-100 filter;
- Tyvek<sup>®</sup> F coveralls with hood;
- Inner coveralls or other work clothes;
- Inner surgical gloves;
- Outer butyl-rubber gloves;
- Chemical-resistant butyl-rubber safety boots;
- Rubber boot covers or TAP boots (TEU);
- Hard hat (as required when adjacent to heavy equipment); and
- Hearing protection (as required when near heavy equipment).

### **8.2.4 Level B**

- Interspiro positive pressure supplied air/SCBA (used in pressure demand mode);
- Tyvek<sup>®</sup> F coveralls with hood;
- Chemical protective undergarments (CPU)

- Inner surgical gloves;
- Outer butyl-rubber gloves;
- Chemical-resistant butyl-rubber safety boots;
- TAP boots (TEU) or chemical resistant rubber boot covers;
- Hard hat (as required when working adjacent to heavy equipment); and
- Hearing protection when near heavy equipment.

#### **8.2.5 Level A (TEU Only)**

Only TEU personnel will conduct Level A operations when the presence of liquid chemical agent is confirmed.

- Interspiro positive pressure supplied air/SCBA (use in pressure demand mode);
- Trelleborg TRELLECHEM HPS/Responder CSM totally-encapsulated suit or CSM Responder Level A suite;
- CPU; and
- TAP boots

### **8.3 RESPIRATORY SELECTION, FIT TEST, AND MAINTENANCE PROCEDURES**

The respiratory protection program for Fort McClellan sites is in Appendix I of this SSHP. This program outlines the requirements and procedures for selecting, fit-testing and maintaining respiratory protection during this project.

### **8.4 PERSONAL PROTECTIVE EQUIPMENT (PPE)**

The PPE Program which will be used at Fort McClellan sites is described in Appendix E - Personal Protective Equipment of this SSHP. This appendix describes the protective ensembles, testing and inspection of PPE, maintenance, duration of work/rest periods, storage, training and proper fitting, and program evaluation.

**SECTION 9  
MEDICAL SURVEILLANCE AND EMERGENCY MEDICAL SUPPORT**

**9.1 MEDICAL SURVEILLANCE FOR SITE WORKERS**

Personnel engaged in hazardous waste operations are required to be enrolled in a medical monitoring program as required by 29 CFR 1910.120(f). Medical surveillance on this project will also be in accordance with Department of the Army Pamphlets DA PAMS 40-173 and 40-8. Parsons ES utilizes the services of licensed, local physicians for medical examinations and a contract occupational health physician to review all medical records to provide medical surveillance of employees at the various Parsons ES offices. Medical monitoring is also required for subcontractors. A letter (signed by a physician) attesting to each individual's fitness for duty must be provided to the Project Manager (by Parsons ES and Subcontractor personnel) prior to beginning work. Due to the potential presence of cholinesterase inhibiting nerve agents, cholinesterase baselines will be developed for all personnel who will be conducting field tasks at these sites.

**9.2 MEDICAL SUPPORT**

The medical support for work at this site will be provided by contract with a local emergency rescue company and the Northeast Alabama Regional Medical center.

- The local emergency company will provide an ambulance and 1 EMT (emergency medical technician) and 1 Paramedic to standby during intrusive work at suspect chemical agent sites. This company will provide emergency treatment and transport for decontaminated casualties. Casualties will be transported to the Northeast Alabama Regional Medical Center.
- Northeast Alabama Regional Medical Center will provide medical treatment for chemical agent related casualties and other injured personnel associated with this project.

**9.3 MEMORANDA OF AGREEMENTS (MOA) FOR MEDICAL SUPPORT.**

The Mobile District, U.S. Army Corps of Engineers has prepared the MOA for emergency medical support during this project. A copy of the MOA is included in Appendix F.

## SECTION 10 ENVIRONMENTAL AND PERSONAL MONITORING

### 10.1 AIR MONITORING

Air monitoring will be conducted during subsurface soil sampling (i.e., greater than 6 inches deep), and intrusive excavation or trenching activities. Monitoring will be conducted by ECBC and Parsons ES subcontractor personnel and Parsons ES personnel. The purpose of this air monitoring is three-fold:

- To determine the airborne concentrations of contaminants to which personnel working on the site would be exposed without PPE or other control measures, and to evaluate the adequacy of PPE or other control measures used by site workers.
- To determine the airborne concentrations of contaminants being released from on-going site activities and to evaluate the need for additional engineering controls during intrusive trenching or excavation.
- To determine the airborne contaminant concentrations leaving the site during intrusive activities and to evaluate, document and control potential public exposures.

### 10.2 AIR MONITORING INSTRUMENTS

The air contaminants to be measured include volatile organic compounds (VOCs), dust/particulates, and chemical agent vapors. The air monitoring instruments or methods used to evaluate airborne concentrations of these contaminants are indicated below.

#### 10.2.1 VOCs

Photoionization detector (PID) with an 11.7 electron volt (eV) lamp, or an organic vapor analyzer (OVA®) will be used to conduct general VOC monitoring. Dräger detector tubes will be used to differentiate between aromatic hydrocarbons (e.g., benzene, xylene, ethylbenzene, and toluene) and chlorinated hydrocarbons (e.g., trichloroethene, tetrachloroethene, and 1,1,2,2-tetrachloroethane). The specific detector tubes which will be used are benzene 0.5/a (also equally sensitive to other aromatic compounds) and trichloroethane 50/d (also indicates presence of other chlorinated hydrocarbons). Detector tubes will be used as a qualitative indicator of type of VOC present (i.e., are VOCs detected by PID/OVA® aromatic or chlorinated).

### **10.2.2 Chemical Agents**

ECBC will provide near-real time air monitoring for chemical agents (see Appendix G).

### **10.2.3 Airborne Dust**

The MIE Mini-Aerosol Monitor will be used to measure airborne particulate matter during trenching and excavation activities.

## **10.3 AIR MONITORING LOCATIONS**

Air monitoring will be accomplished at three locations on each site where intrusive activities are ongoing. These locations will include:

### **10.3.1 Within Exclusion Zone (EZ)**

VOCs and chemical agent monitoring will be conducted within the EZ at and around the location of intrusive sampling or investigation activities. Purpose of this air monitoring at the source is to detect any airborne releases of chemical agent as early as possible.

### **10.3.2 Within Contamination Reduction Zone (CRZ)**

VOCs and airborne dust will be monitored within the CRZ. Personnel within this zone may not be wearing PPE so these measurements will be used to determine whether additional protection is required. In addition, the dust measurements in the CRZ, will be used to determine the need for dust control measures.

### **10.3.3 Perimeter of CRZ**

VOCs and airborne dust measurements will be performed around the perimeter of the CRZ and Exclusion Zone. These measurements will be used to document potential public exposures and if necessary – take measures to control these exposures.

## **10.4 ACTION LEVELS**

The following action levels will be used to control site activities, and potential worker and public exposures.

### **10.4.1 VOCs**

VOCs detected on either the PID or OVA® will be used as shown below to determine the appropriate levels of protection:

Concentration of VOCs at Breathing Height (5-5.5 ft) *	Required Level of Protection
0 - 1 ppm	Level D
>1 - 25 ppm	Level C
>25 - 1,000 ppm	Level B
> 1,000 ppm	Stop work; reevaluate activities at site area.

\* Based upon benzene PEL/PELTV

**10.4.2 Chemical Agent**

*If any chemical agent is detected in the air at this site, all operations/activities will be closed immediately and the USAESCH Project Manager, the Parsons ES Project Manager, and the Project Health and Safety Officer will be notified.* Section 14 contains additional information on communication, notification, site closure procedures and other required actions associated with the detection of airborne chemical agent.

**10.4.3 Airborne Dust**

The concentration of particulate matter detected on MIE Mini-Aerosol Monitor will be used as follows:

Airborne Particulate Concentration (mg/m3) at Breathing Height	Required Action
0 - 2.5	Continue normal work activities
>2.5 - 5.0	Dust suppression
>5.0	Cease operations and re-evaluate

**10.5 AIR MONITORING PLAN**

Additional information and details of the air monitoring plan for sites at Fort McClellan are contained in the Air Monitoring Plan (Appendix G). The specifics of this Air Monitoring Plan (e.g., Chemical Compound, Classification/Description, Organization Responsible for Monitoring, Monitoring Method, Action Level and Action Taken) are summarized in Table 10.1.

**TABLE 10-1  
SUMMARY OF AIR MONITORING PROCEDURES**

Compound	Classification/ Description	Monitored By	Monitoring Method	Action Level <sup>1</sup>	Action Taken <sup>2</sup>
Mustard	CWM. Includes sulfur and nitrogen mustards, thickened mustards, and mustard mixtures	ECBC	MINICAMS®a nd/or RTAP	0.003 mg/m <sup>3</sup>	Concentrations above this action level require respiratory protection for exposed personnel regardless of their location.
Lewisite	CWM. Includes Lewisite as well as Lewisite/mustard mixtures	ECBC	MINICAMS® and/or RTAP	0.00075 mg/m <sup>3</sup>	Concentrations above this action level require respiratory protection for exposed personnel regardless of their location.
Agent GB	CWM. Potentially leathal Nerve Agent.	ECBC	MINICAMS® and RTAP	0.0001 mg/m <sup>3</sup>	Workers must wear respiratory protection above this concentration.
Agent VX	CWM. Potentially lethal Nerve Agent.	ECBC	MINICAMS® and RTAP	0.00001 mg/m <sup>3</sup>	Workers must wear respiratory protection above this concentration.
Phosgene (CG)	Industrial. Component in CAIS Kits.	ECBC Parsons	MINICAMS® and Detector Tube	0.1 ppm	Concentrations above this action level require respiratory protection for exposed personnel regardless of their location.
Cyanogen Chloride (CK)	Industrial. Used as chemical warfare agent – Blood Agent.	ECBC	MINICAMS®	0.1 ppm	Concentrations above this level require workers in area to wear respiratory protection.

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**TABLE 10-1 (CONTINUED)  
SUMMARY OF AIR MONITORING PROCEDURES**

Compound	Classification/ Description	Monitored By	Monitoring Method	Action Level <sup>1</sup>	Action Taken <sup>2</sup>
Chloropicrin (PS)	Industrial. Component in CAIS kits.	ECBC	MINICAMS® RTAP and Detector Tube	0.1 ppm	Concentrations above this action level require respiratory protection for exposed personnel regardless of their location.
Volatile Organic Compounds (VOCs)-- specific	Industrial. From decontamination solutions used on these sites.	Parsons	PID	1 ppm	Concentrations above this action level require respiratory protection for exposed personnel regardless of their location.

<sup>1</sup> mg/m<sup>3</sup> = milligrams of contaminant per cubic meter of air and ppm= parts (by volume) of contaminant per million parts of air used either TLV® or Army's Airborne Exposure Limit (AEL).

<sup>2</sup> Notify PSHO of any exceedances of action levels.

MINICAMS® = Miniature Chemical Agent Monitoring System

MEAP = Mobile Environmental Analytical Platform

RTAP = Real Time Analytical Platform

## SECTION 11 HEAT AND COLD STRESS

### 11.1 HEAT STRESS

11.1.1 Sweating does not cool the body unless the sweat is evaporated from the body. During the field investigation activities at Fort McClellan a number of the site personnel may be required to wear semi-permeable or impermeable personal protective equipment (PPE). The use of this personal protective equipment (PPE) reduces the body's ability to eliminate large quantities of heat because the evaporation of sweat is decreased. The body's effort to maintain an acceptable temperature may become impaired and this may cause heat stress. Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks. If semi-permeable and impermeable PPE is used at these sites, heat stress is a **MAJOR HAZARD** to involved site workers.

11.1.2 Heat stress related problems include heat rash, fainting, heat cramps, heat exhaustion, and heat stroke. Heat rash occurs because sweat is not evaporating, making the skin wet most of the time. Standing erect and immobile in the heat allows blood to pool in the lower extremities. As a result, blood does not return to the heart to be pumped back to the brain and fainting may occur. Heat cramps are painful spasms of the muscles due to excessive salt loss from profuse sweating. Heat exhaustion occurs due to the large fluid and salt loss from profuse sweating. A person's skin is clammy and moist; and nausea, dizziness, and headaches may occur.

11.1.3 Heat stroke occurs when the body's temperature regulatory system has failed. Skin is hot, dry, red, and spotted. The affected person may be mentally confused, delirious, and convulsions may occur. A person exhibiting signs of heat stroke should be removed from the work area to be shaded area immediately. The person should be soaked with water and fanned to promote evaporation. Medical attention must be obtained immediately. **EARLY RECOGNITION AND TREATMENT OF HEAT STROKE ARE THE ONLY MEANS OF PREVENTING BRAIN DAMAGE OR DEATH.**

11.1.4 Monitoring of personnel wearing PPE should begin when the ambient temperature is 70°F or above. **Table** 11.1 presents the frequency for this monitoring during site operations at Fort McClellan. Monitoring frequency should increase as the ambient temperature increases or as slow recovery rates are observed. Heat stress monitoring should be performed by a person with a current first-aid certification who is trained to recognize heat stress symptoms. A log will be kept on-site of all monitoring conducted.

**Table 11.1<sup>(1)</sup>**  
**Suggested Frequency of Physiological Monitoring**  
**For Fit and Acclimatized Workers<sup>(a)</sup>**  
**Fort McClellan, Alabama**

<b>Adjusted Temperature<sup>(b)</sup></b>	<b>Normal Work Ensemble<sup>(c)</sup></b>	<b>Impermeable Ensemble<sup>(d)</sup></b>
90°F (32.2°C) or above	After each 45 minutes of work	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 60 minutes of work	After each 30 minutes of work
82.5°-87.5°F (28.1°- 30.8°C)	After each 90 minutes work	After each 60 minutes of work
77.5°-82.5°F (25.3°- 28.1°C)	After each 120 minutes of work	After each 90 minutes of work
72.5°-77.5°F (22.5°- 25.3°C)	After each 150 minutes of work	After each 120 minutes of work

(1) NIOSH/OSHA/USCG/EPA, 1985.

(a) For work levels of 250 kilocalories/hour.

(b) Calculate the adjusted air temperature ( $t_{a\ adj}$ ) by using the equation:

$$t_{a\ adj} = t_a + (13 \times \text{percent sunshine})$$

where:  $t_a$  is the air temperature in °F.

Measure air temperature ( $t_a$ ) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat.

Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow (100 percent sunshine = no cloud cover and a sharp, distinct shadow; zero percent sunshine = no shadows.)

(c) A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

(d) Includes all work accomplished at Fort McClellan sites with personnel wearing Saranex® and Responder® or Trelleborg® Level A suits.

## **11.2 EARLY SYMPTOMS OF HEAT STRESS RELATED PROBLEMS**

11.2.1 Early symptoms of heat stress related problems include the following:

1. Decline in task performance
2. Lack of coordination
3. Decline in alertness
4. Unsteady walk
5. Excessive fatigue
6. Muscle cramps
7. Dizziness

11.2.2 To monitor the worker, measure:

- Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period.
  - If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
  - If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.
- Oral temperature. Use a clinical thermometer or similar device to measure the oral temperature at the end of the work period (before drinking).
  - If oral temperature exceeds 99.6°F (37.6°C), shorten the next work cycle by one-third without changing the rest period.
  - If oral temperature still exceeds 99.6°F (37.6°C) at the beginning of the next rest period, shorten the following cycle by one-third.
  - Do not permit a worker to wear a semipermeable or impermeable garment when oral temperature exceeds 100.6°F (38.1°C).

## **11.3 PREVENTION OF HEAT STRESS**

Proper training and preventive measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illnesses. To avoid heat stress, the following steps should be taken:

- Adjust work schedules.
  - Modify work/rest schedules according to monitoring requirements.
  - Mandate work slowdowns as needed.
  - Perform work during cooler hours of the day, if possible, or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluids intake must approximately equal the amount of water lost in sweat, e.g. 8 fluid ounces (0.23

liters) of water must be ingested for approximately every 8 ounces (0.23 kg) of weight loss. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:

- Maintain water temperature at 50° to 60°F (10°-16.6°C).
  - Provide small disposable cups that hold about 4 ounces (0.1 liter).
  - Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
  - Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
- Train workers to recognize the symptoms of heat-related illnesses.
  - Rotate personnel and alternate job functions.
  - Limit work hours – at Fort McClellan, Level A, or other levels of protection involving semi-permeable or impermeable PPE; wear time may be reduced based on the risk assessment (wet bulb temperature and Table 11.1 should be used). Wear time for this level of dress will not exceed 8-hour days under ideal conditions.

#### 11.4 COLD-RELATED ILLNESS

Exposure to low temperatures presents a risk to employee safety and health both through the direct effect of the low temperature on the body and collateral effects such as slipping on ice, decreased dexterity, and reduced dependability of equipment. Work conducted in the winter months can become a hazard for field personnel due to cold exposure. All personnel must exercise increased care when working in cold environments to prevent accidents that may result from the cold. The effects of cold exposure include frostbite and hypothermia. Wind increases the impact of cold on a person's body. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally labeled frostbite. Recognition of the symptoms of cold-related illness will be discussed during the health and safety briefing conducted prior to the onset of site activities during cold weather.

- **Hypothermia.** Hypothermia is defined as a decrease in a person's core temperature below 96°F. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interferences with any of these mechanisms can result in hypothermia, even in the absence of "cold" ambient temperatures. The first symptom of systemic hypothermia is shivering. Maximum shivering starts when the core body temperature drops below 95°F. The next set of symptoms as the body's cooling progresses is apathy, listlessness, and sleepiness. The person remains conscious and responsive with normal blood pressure and a core temperature of 93.2°F. The person must be removed immediately to a facility with heat. As hypothermia advances beyond this point, the person has a glassy stare, slow pulse, slow respiratory rate, and may lose consciousness. Severe hypothermia starts when the core body temperature reaches 91.4°F. Finally, the extremities start to freeze and death may result.

- **Monitoring.** When the windchill drops below 20°F (dry) or 30°F (with precipitation), monitoring of workers' body temperatures will be conducted twice per day. Core temperatures less than 95°F indicate a need for the individual to take a break and warm up. Any person who develops moderate hypothermia (core temperature less than 95°F) will not be allowed to return to work for 48 hours.

## SECTION 12 SITE CONTROL

### 12.1 INTRODUCTION

Site control measures minimize potential contamination of workers, protect the public, and prevent unauthorized entry. Site control involves the physical arrangement and control of access into established work zones that may contain contamination. At Fort McClellan, PPE levels beyond Level D may be used for all intrusive activities on sites where CWM was previously used for training or otherwise handled. Therefore, work zones will be established on sites where intrusive activities are being performed. These work zones are a site control measure and serve to protect workers and the public while minimizing the spread of contamination.

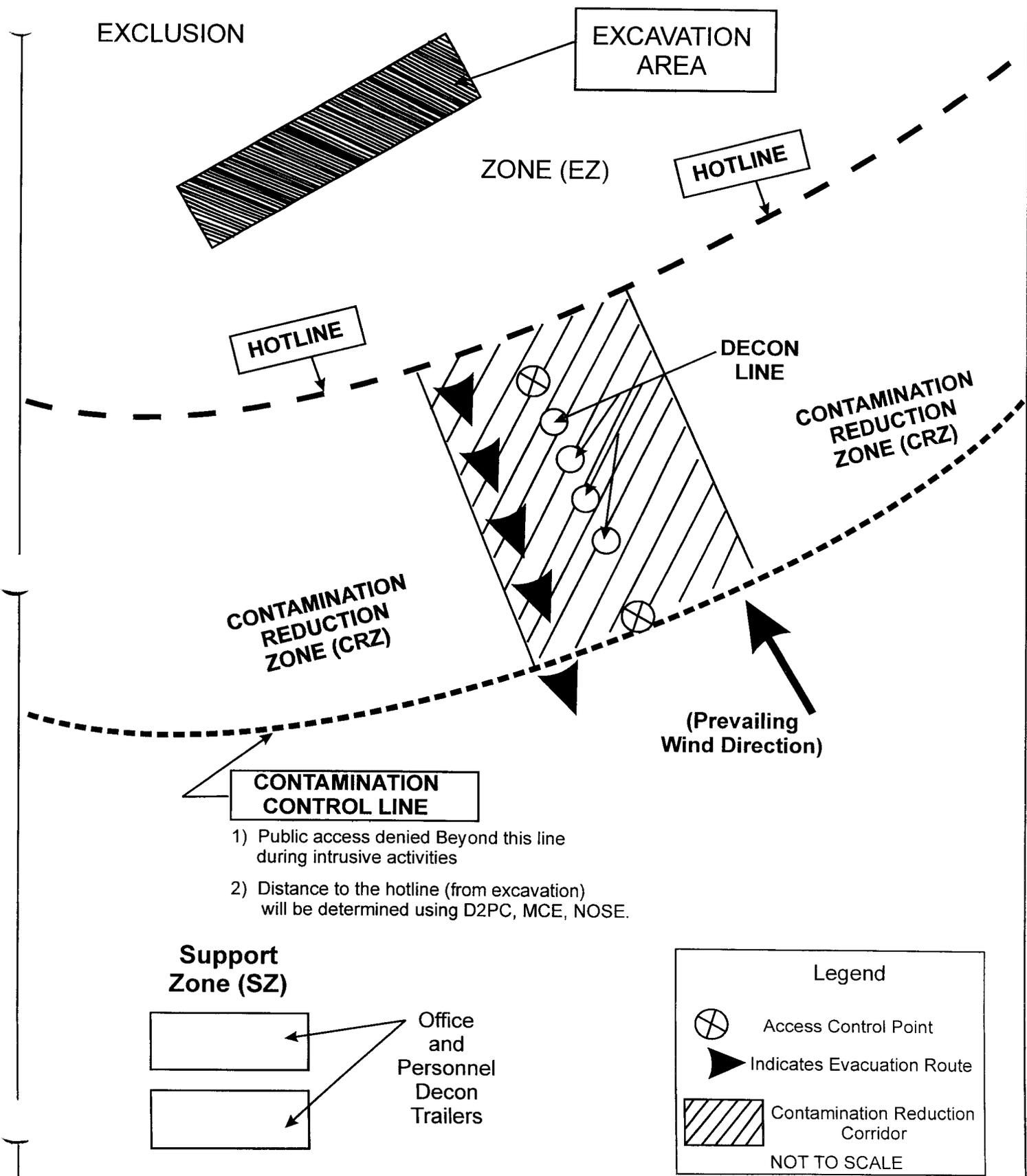
### 12.2 SITE WORK ZONES

To reduce the spread of hazardous materials by workers from the contaminated areas to the clean areas, zones will be delineated on each site to aid in controlling the flow of personnel and equipment between the zones. The establishment of the work zones will help ensure that personnel are properly protected against the hazards present where they are working; work activities and contamination are confined to the appropriate areas; and personnel can be located and evacuated in an emergency. Figure 12.1 shows a *generalized* site layout that includes the three work zones (i.e., exclusion zone, contamination-reduction zone, and the support zone) that are also described in greater detail below. These zones will be established at each site based on the site conditions (e.g. locations of roads, etc.), planned site activities, meteorological conditions, and MCE. Site layout specifics will differ somewhat and will be established through a specific site operations plan following evaluation of the results of the geophysical surveys.

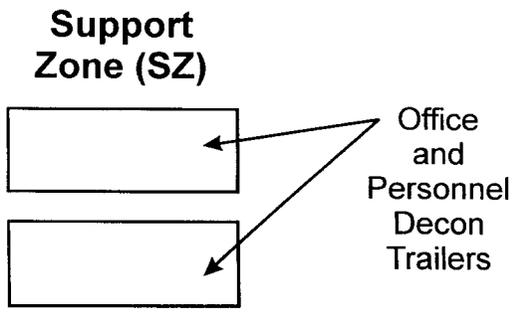
#### 12.2.1 Exclusion Zone (EZ)

The EZ is the work area where intrusive investigation will take place. Within the EZ, Modified Level D or greater (i.e., Level B or A) PPE will be worn by all personnel performing intrusive activities. The hotline, or EZ boundary, will be established through visual observations and/or general air monitoring requirements. This boundary will be physically marked by tape or temporary barriers or well-defined by physical and geographic boundaries. All Parsons' personnel and subcontractors will be properly trained in controlling and minimizing access to the EZ. Should an unauthorized person enter the EZ they will be stopped and escorted to the support zone. Work will be stopped until the situation is resolved. Unauthorized entry will be recorded in the field notebook. It should be noted that the EZ will not necessarily correspond to the maximum extent of the NOSE.

Figure 12.1: Site Work Zones - Generalized



- 1) Public access denied Beyond this line during intrusive activities
- 2) Distance to the hotline (from excavation) will be determined using D2PC, MCE, NOSE.



**Legend**

- Access Control Point
- Indicates Evacuation Route
- Contamination Reduction Corridor

NOT TO SCALE

### **12.2.2 Contamination-Reduction Zone (CRZ)**

The CRZ is the transition area between the contaminated area and the clean area. This zone provides an area to prevent or reduce the transfer of hazardous materials that may have been picked up by personnel or equipment leaving the EZ. The organization of the CRZ and control of decontamination operations are also described in Section 13 and Appendix L of this plan.

### **12.2.3 Support Zone**

**12.2.3.1** The support zone is considered a clean area. The support zone for each site will be located upwind or at sufficient distance from the intrusive activity that during a maximum credible event (MCE) personnel in the Support Zone will be a safe distance from the release. A MCE is the worst possible theoretical chemical agent release that could occur as a result of site activities being performed for this project. The U.S. Army's D2PC computer program will be used to determine the downwind distance from the MCE which would result in a "No Significant Effects" (NOSE) dosage. This information will be used to locate the outer perimeter (contamination control line) of the CRZ and the beginning of the support zone. Public access beyond the contamination control line will be prevented during intrusive activities (i.e., trenching and excavation).

**12.2.3.2** The support zone contains the office and other support supplies. Level D PPE is appropriate apparel within this zone. Contaminated clothing and equipment are not permitted in the support zone. Since activities may be conducted during the winter months, special types of PPE and other safety equipment susceptible to freezing (e.g., eye wash and decontamination solutions) will be stored in a heated space.

### **12.3 SITE SPECIFIC CONTAMINANTS OF CONCERN, MCEs, AND NOSEs**

Table 12.1 contains the sites at which CWM may be present, the CWM contaminants of concern (i.e., the chemical warfare agents and CWM previously handled and used for training at a specific site) and the associated MCEs and NOSEs for these sites. The NOSE distances under assumed worst case meteorological conditions have been determined for each intrusive excavation or sampling area or location, and Figures 12.2 through 12.14 depict this NOSE distance for each site. As described in paragraph 12.2.3, public access to these areas will be prohibited during any intrusive excavation or sampling activities.

### **12.4 MINIMUM SEPARATION DISTANCE (MSD)**

The MSD is the minimum separation distance for unrelated personnel given unintentional detonation and the minimum separation distance for personnel (related and unrelated) for intentional detonations of conventional ordnance items. The MSD for all unrelated personnel for an unintentional detonation shall be determined by the greatest of 200 feet, the K50 distance, or the maximum fragment throw distance. The MSD for all personnel (related or unrelated) for intentional detonations shall be determined by the minimum of 200 feet, K328 distance, or the maximum fragment throw distance. The

team separation distance is the minimum distance between active intrusive teams. The team separation distance is determined by the greater of 200 feet or K50 (0.9-psi overpressure) distance.

The sites at Fort McAllen that have the potential to contain conventional ordnance are Training Area 31, Area T-24A, and the Smoke Ranges R&S. Training Area 31 and Area T-24A are CWM sites that may contain conventional ordnance, while Smoke Ranges R&S is not suspected to contain CWM. The suspected conventional ordnance and subsequent MSDs and related information for Training Area 31 and Area T-24A are presented in the Explosive Safety Submission (ESS) located in Appendix E of Volume 1.

Smoke Ranges R&S were used primarily for training troops in the use of smoke, but overlaps with historic areas used in firing 3" Stokes mortars, 6" Newton trench mortars, 4.2" mortars, 37mm, 75mm, 105mm, and 155mm projectiles. The MSDs will be based on a 6" Newton trench mortar as the most probable munition (MPM). The maximum fragmentation distance for unrelated personnel using the 6" Newton trench mortar is 2,631 feet as determined by USAESCH Blast Effect personnel. These calculations are included as Annex A to this section. This distance represents the MSD for both unintentional and intentional detonations without the use of fragmentation mitigation. Plate 1 illustrates the relative areas impacted by the MSD.

Mitigation procedures will include evacuation of all non-essential personnel and boundary control along the perimeter of the MSD arc. Due to the base closure, the nearest potentially inhabited buildings to the southern section of Smoke Ranges R & S are approximately 1,000 feet to the west. These facilities will be individually checked and isolated prior to any intrusive activity. The nearest facility known to be inhabited is the former CDTF, lying just within the MSD arc to the north. There are numerous roads that traverse the Smoke Ranges R & S. These roads will be blocked (i.e., temporary barricade will be placed across the road) and monitored during working hours to insure no transiting within the arcs. All explosive operations will cease if unauthorized personnel enter the arcs. Engineering controls will also be considered in an effort to mitigate the effects of fragmentation and decrease the MSD. As detailed in Annex A, the MSD for intentional detonations may be decreased to the K328 distance of 820 feet by using 36-inches of sandbags.

The UXO team separation distance of 200 feet will be used during intrusive activities, due to its greater distance than the K50 (0.9 overpressure) distance of 125 feet.

## **12.5 EMERGENCY PROTOCOL**

Should an emergency occur while personnel are in site work zones, an audible alarm (i.e., three five-second blasts on an airhorn) and/or voice messages via radios/cellular telephones will be used to alert site personnel that an emergency exists. The alarm will indicate to site personnel that work activities are to cease and be secured, and personnel are to proceed back through the decontamination reduction corridor (if they are in the EZ or CRZ) and assemble at the off-site, upwind assembly location designated in the daily tailgate safety meeting. Appendix B, Emergency Response and Fire Prevention Plan, contains details on this and other emergency procedures which will be used at Fort McClellan, AL.

Figure 12.2



## Training Area 31

Boundaries Overlaid on 1994 Photo-mosaic

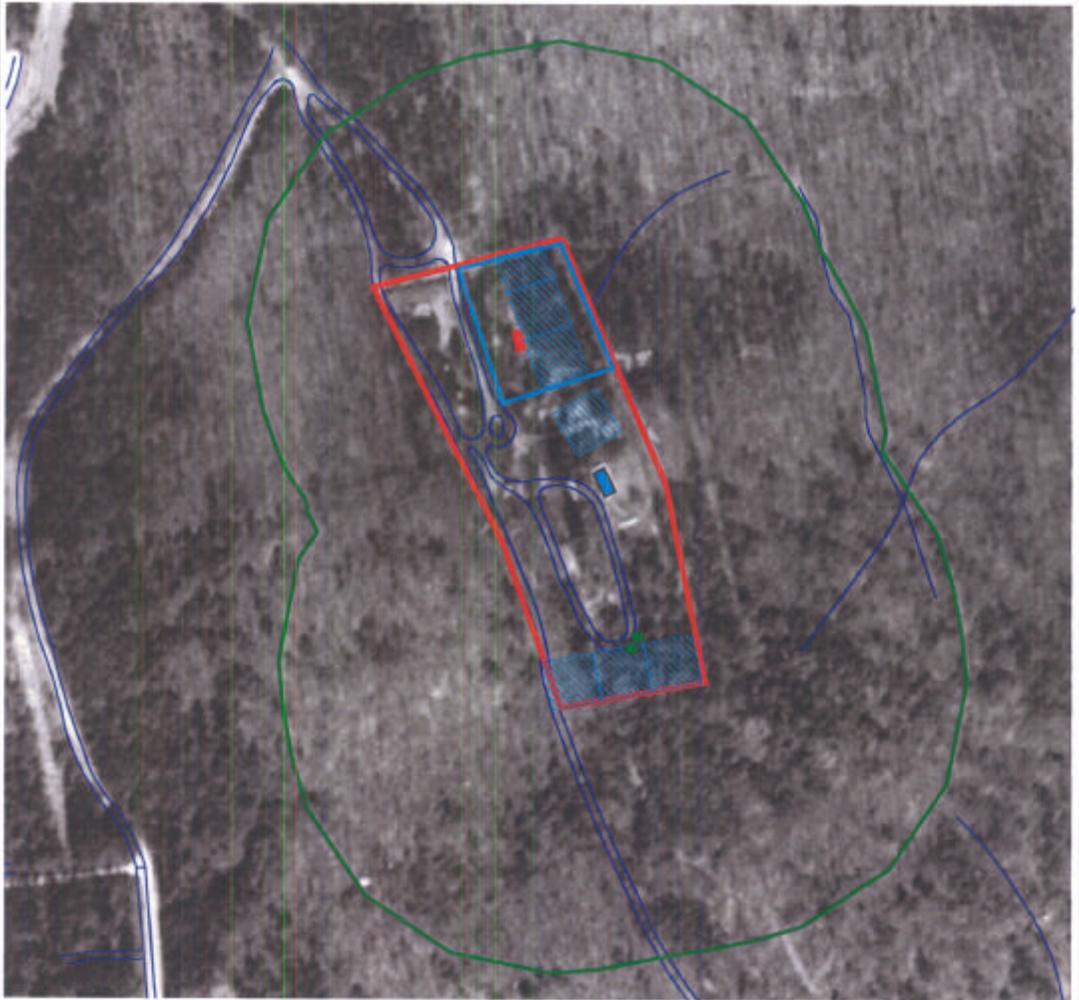
### Legend

- Soil Sampling Location
- ▨ Geophysical Grids (100 x 100)
- Approximate Location of Decon Pad
- ▭ Training Area 31 Boundary
- NOSE = 99 Meters



Revisions		Date	Approved
Symbol:			
Data Source: Oak Ridge National Laboratory			
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Checked by Parsons ES	Date: February 1999	1 of 1	
	UTRI/Environmental, Inc.		

Figure 12.3



## T-38 (Reservoir Ridge)

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

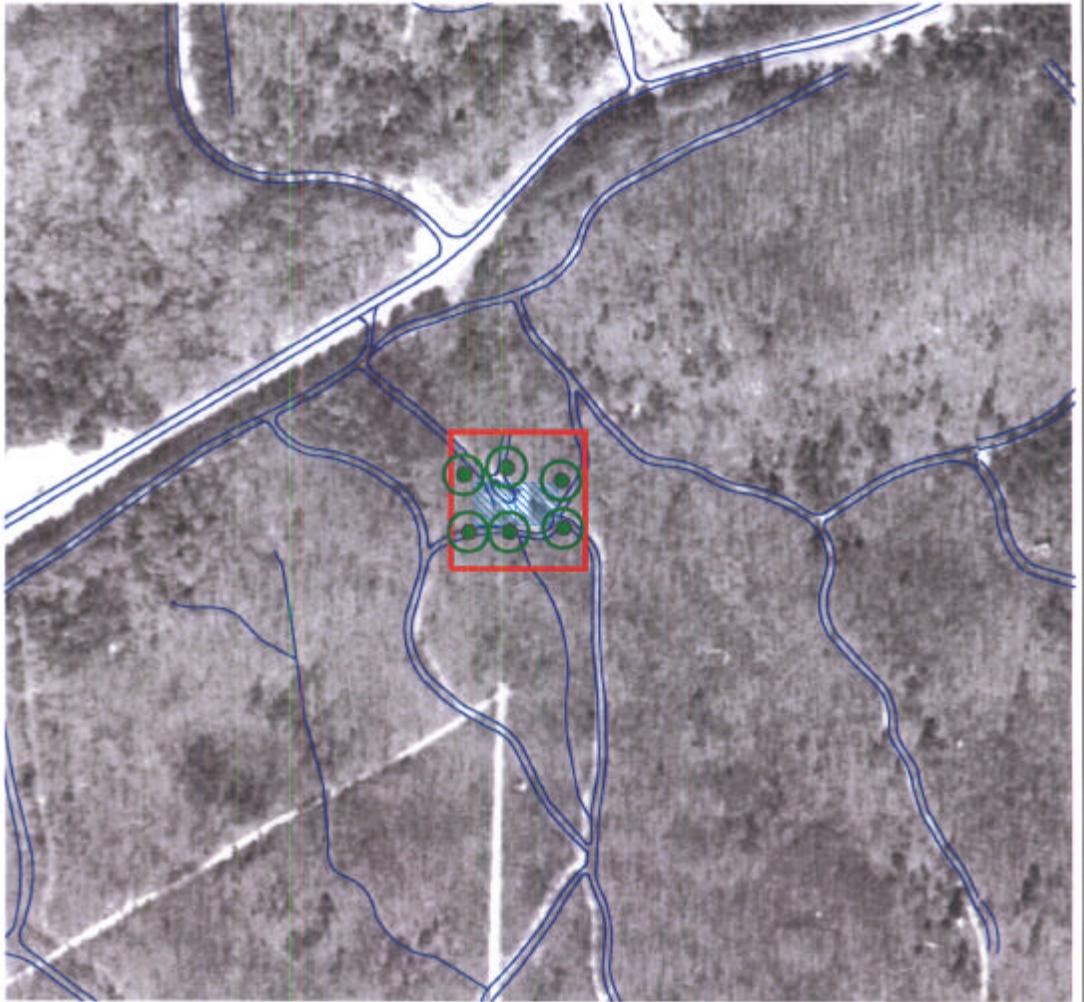
- Soil Sampling Locations
- ▨ Geophysical Grids (100 x 100)
- Approximate Location of Decon Storage
- Approximate Location of Pad
- T-38 Boundary
- Fenced Storage Area
- NOSE = 160 Meters



100 0 100 200 Feet

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Figure 12.4



## Range T-4 Biological Warfare Area

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

- Range T-4 Boundary
- Geophysical Grids (100 x 100)
- Soil Sampling Location
- NOSE = 14 Meters



200 0 200 Feet

Revisions			
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Submitted by Parsons ES	Date: February, 2004 C:\P\110000\754119.dwg	1 of 1	

Figure 12.5



## Agent ID Area

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

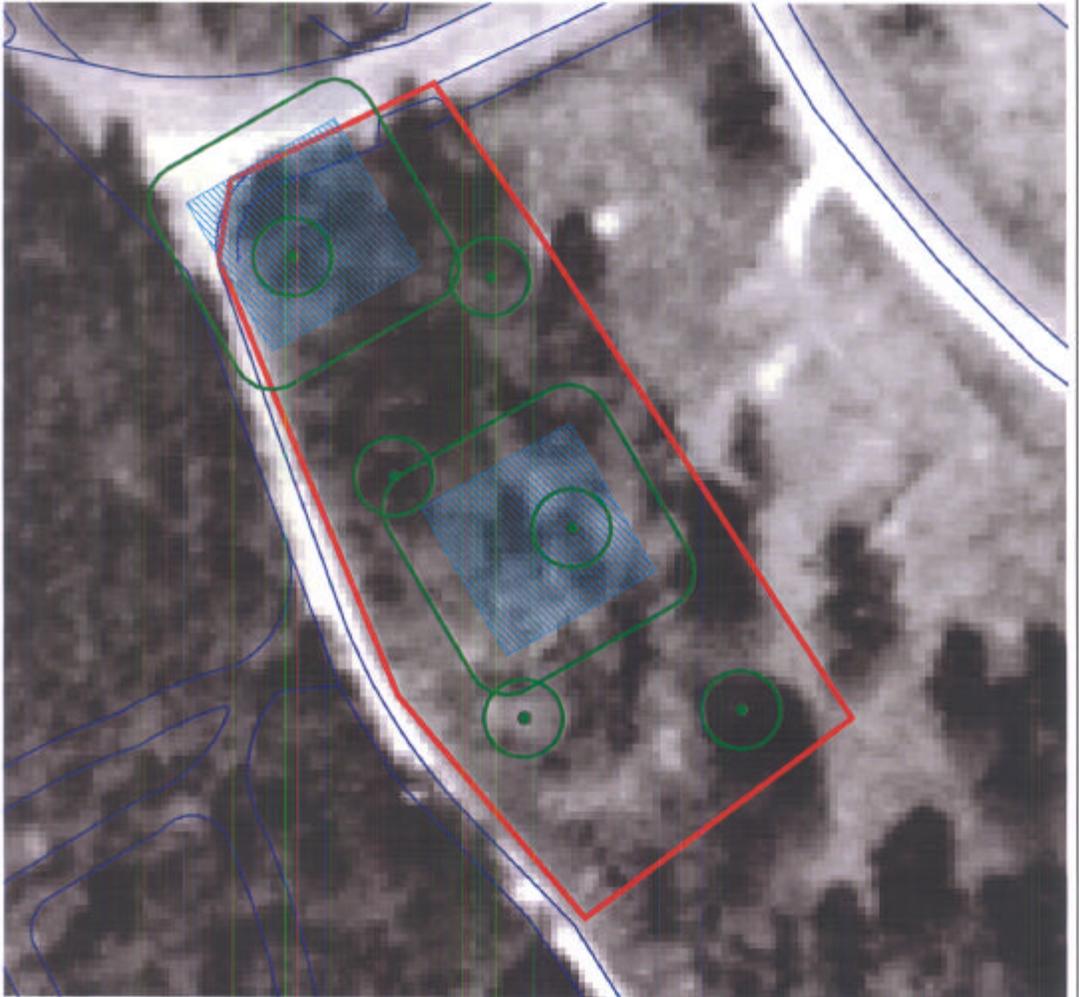
- Soil Sampling Location
- Agent ID Area Boundary
- ▨ Geophysical Grids (100 x 100)
- NOSE = 132 Meters



100 0 100 Feet

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Drawn by:	Scale: 1:2000	Sheet:	Project: 12115
Checked by:	Date: February 1998	Number: 1	1 of 1
Submitted to:	CS/ET/Environmental		

Figure 12.6

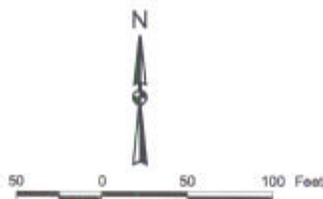


## Cane Creek Training Area

Boundaries Overlaid on 1994 Photo-mosaic

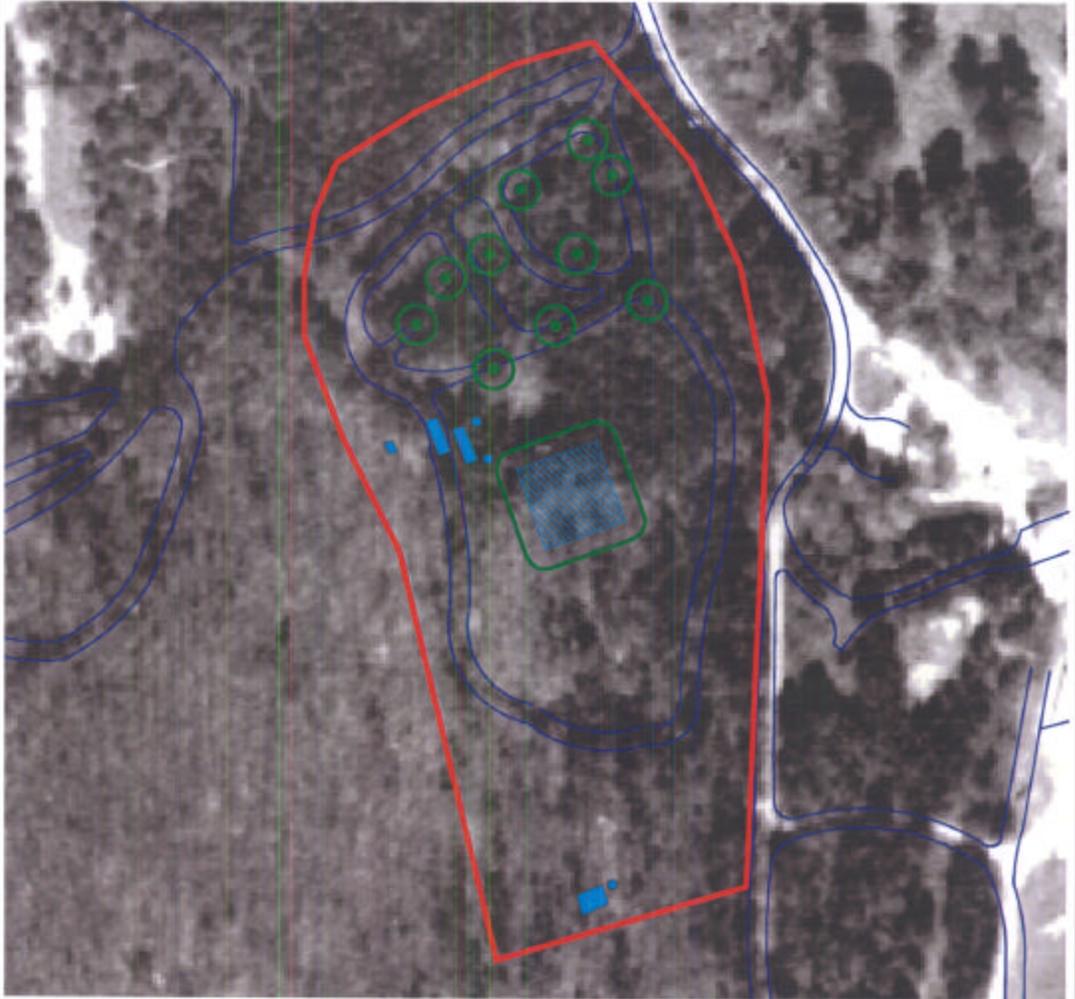
### Legend

- Cane Creek Training Area Boundary
- Geophysical Grid (100 x100)
- NOSE = 7 Meters



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Checked by	Date: October, 2001	1 of 1	
Submitted by Duggan ES	ETM: (Electronics) .gr		

Figure 12.7



## Naylor Field

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

- Approximate Proposed Soil Sampling Location
- Approximate Location of SI Soil Sample Point
- ▨ Geophysical Grid (100 x 100)
- Approximate Location of Concrete Pad
- Naylor Field Boundary
- NOSE = 7 Meters



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Checked by:	Date: February 1999	Drawn: 1:01	
Submitted by: Parsons ES	©2000 PARSONS ENGINEERING SCIENCE, INC.		

Figure 12.8



## Blacktop Training Area

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

- Blacktop Training Area and Fenced Yard Boundary (Fence Removed)
- Soil Sampling Location
- NOSE = 7 Meters



100 0 100 Feet

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Checked by	Scale: 1" = 100'	Sheet Number: 1	Project # 75411E
Submittal by Parsons ES	Date: February 1999	Scale: Asymmetric	

Figure 12.9



## Dog Training Area

Boundaries Overlaid on 1994 Photo-mosaic

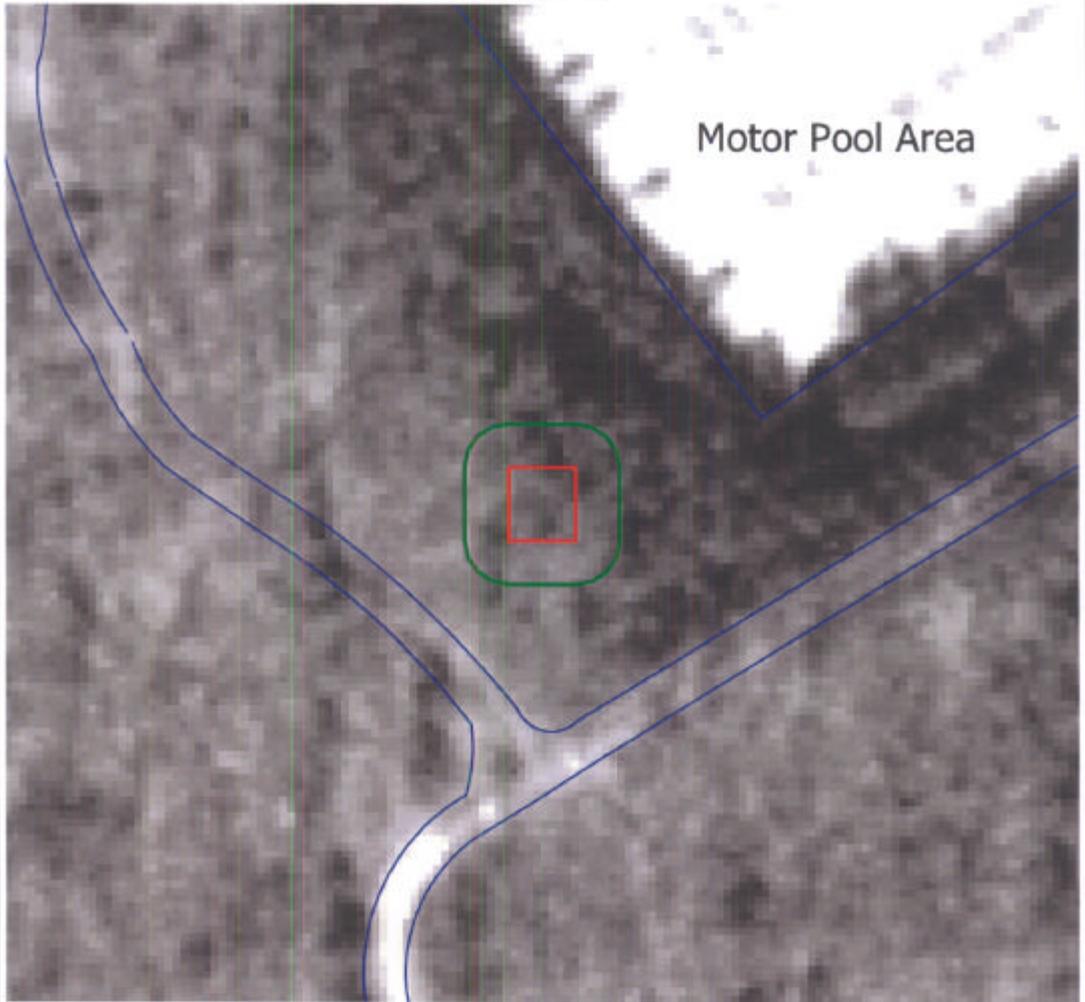
### Legend

- Dog Training Area Boundary
- Soil Sampling Location
- NOSE = 7 Meters



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Data Source: Oak Ridge National Laboratory			
PARSONS ENGINEERING SCIENCE, INC.		U. S. ARMY CORPS OF ENGINEERS Huntsville Center	
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Drawn by: Parsons ES			
Checked by:	Scale: 1:1000	Sheet Number: 1	PROJECT 7541.05
Submitted by: Parsons ES	Date: February 1998	1 of 1	

Figure 12.10



## Old Burn Pit

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

- Old Burn Pit Boundary
- NOSE = 7 Meters



Revisions			
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Reviewed by Parsons ES	Date: February 1999		14

Figure 12.11



## Field Personnel Decontamination Area

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

-  Approximate Location of Building (circa 1950's)
-  Soil Sampling Location
-  NOSE = 7 Meters
-  Field Personnel Decontamination Area Boundary



Revisions		Date	Approved
Revised by			
Drawn by			
Checked by			
Submitted by			
Data Source: Oak Ridge National Laboratory			
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Prepared by: Parsons ES Drawn by: Parsons ES Checked by: Submitted by: Parsons ES		FORT McCLELLAN ANNISTON, ALABAMA CALHOUN COUNTY	
Date: 12/14/00 Scale: 1:10,000 Project: 12-14		Revision: 1 	

Figure 12.12



## Old Toxic Training Area

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

- Old Toxic Training Area Boundary
- Soil Sampling Location
- NOSE = 7 Meters



50 0 50 100 Feet

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Submitted by:	Date: February 1998	of 1	
Printing Date:	CGM/Environmental, etc.		

Figure 12.13



## Mustard Spill Sites

### Legend

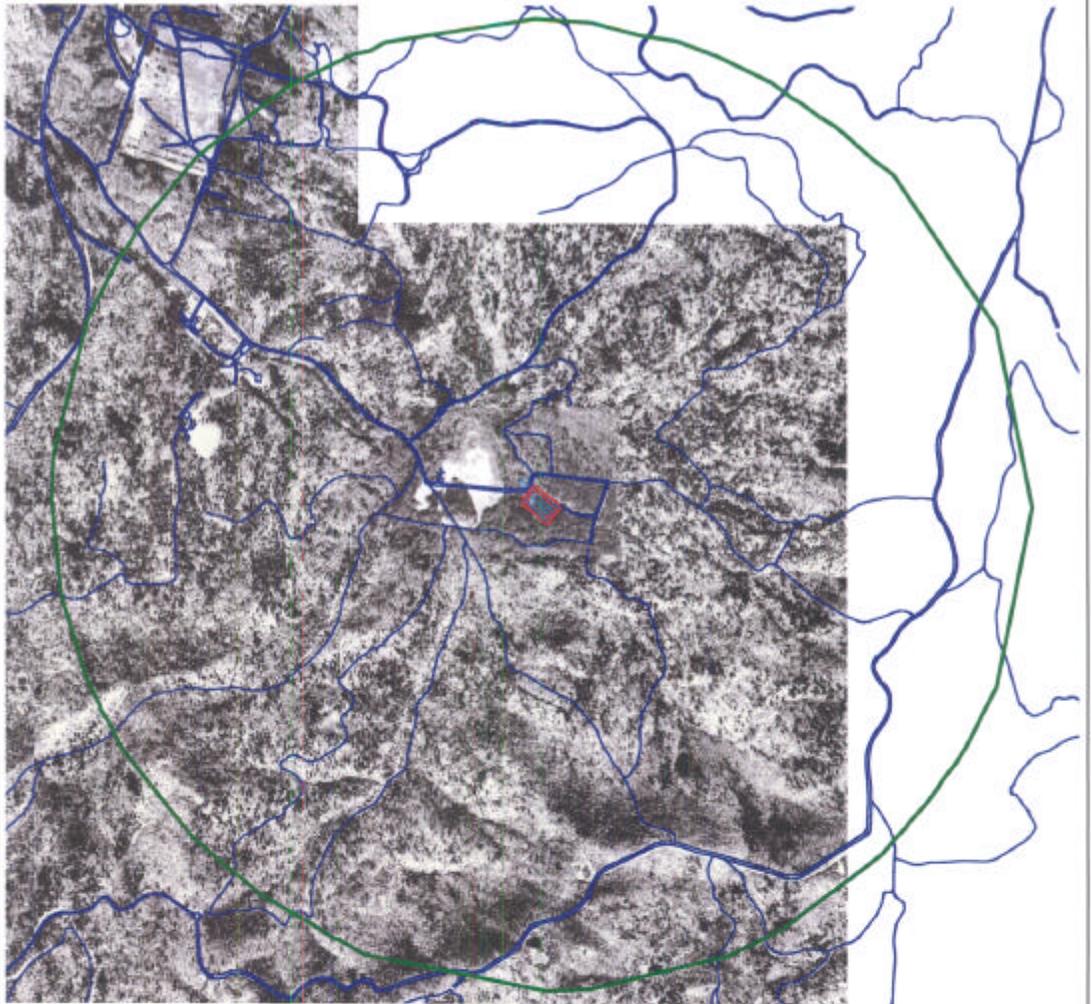
- Mustard Spill Sites
- NOSE = 7 Meters



500 0 500 Feet

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Checked by:	Date: February 1999	Drawn by: C. J. [unreadable]	

Figure 12.14



## Range 24A

Boundaries Overlaid on 1994 Photo-mosaic

### Legend

-  Geophysical Grid
-  Range 24A Boundary
-  NOSE = 1675 Meters



1000 0 1000 Feet



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Checked by Parsons ES	Date: October 1998	10001/25000000.dwg	1 of 1

**TABLE 12.1  
CONTAMINANTS OF CONCERN, AND MAXIMUM CREDIBLE EVENTS (MCEs),  
AND NO SIGNIFICANT EFFECTS DISTANCES FOR SUSPECT CWM SITES  
FORT McCLELLAN**

Site Number/Name	Contaminants(s) of Concern	Remarks	MCE & NOSE
Training Area 31 (AOC-1)	GB/HD/decontaminants (STB, DS-2 and DANC)	Samples (20-40 ml of agent) were used to contaminate objects used for training. In 1992 field samples were analyzed for chemical agents and breakdown products - negative results.	40 ml of GB NOSE = 11M/15M/ <u>99M</u>
Area T-38, Reservoir Ridge	GB, VX, HD/decontaminants (STB, DS-2 and DANC)	Sampling has been performed for chemical agents and breakdown products-negative results. Sampling in 1992 was negative for chemical agents and breakdown products at 4 locations.	Pit areas – 40 ml GB NOSE+11M/15M/ <u>99M</u> 5 gal HD evap release in suspect drum burial site NOSE=10M/14M/ <u>160M</u>
Smoke Ranges R&S (AOC-3)	OE and smoke oils		NA for Smoke Range—No MCE/NOSE
T-4 Biological Warfare Area	Possible HD contaminated soils and decontaminants (STB, DS-2 and DANC)	Possibility of and historic mustard spill at this site. Previous surface sampling was negative.	7.1 oz of globulized HD-exposed during sampling. NOSE-14M

**TABLE 12.1 (continued)  
CONTAMINANTS OF CONCERN, AND MAXIMUM CREDIBLE EVENTS (MCEs),  
AND NO SIGNIFICANT EFFECTS DISTANCES FOR SUSPECT CWM SITES  
FORT McCLELLAN**

Site Number/Name	Contaminant(s) of Concern	Remarks	MCE & NOSE
Agent ID Area (AOC-6)	GB, VX, HD, L, decontaminants (STB, DS-2 and DANC), if ID sets were used, then Phosgene may be present.	Exact use is unknown	40 ml CG-due to ID sets being used NOSE=16M/18M/ <u>132M</u>
Cane Creek Training Area (AOC-8)	Suspect burial pit, decontaminants (STB, DS-2 and DANC), HD	Sampling was done for chemical agents and breakdown products-negative results. In 1992, surface water and sediment samples were taken – negative results.	40 ml HD NOSE= <u>7M</u>
Naylor Field (AOC-9), T-6	HD (40 ml at a time) and decontaminants (STB,DS-2 and DANC) were used at site. EBS states DANC, possible Lewisite, MR stimulant	Sampling was conducted for agents and for breakdown products – negative results.	40 ml HD NOSE= <u>7M</u>
Blacktop Training Area (AOC-10/11)	Possibly any chemical agent and decontaminants (STB, DS-2 and DANC)		40 ml HD, sampling around perimeter of blacktop NOSE= <u>7M</u>

**TABLE 12.1 (continued)  
CONTAMINANTS OF CONCERN, AND MAXIMUM CREDIBLE EVENTS (MCEs),  
AND NO SIGNIFICANT EFFECTS DISTANCES FOR SUSPECT CWM SITES  
FORT McCLELLAN**

Site Number/Name	Contaminant(s) of Concern	Remarks	MCE & NOSE
Dog Training Area (AOC-12)	All		Concrete samples, extraction 40 ml of HD, NOSE= <u>7M</u>
Old Burn Pit (AOC-16)	Unknown	Site was found during Archive Search Report (ASR) site visit.	40 ml HD NOSE= <u>7M</u>
Field Personnel Decontamination (AOC-17)	Unknown, Decontaminants STB, DS-2 and DANC		40 ml HD in sump area along with copious amounts of STB NOSE= <u>7M</u>
Old Toxic Training Area	HD, decontaminants (STB, DS-2 and DANC)	Training exercises or detecting and deconning HD. Sampling was done for agent and by products (surface) – negative results (1992).	40 ml of HD for samples NOSE= <u>7M</u>
Mustard Spill Sites	Possible HD		7.1 oz of globulized HD – exposed during sampling. NOSE=14M

**TABLE 12.1 (continued)  
CONTAMINANTS OF CONCERN, AND MAXIMUM CREDIBLE EVENTS (MCE5),  
AND NO SIGNIFICANT EFFECTS DISTANCES FOR SUSPECT CWM SITES  
FORT McCLELLAN**

Site Number/Name	Contaminants(s) of Concern	Remarks	MCE & NOSE
Area T-24A, FTMC-33 1.5 acres	CG, BZ, GB, and HD and decontaminants (STB, DS-2 and DANC) Lots of Fog Oil used in this area EBS	EOD training area, 2 burning pits, possible 6 feet depth, limited sampling was done with neg results, Weston	155 HD, not explosively configured NOSE=4M/5M/ <u>71M</u> 155 CG, not explosively configured NOSE=166M/186M/ <u>1675M</u> 155 GB, not explosively configured NOSE=82M/110M/ <u>711M</u> 4.2" CG, not explosively configured NOSE=156M/173M/ <u>1254M</u> 4.2" GB, not explosively configured NOSE=2M/4M/ <u>52M</u>

**Notes:**

Maximum Credible Event = MCE:A possible, maximum release of contamination that could be expected, but not necessarily a worst possible case.

NOSE: The distance from the MCE at which no significant health effects are expected.

1. The amount of 40 ml of agent was selected because of the archival data that mentions the use of “up to this amount” in the training areas. For the agent detection areas, this amount is mentioned frequently as the maximum amount used at each test station.
2. The amount of 5 gal of agent in a drum is the result of calculations by TEU as to how much agent would evaporate between the time the drum was located and the time it was overpacked, for the purposes of this site we will use 60 minutes evaporation time.
3. Meteorological conditions used will be: WS=1MPS, Temp=DF85, Phosgene will be an instantaneous release, mustard will be an evaporative release over a 60 minute time frame, GRA will be the surface used, Anniston will be the geographical location used.
4. The last number in the string of numbers in the NOSE, underlined, is the NOSE, the first number is the 1%, the second number is the No Deaths, the last number is the No Significant Effects distance, all in meters. If there is only one number and it is underlined, that is the NOSE.

TABLE 12.1 (continued)  
 CONTAMINANTS OF CONCERN, AND MAXIMUM CREDIBLE EVENTS (MCE5),  
 AND NO SIGNIFICANT EFFECTS DISTANCES FOR SUSPECT CWM SITES  
 FORT McCLELLAN

Site Number/Name	Contaminants(s) of Concern	Remarks	MCE & NOSE
Area T-24A, FTMC-33 1.5 acres	CG, BZ, GB, and HD and decontaminants (STB, DS-2 and DANC) Lots of Fog Oil used in this area EBS	EOD training area, 2 burning pits, possible 6 feet depth, limited sampling was done with neg results, Weston	155 HD, not explosively configured NOSE=4M/5M/ <u>71M</u> 155 CG, not explosively configured NOSE=166M/186M/ <u>1675M</u> 155 GB, not explosively configured NOSE=82M/110M/ <u>711M</u> 4.2" CG, not explosively configured NOSE=156M/173M/ <u>1254M</u> 4.2" GB, not explosively configured NOSE=2M/4M/ <u>52M</u>

**Notes:**

Maximum Credible Event = MCE: A possible, maximum release of contamination that could be expected, but not necessarily a worst possible case.

NOSE: The distance from the MCE at which no significant health effects are expected.

1. The amount of 40 ml of agent was selected because of the archival data that mentions the use of "up to this amount" in the training areas. For the agent detection areas, this amount is mentioned frequently as the maximum amount used at each test station.
2. The amount of 5 gal of agent in a drum is the result of calculations by TEU as to how much agent would evaporate between the time the drum was located and the time it was overpacked, for the purposes of this site we will use 60 minutes evaporation time.
3. Meteorological conditions used will be: WS=1MPS, Temp=DF85, Phosgene will be an instantaneous release, mustard will be an evaporative release over a 60 minute time frame, GRA will be the surface used, Anniston will be the geographical location used.
4. The last number in the string of numbers in the NOSE, underlined, is the NOSE, the first number is the 1%, the second number is the No Deaths, the last number is the No Significant Effects distance, all in meters. If there is only one number and it is underlined, that is the NOSE.



## **SECTION 13**

### **PERSONNEL AND EQUIPMENT DECONTAMINATION**

#### **13.1 INTRODUCTION**

This section discusses decontamination of personnel and equipment. To prevent harmful materials from being transferred into clean areas or from exposing unprotected workers, all field personnel and equipment exiting an area of potential contamination should undergo decontamination. The extent of decontamination depends on a number of factors, the most important being the type and concentration of the contaminant involved. Appendix L, Equipment and Personnel Decontamination Station SOPs contains procedures for decontaminating personnel and equipment used in intrusive excavation/trenching and potentially contaminated with chemical agents or industrial chemicals at Fort McClellan sites.

#### **13.2 PROCEDURES FOR HAND-HELD EQUIPMENT DECONTAMINATION**

All hand-held equipment (i.e., shovels, etc.) that have been used in the EZ shall be decontaminated in the baths used for decontamination of personnel and PPE. Handheld instruments (e.g., air monitoring instruments) will be double-bagged (prior to entering the EZ) and potentially exposed to chemical agents or industrial chemicals to the least extent possible. All tools or equipment that may have become contaminated will be marked, logged, controlled and segregated to preclude their removal and prevent cross contamination. Pourous materials/equipment, such as those with wooden handles, if potentially exposed to chemical agent, will be “hot boxed” for determination of disposition. Field analytical instruments, such as for air monitoring, will be removed from the double bags and inlets cleaned. If a CWM release occurred and there is potential for internal contamination of the instrument, the device will be double-bagged and retained for disposal determination.

#### **13.3 PROCEDURES FOR HEAVY EQUIPMENT AND VEHICLE DECONTAMINATION**

All heavy equipment and vehicles which have entered the EZ shall be decontaminated prior to being removed from the work area/EZ.

#### **13.4 DECONTAMINATION PROCEDURES DURING MEDICAL EMERGENCIES**

Decontamination procedures during medical emergencies must be thorough to prevent exposure of unprotected medical personnel and facilities. Cutting away

disposable clothing and other similar decontamination activities should be undertaken to expedite decontamination to the maximum extent possible.

### **13.4.1 Physical Injury**

13.4.1.1 Physical injuries can range from a sprained ankle to a compound fracture, from a minor cut to massive bleeding. Depending on the seriousness of the injury, treatment may be given at the site by trained personnel. For minor medical problems or injuries, the normal decontamination procedure should be followed.

13.4.1.2 For the most serious injuries, additional assistance may be required at the site or the victim may have to be transported to a medical facility. Life-saving care should be started immediately, without considering decontamination. The outside garments need not be removed unless they cause delays, interfere with treatment, or aggravate the problem. Respirators and backpack assemblies must always be removed. Chemical-resistant clothing can be cut away. Outer contaminated garments should be cut away, and the individual should be wrapped in plastic, rubber, or blankets to prevent the contamination of medical personnel and the inside of ambulances. Site personnel will accompany the injured, notify the receiving medical facility/personnel of potential CWM contamination and perform any needed additional decontamination.

### **13.4.2 Heat Stress (See Section 11.1 for additional information)**

Heat-related illnesses range from mild heat fatigue to life-threatening heat stroke. Heat stroke requires prompt treatment to prevent irreversible damage or death. Less serious stages of heat stress also require prompt attention to prevent heat stroke. Decontamination should involve cutting off protective clothing and decontaminating with liquids. This decontamination will also represent the performance of first aid for heat stress.

### **13.4.3 Hypothermia, Frostbite (See Section 11.4 for additional information)**

Cold-related illnesses range from mild to severe forms of hypothermia and frostbite. Both illnesses should be easily detected at mild stages of development. Decontamination procedures should be conducted as normal. However, staff should work as quickly as possible, and begin proper treatment as soon as possible.

### **13.4.4 Chemical Exposure**

13.4.4.1 Exposure to chemicals can be divided into two categories:

- Injuries from direct contact, such as chemical burns or inhalation of toxic chemicals, and
- Potential injury caused by gross contamination of clothing or equipment.

13.4.4.2 For inhaled contaminants, treatment can only be performed by qualified physicians. If the contaminant is on the skin or in the eyes, first-aid treatment generally includes flooding the affected area with water. Decontamination of skin will be

conducted using dilute decontamination solutions and soap and water provided further injury will not result from this action.

13.4.4.3 When protective clothing is grossly contaminated, contaminants may be transferred from the wearer to treatment personnel and cause injuries. The protective clothing should be washed off as rapidly as possible and then carefully removed.

## SECTION 14

### EMERGENCY RESPONSE AND CONTINGENCY PLAN

#### 14.1 INTRODUCTION

14.1.1 Appendix B (Emergency Response and Fire Prevention) contains detailed procedures on emergency response actions and contingencies. This section summarizes this plan. Refer to Appendix B for more detailed information.

14.1.2 If an emergency develops on site, the procedures described in this section are to be immediately implemented. Emergency conditions exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of chemical exposure;
- A condition occurs that is more hazardous than anticipated; and/or
- Fires, explosions, structural collapses/failures, and/or unusual weather conditions (thunderstorms, lightning, high winds, etc.) occur.

14.1.3 If an emergency occurs, direct voice communication is used to sound the alarm. If personnel are out of range of direct voice communication, an air horn meeting the requirements of 29 CFR 1910.165 is sounded. The emergency signal is three, five-second blasts on a hand-held air horn. Air horns will be located in the CRZ, with the **SSHO**, and at the outer perimeter of the contamination reduction zone. In the event of an emergency and the air horn sounds, all personnel will assemble in the support zone at the previously identified assembly point, be accounted for, and be given directions on how to proceed. The assembly point for emergencies or contingencies will be identified in the tailgate training each morning (based upon the wind direction and the route providing the easiest egress from the site). All site personnel will immediately cease site activities and begin moving towards the assembly point when the alarm is sounded. If personnel are working in the exclusion zone, they will exit through the most practical exit. If the emergency warrants rapid egress from the exclusion zone, decontamination will be accomplished in the most practical way possible. General emergency procedures and specific procedures for personal injury are described within this section. **Table 14.1** is a list of emergency contacts. **Figure 14.1 shows the route to the primary medical facility for this project (Northeast Regional Medical Center; 400 East 10<sup>th</sup> Street, Anniston, Alabama). The facility can be used for all trauma emergencies as well as for non life-threatening emergencies.**

## 14.2 EMERGENCY EQUIPMENT

14.2.1 An ambulance with a paramedic and EMT (trained in chemical casualty treatment) will be on standby during all intrusive field activities at suspect chemical agent sites. The ambulance will be positioned in the Support Zone as near as possible to the CRZ. The EMTs will remain onsite (i.e., on standby) when intrusive work is being done on sites with a history of GB or VX agent usage. The ambulance and EMTs will not be allowed to leave the site (following cessation of daily activities) until after all air monitoring results have been received and confirm that chemical agents were not present. The telephone number and source of ambulance support are detailed in [Table 14.1](#).

14.2.2 In each operative decontamination area, the **SSHO** will establish an emergency equipment station containing the following: an eyewash and flushing station, first-aid kit, 20-pound class A, B, and C (ABC) fire extinguisher, a portable cellular telephone and radio. Copies of pertinent figures including emergency phone numbers and maps to emergency facilities will be displayed at this station. The eyewash and flushing units will be located near the source of potential hazards. Each station will be prominently marked.

14.2.3 For activities not requiring a decontamination area, such as geophysical surveying for which Level D protection is used, a first-aid kit, fire extinguisher, and cellular telephone will be provided. Copies of pertinent figures as discussed above will also be displayed at this station.

### 14.2.1 Fire Extinguishers

14.2.1.1 Portable fire extinguishers approved by a nationally recognized testing laboratory, and labeled to identify the labeling organization and the fire test and performance standard, will be provided at each individual job site. Extinguishers will be fully charged and in operable condition.

14.2.1.2 A dry-chemical type 4A:20B:C extinguisher will be available at each work site. Each piece of heavy equipment, site trailer, and each vehicle will be equipped with at least a 2A:10B:C fire extinguisher.

### 14.2.2 First Aid Equipment and Supplies

First aid kits will be the 16 unit first aid kits and comply with ANSI Z308.1. The number of kits will be sufficient to accommodate the maximum number of people on site at any given time. Kits will be located at each work site and personnel will be briefed as to their locations. The Sr. UXO Supervisor and SSHO will each maintain one kit at all times. Kits will be inspected on a weekly basis and missing components replaced immediately.

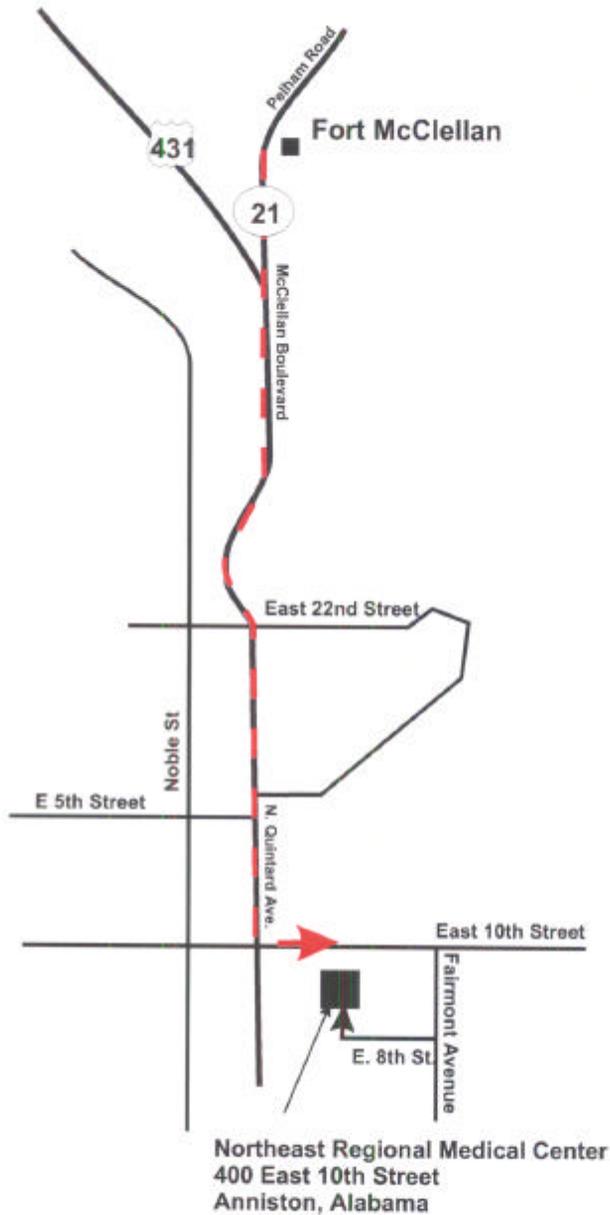
**Table 14.1**  
**Emergency Contacts**

These contacts and maps should be posted prominently at the site. Should any situation or unplanned occurrence require outside assistance or support services, the appropriate contact from the following list should be made:

<u>Agency/Contact</u>	<u>Telephone Number</u>
<b><u>At Ft. McClellan:</u></b>	
Fort McClellan Transition Force	(SSG Michael Busch) <b>256-895-4824</b>
<b><u>Off Ft. McClellan:</u></b>	
Police	Anniston Sheriff Department <b>(256) 236-6600</b>
Fire	Anniston Fire Department <b>(256) 237-3541</b>
Emergency Response (Spills/Releases-Only)	EMA Civil Defense <b>(256) 435-0543</b>
Ambulance	EMTs/Ambulance <b>TBD</b>
Hospital	Northeast Regional Medical Center <b>(256) 235-5121 Ex. 17</b>
Poison Control Center	<b>800-288-9999</b>

<u>Responsible Person</u>	<u>Telephone Number</u>	
	<u>Work</u>	<u>Home</u>
Ken Stockwell (Parsons ES Proj. Mgr.)	678-969-2351	770-979-5628
TBD (Parsons ES Site Mgr./ H&S Officer)	TBD	TBD
Ed Grunwald (Parsons ES Project H&S Officer)	678-969-2394	770-594-9760
<i>(USACE Safety Specialist)</i>	<b>256-895-1550</b>	<b>205-851-7466</b>
<i>Dave Skridulis (USACE Project Manager)</i>	<b>256-895-1468</b>	
<i>TEU - Staff Duty (24 hrs)</i>	<b>410-671-2773</b>	<i>Staff Duty Number</i>
<i>Gary Lattin (ECBC Emergency Contact)</i>	<b>410-671-4479</b>	<b>717-235-8129</b>
Medical Services Network (Dr. Merlin)	1-800-874-4676, ext. 111	
	TBD = To Be Determined NA = Not Applicable	

Figure 14.1: Hospital Route from Fort McClellan, AL



### **14.2.3 Emergency Eye Wash/Showers**

Portable eyewash and drench hose unit will be provided on site for use by personnel. The unit will have a minimum of 10 gallons capacity for thorough flushing action. The unit will be filled and maintained for immediate use in the event of an emergency requiring its use.

### **14.2.4 Communication and Signaling Devices**

14.2.4.1 Site communication devices will include portable, hand-held two-way radios for communication between teams, the site trailer, and site managers/supervisors. Cellular telephones will be used to communicate with off-site individuals and organizations. Operational radios and telephones will be present at the site trailer, and on each site where intrusive tasks are performed. The Parsons ES Site Manager, Sr. UXO Supervisor, and the SSHO will be issued radios.

14.2.4.2 Hand-held air horns will also be present at each site where intrusive activities are being conducted, with the SSHO, and in the Site Trailer. Air horns will be used to audibly signal (three, five-second blasts) that an emergency is ongoing.

## **14.3 GENERAL EMERGENCY PROCEDURES**

General emergency procedures are as follows:

- Notify the contacts listed in **Table** 14.1 of the SSHP when an emergency occurs. This list is posted prominently at the site.
- Use the "buddy" system (pairs).
- Maintain visual contact between "pairs." Each team member remains close to the other to assist in case of emergencies.
- If any member of the field crew experiences any adverse effects or symptoms of exposure, the entire field crew will immediately halt work and act according to the instructions provided by the Site Manager.
- Any condition that suggests a situation more hazardous than anticipated will result in evacuating the field team and reevaluating the hazard and the level of protection required.
- If an accident occurs, the Site Manager is to complete either a Parsons or an ENG Form 3394 Accident Report Form (Appendix C). Follow-on action will be taken to correct the situation that caused the accident.
- Use radio communication to maintain contact with personnel working in remote areas or other areas not in line-of-sight.

### **14.3.1 Personal Injury or Illness**

In case of personal injury or illness at the site, follow the procedures listed below:

- Field team members or on-site emergency medics trained in first aid administer treatment to injured workers.
- The victim will be transported to the Northeast Medical Center (See Figure 14.1). If injury does not occur while the ambulance is standing-by at a site, the on-call ambulance service will be called to transport the victim.
- The SSHO is responsible for reporting the accident. If there are any questions concerning whether an accident should be reported, contact the PHSO.

### **14.3.2 Chemical Warfare Materiel (CWM)**

14.3.2.1 A military chemical agent may be encountered during planned activities. The agents handled at these sites includes mustard, Lewisite, nerve agents (GB and VX), and blood and choking agents. It is extremely important that all personnel working on these sites are capable of recognizing symptoms of exposure to these agents and the required first aid/self aid procedures.

14.3.2.2 If any of the following odors are detected, personnel will take immediate action to evacuate upwind and don protective clothing.

- The odor of garlic - Distilled Mustard or Mustard-Lewisite.
- The odor of geraniums – Lewisite.
- The odor of new-mown hay or grass – Phosgene.
- Stinging and pungent odor – Chloropicrin.
- Unusual odors with unknown source.

### **14.3.3 Blister Agent**

Blister agents (HD, H, HT, and L) cause cell damage to any part of the body they come in contact with. Skin contact can cause effects ranging from reddening to severe blistering. The eye is most vulnerable - either by liquid or vapor contact. Hypersensitivity to light may occur. Long-term exposure to low concentrations or short-term exposures to high concentrations can result in permanent eye damage. Upper respiratory tract damage is caused by inhalation of vapors or aerosol. Severe exposure can cause secondary infection such as bronchial pneumonia.

- Symptoms may not appear for several hours after exposure. Vapor exposure may cause eye irritation, localized reddening and gritting feeling in the eye, and respiratory distress similar to a chest cold.
- First aid - decontaminate exposed area immediately with soap and water and follow with nominal 5 percent bleach solutions.

**NOTE:** If eye exposure, flush eyes only with water. Provide opaque glasses to aid in comfort for light sensitivity.

### 14.3.4 Nerve Agent

14.3.4.1 Nerve agents (G-series and VX) are lethal by inhibiting the enzyme acetylcholinesterase, which is required for the function of many nerves and muscles in the human body. The number and severity of the symptoms depend on the quantity and route of entry of the nerve agent into the body. The agent is quick acting, and within 15 minutes the exposed person can experience symptoms.

- Mild symptoms of nerve agents exposure include:
  - Runny nose;
  - Pinpointed eye pupils (myosis) and dimness of vision;
  - Chest tightness and difficulty breathing; and
  - Localized muscle twitching.
- Symptoms of severe nerve agent poisoning include:
  - Nausea and vomiting;
  - Cramps;
  - Involuntary defecation or urination;
  - Coma;
  - Cessation of respiration and death.

14.3.4.2. Decontamination and donning of respiratory protection are necessary immediately if nerve agent exposure is suspected. Personnel with symptoms must be provided medical treatment, immediately. If severe signs of exposure are present, antidotes should be administered. The antagonists for nerve agent exposure include 2-PAM chloride and atropine. These compounds may be self-administered using military Mark I auto-injectors or administered by medical personnel. Three (3) Mark I kits will be available for each individual within the exclusion zone of sites potentially containing nerve agents.

### 14.3.5 Blood Agent

This type of agent [(e.g., hydrogen cyanide (AC) and cyanogen chloride (CK)] affects the ability of the blood to support respiratory function. Symptoms are dependent on concentration and duration:

- Moderate exposure
  - Vertigo;
  - Nausea;
  - Headache; and
  - Convulsions and/or coma.
- High exposure

- Deep, rapid breathing;
- Violent convulsion after 15 to 20 seconds;
- Cessation of regular breathing – 1 minute;
- Terminations of heart action shortly thereafter.
- Getting effected personnel to first aid is crucial with exposure to blood agents. The following steps should be taken quickly with exposed personnel:
  - Don respiratory protection immediately;
  - Move victim to clean area;
  - Get medical assistance; and
  - Provide artificial respiration in the interim.

#### **14.3.6 Choking Agent**

Phosgene (CG) is the best known choking agent. It causes irritation to the upper respiratory tract, damaging the air passages in the lungs, and causing them to fill with fluid.

- Symptoms of exposure to phosgene include:
  - Coughing;
  - Choking;
  - Tightness in chest;
  - Nausea;
  - Occasional vomiting;
  - Headache;
  - Lacrimation; and
  - Pulmonary edema, rapid shallow breathing, and painful cough and cyanosis.

**NOTE:** Symptoms may be delayed or they may occur and then disappear for a period of up to 24 hours; and then recur as pulmonary edema develops. Seeking medical treatment as soon as possible is essential.

- First Aid
  - Don mask;
  - Remove victim to fresh air. If area is clean, mask should be removed;
  - Obtain medical assistance;
  - Observe victim;

- Provide drainage from victim's mouth to prevent aspiration; and
- Administer artificial respiration.

#### **14.3.7 Incapacitating Agent**

BZ is an incapacitating agent that produces mental confusion, lack of coordination, and hallucinations.

- Symptoms of exposure to BZ include:
  - Rapid heartbeat;
  - Dizziness;
  - Vomiting;
  - Extremely dry mouth; and
  - Blurred vision.

**NOTE:** BZ is absorbed by inhalation or ingestion. Symptoms are similar to alcoholic intoxication, and may not occur for up to several hours after exposure.

- First Aid or other protective measures:
  - Don mask;
  - Evacuate area;
  - Keep victim calm, restrain if needed;
  - Obtain medical assistance;
  - Observe and provide ventilation; and
  - Keep body temperature down.

#### **14.3.8 Procedures Implemented for a Major Fire, Explosion, or On-Site Health Emergency Crisis**

For such emergencies, the Site S&H Officer/Site Manager shall:

- Refer to this Site SSHP;
- Notify the paramedics and/or fire department, as necessary,

**NOTE:** Site personnel will use fire extinguishers to extinguish small, controllable fires. For fires, which are not controlled using available on-site extinguishers, the Anniston Fire Department will be summoned. If the fire involves ordnance, explosives, or toxic chemical agent, fire department personnel will not enter the area but will support on-site response activities.

- Personnel will not engage in any activity in the process of putting out a fire which might cause injury to that person or others on the site;

- Signal for evacuation and evacuate the site, except for personnel completing necessary tasks (e.g., decontaminating themselves prior to evacuation);
- Isolate the area; and
- Stay upwind of any fire.

#### **14.3.9 Procedures Implemented If Chemical Warfare Agent Is Detected In Soil Headspace During Intrusive Activities (e.g. Trenching, Hand Boring)**

The following actions will be taken in the event that a chemical agent is detected in soil samples during site activities:

- Positive-pressure respiratory protection will be donned by all site workers; (emergency 10-minute escape SCBA or other appropriate airline/SCBA combination);
- In the case of hand-borings or narrow trenches, plastic sheeting (previously placed next to the opening for immediate use) will be rolled over the opening and bags of sand (also placed next to the boring or trench) will be placed along the edges of the plastic. For larger openings, the excavation will be backfilled;
- Any open 55-gallon drum containing soils or waste materials will be covered with a drum lid;
- After openings are covered or backfilled, all personnel will evacuate the area to an upwind location in the support zone, going through the proper decontamination procedures;
- The soil sample that yielded the positive headspace result will be analyzed by the ECBC mobile laboratory.
- If results of analysis of the soil sample indicate that the reading was a false positive and no chemical agent of concern is present, personnel will return to the location and continue intrusive activities.
- If results of soil sample analysis indicate that a chemical agent of concern is present:
  1. Parsons ES or ECBC shall contact the TEU emergency contact. The SSHO and/or Site Manager shall contact the USACE Safety Specialist, and the Parsons ES PHSO (see [Table 14.1](#));
  2. Parsons ES and their subcontractors will secure the site, taking all necessary precautions to prevent injury to themselves. They will ensure that no one goes beyond the support zone until TEU takes control of the site and appropriate follow up activities are planned and agreed upon. Assistance in physically securing the site to prevent unauthorized entry will be obtained (if needed) from the Anniston Sheriff Department. Yellow tape, signs, barricades, and traffic cones will be acquired and used to warn unauthorized personnel to “Keep Out;” and

3. If release of a chemical agent is confirmed, the chemical release reporting described in Appendix B will be initiated.

#### **14.3.10 Procedures Implemented If Chemical Agent Is Detected In Air During Intrusive Activities (e.g. Trenching, Hand Boring)**

The following actions will be taken if chemical agent is detected in air by near real-time air monitoring:

- Positive-pressure respiratory protection will be donned by all site workers; (emergency 10-minute escape SCBA or other appropriate airline/SCBA combination);
- In the case of hand borings or trenches, plastic sheeting (previously placed next to the opening for immediate use) will be rolled over the boring and bags of sand (also placed next to the opening) will be placed along the edges of the plastic;
- Any open 55-gallon drum containing cuttings will be covered with a drum lid;
- All personnel will evacuate to an upwind location in the support zone, going through the proper decontamination procedures;
- Parsons ES or ECBC shall contact the TEU emergency contact. The SSSHO and/or Site Manager shall contact the USACE Safety Officer, and the Parsons ES Project H&S Officer (see [Table 14.1](#));
- Parsons ES and their subcontractors will secure the site to include covering and/or containerizing all soils and wastes that may be contributing to the airborne release. Site personnel will wear PPE (to include respiratory protection) and take all necessary precautions to prevent injury to themselves. They will ensure that no one goes beyond the support zone until TEU arrives and takes control of the site;
- Assistance in physically securing the site to prevent unauthorized entry will be obtained (if needed) from the Anniston Sheriff Department. Yellow tape, signs, barricades, and traffic cones will be acquired and used to warn unauthorized personnel to “Keep Out;” and
- If release of a chemical agent is confirmed, the chemical release reporting described in Appendix B will be initiated.

### **14.4 HAZARDOUS MATERIAL HANDLING AND SPILL REMEDIATION**

#### **14.4.1 Minor Chemical Spills**

A spill kit will be maintained at the site in case a chemical being used at the site (such as sodium hypochlorite, a decontamination chemical) is spilled. The kit will include spill absorbers (spill socks, pads, and pillows), disposable bags, and a 35 gallon container. Approximately 28 gallons of spilled oil, coolants, solvents, or water can be absorbed using the contents of the kit.

#### **14.4.2 Major Chemical Spills**

For spills that cannot be contained and controlled using on-site personnel, equipment, and materials (i.e., while protecting human health and the environment), the Local Emergency Response Coordinator will be contacted. Reporting of spills to state agencies will occur only after discussions with the Parsons ES Project Manager and Huntsville Corps of Engineers.

#### **14.4.3 Chemical Warfare Agents (CWA)**

Should CWA be encountered in sealed containers or ordnance items, TEU will assume responsibility for site activities. Assistance of Parsons ES and/or our subcontractor personnel may be requested by TEU personnel. Assistance will be provided to the maximum extent possible. If questions arise concerning potential exposures to Parsons ES and/or subcontractor personnel, the PHSO will be contacted and questions/concerns will be discussed and resolved on case-by-case basis. Release of CWA into the environment will be reported immediately to USAESCH, and the Parsons ES Project Manager/PHSO.

**SECTION 15**  
**STANDARD OPERATING PROCEDURES, ENGINEERING**  
**CONTROLS, AND SAFE WORK PRACTICES**

**15.1 GENERAL SAFETY**

The following are standard practices for work on Fort McClellan CWM sites.

1. Eating, drinking, chewing tobacco, smoking, and carrying matches or lighters are prohibited in a contaminated or potentially contaminated area or where the possibility of contamination transfer exists.
2. Avoid contact with potentially contaminated substances or materials. Do not walk through puddles, pools, mud, or handle soils without protective gloves, etc. Avoid, whenever possible, kneeling on the ground, leaning or sitting on equipment or the ground. Do not place monitoring equipment on potentially contaminated surfaces (e.g., ground, etc.).
3. Field crewmembers should be alert to all potentially dangerous situations e.g., presence of strong, irritating, unusual, or nauseating odors.
4. Field crewmembers shall be familiar with the physical characteristics of a site during intrusive investigations, including:
  - Wind direction in relation to nearby buildings;
  - Accessibility to associates, equipment, vehicles, communication;
  - Hot zone (areas of known or suspected contamination);
  - Site access; and
  - Nearest water sources.
5. Protective equipment as specified in this SSHP will be used by workers throughout the Fort McClellan project.
6. Use of heavy equipment on-site, e.g., trucks, and bobcats, presents additional hazards for site workers. For example, the vision of a backhoe operator is limited, so all field crewmembers should stay clear when backhoe is operating.
7. Wearing personal protective equipment can result in an impairment of the ability to operate site equipment. All field crewmembers should pay specific attention to decreased performance capabilities resulting from the use of personal protective equipment, such as poor tactile skills when wearing certain types of gloves. Prior knowledge of limitations imposed by the use of such equipment

and clothing will allow the worker to assess the decrease in his or her capability to perform field operations in a safe manner.

8. Wearing of jewelry, such as rings and loose bracelets and necklaces, is prohibited in order to avoid its entanglement in site machinery.
9. Overhead power lines, downed electrical wires, and buried cables pose a danger of shock or electrocution if workers contact or sever them during site operations. The location of these potential hazards should be ascertained before beginning site activities.
10. Buddy system procedures will be enforced during site operations.
11. Site personnel will perform only those tasks that they are qualified to perform.
12. Site visitors are to be escorted by qualified personnel at all times.
13. Running and horseplay are prohibited in all areas of the site.
14. The number of personnel in the exclusion zone (EZ) will be the minimum number necessary to perform work tasks in a safe and efficient manner.

## **15.2 CWM SAFETY**

The following measures will be observed by personnel working at Fort McClellan sites suspected of being contaminated with chemical agent.

1. Clothing will be changed at the beginning and end of each work shift. Personal clothing will be removed and replaced with issued clothing. Clothing issued for work on-site will be coveralls, white T-shirt, underwear, socks and PPE outer garments.
2. A decontamination trailer will be used for showering prior to leaving the site. Showers are mandatory for all personnel crossing the contamination control line during intrusive activities at suspect CWM sites.
3. Issued clothing will be laundered by Parsons ES. Personnel are responsible for laundering their personal clothing.
4. Open sores or wounds will be evaluated by first aid personnel and covered with an impermeable layer/plastic dressing prior to admittance to a suspect CWM site.
5. Areas where CWM is suspected of being present will be clearly identified to all site personnel. Personnel will be reminded of the possible presence of chemical agent during morning safety meetings.
6. Eating, drinking, chewing and smoking will not be permitted in work areas suspected of containing CWM. The SSHO will designate safe locations (separated from the work areas) where these activities will be allowed.
7. Supplies of decontaminating solutions (5.25% chlorine) and emergency flushing devices for personnel decontamination will be made available in work areas where intrusive activities are in progress.

8. Each worker will be examined for signs of chemical agent exposure before leaving the worksite. If signs of possible exposure are detected, the individual will be immediately transported to the Northeast Alabama Regional Medical Facility for further examination.

### 15.3 ORDNANCE SAFETY

Maximum safety in any UXO operation can be achieved through adherence to applicable safety precautions, a preplanned approach and intensive supervision. Only those personnel absolutely necessary to the operation shall be allowed in the exclusion zone during UXO activities (DOD 6055.9-STD). **Only personnel who have graduated from the US Naval EOD school, Indian Head, MD are authorized to handle UXO.** Detection and identification of suspect explosive materials will be accomplished IAW Chapter 13, TM 9-1300-214, "Military Explosives". ETL 385-1-1, Safety Concepts and Basic Considerations for Unexploded Ordnance (UXO) Operations, dated 16 Feb 96, will be used when determining ordnance safety issues. The following precautions must be observed:

1. Precautions must be observed in searching for, probing for, excavating, moving, and handling UXO; ETL 385-1-1, Safety Concepts and Basic Considerations for Unexploded Ordnance (UXO) Operations, dated 16Feb96 will be used when determining ordnance safety issues.
2. UXO which have been exposed to fire and detonation must be considered as extremely hazardous;
3. UXO shall not be destroyed until it has been positively identified. Make every effort to identify the UXO. Carefully examine the item for markings and other identifying features such as shape, size, and external fitting. However, items will not be moved to inspect them. Unknown UXO will be photographed and the photograph will be express-mailed or emailed to USACE for assistance in identification;
4. Outer or undergarments made of wool, silk, or synthetic textiles such as rayon and nylon will not be worn while working on UXO. These materials can generate sufficient static charge to ignite fuels or initiate explosives. Persons coming in contact with a UXO shall ground themselves prior to touching the UXO;
5. The 2-man concept is immediately implemented and notification is made to USACE and TEU when a suspected chemical-filled UXO is encountered. Other site personnel will immediately evacuate upwind and standby to assist TEU, if requested.
6. Plungers, vanes, spindles, levers, setting rings, or other external fittings on UXO will not be depressed, rotated, or turned. Such actions may arm, actuate, or function the UXO;
7. UXO will not be moved or disassembled except in response to a valid requirement;

8. Practice UXO is assumed to contain a live charge until it can be determined otherwise;
9. The fuse condition must be ascertained before any movement of an UXO. If the condition is questionable, consider the fuse armed. The fuse is considered the most hazardous component of UXO, regardless of type or condition;
10. Unauthorized or unnecessary personnel will not be present in the vicinity of UXO. Limit personnel exposure time. Operations shall always be based upon minimum exposure consistent with efficient operations;
11. Avoid inhalation of, and skin contact with smoke, fumes, and vapors associated with any explosives, smoke, or other associated materials;
12. Color-coding of UXO will not be relied upon for identification of contents. Munitions having none, incomplete, or improper color coding may be encountered;
13. The area forward of the nose of a munition should be avoided until it can be determined that the item is not a shape charge type item;
14. Emplaced land mines should be considered armed until proven otherwise. Be alert to deterioration of mines due to being buried;
15. Extra care shall be taken when uncovering a buried UXO, if records search indicated WP munitions were fired or destroyed in the area. A buried WP munition may be damaged and when exposed to air, may start burning and detonate. An ample supply of water and mud shall be immediately available if excavation reveals a WP UXO. Appropriate protective equipment (leather gloves and face shield) and first aid shall also be immediately available. Do not approach a smoking white phosphorus UXO.
16. The method for uncovering buried UXO is to excavate by hand. Hand excavation is the most reliable method for uncovering UXO. Earth moving machinery may be used to excavate for buried UXO, if the UXO is estimated to be deeper than 24 inches. Machines shall not be used to excavate within 12 inches of an UXO, but within 12 inches and, hand excavation shall be used to uncover the UXO; and
17. The site shall be surveyed for electromagnetic radiation (EM) radio frequency (RF) transmitters and appropriate action taken. Safe distances have been established for specific transmitter power and transmitters. In general, all ordnance items, even those normally safe when intact, are hazardous when extensively damaged. The damage may expose components, trailing wires, or breaks in shielding integrity that permit the entrance of EMR (RF) energy into the ordnance.

#### **15.4 GENERAL SANITATION**

Several issues associated with general sanitation shall be addressed during fieldwork at Fort McClellan sites. Section 2 of EM 385-1-1, lists and describes these sanitation issues, to include the following:

**15.4.1 Drinking Water**

Cool potable drinking water will be provided in sanitary, portable containers at all sites. Disposable cups will be provided and used to drink from coolers/containers.

**15.4.2 Toilets**

Two chemical toilets will be provided and located near the Administrative/Decontamination Trailers in the support zone.

**15.4.3. Washing Facilities**

Washing facilities will be provided in the Decontamination Trailer used at this site during intrusive investigations. Personnel will ensure that handwashing is performed prior to eating or drinking. On-site personnel will change and use lockers provided in the Decon trailer for storing their personal clothing while working on-site.

## **SECTION 16 LOGS, REPORTING, AND RECORD KEEPING**

### **16.1 LOGBOOK**

16.1.1 The SSHO will keep a log of the following aspects related to safety at the site:

- Training (kickoff, tailgate, and other),
- Issues or Problems Encountered,
- Accidents,
- Emergencies, and
- Monitoring data.

16.1.2 Records showing that all Parsons ES and subcontractors' personnel have read and understood this SSHP will be kept at the site. Records showing that these personnel are being monitored by a physician according to the requirements of this SSHP will be kept in the Parsons ES Atlanta Office.

### **16.2 WEEKLY REPORTS**

The SSHO will prepare a report each week which is forwarded to the USAESCH Safety Specialist and to the Parsons ES PHSO. This report will describe and summarize the following for the week completed:

- Activities performed and personnel on-site;
- Level of PPE used for activities;
- Air monitoring results for chemical agents and industrial chemicals;
- Training provided (to include topics and number attending);
- Incidents involving safety or health concerns or questions;
- On-site visitors;
- Problems needing resolution; and
- Activities planned for next week.

### **16.3 RECORD KEEPING**

The SSHO will establish and maintain a filing system on-site for Health and Safety records, reports, and information concerning individual training, medical surveillance, etc. Sections in this filing system will include:

- Personnel Records -- Certificates for required training (e.g., HAZWOPER, EOD, First aid, etc.); medical examination summary letters or certifications; signed SSHP acceptance forms; monitoring results; etc.
- Air Monitoring Records -- Calibrations; equipment maintenance; monitoring results; etc.
- Training -- Sign-in sheets for on-site training with topics and dates;
- Visitor Logs -- Sign-in sheets for site visitors;
- Inspection Reports -- Reports of daily inspections by SSHO and others (e.g., site safety officer) concerning health and safety issues. Copies of reports of periodic inspections by PHSO, QC Officer, USAESCH Safety Specialist, and others;
- Accident Prevention -- Copies of all hazard analyses performed on new tasks or activities. Copies of any accident/incident reports and follow-up reports. Other pertinent correspondence;
- PPE -- Records of periodic inspection, testing and maintenance performed on PPE; and
- Weekly Reports -- Copies of weekly reports forwarded to USAESCH and Parsons ES PHSO.