

Final

**Site-Specific Work Plan
3X Scrap Removal**

**Training Area T-38
Former Technical Escort Reaction Area, Parcel 186(6)
Training Area T-24A
Former Chemical Munitions Disposal Area, Parcel 187(7)**

Fort McClellan, Calhoun County, Alabama

Prepared for:

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**Contract No. DACA21-96-D-0018
Task Order No. CK10
Shaw Project No. 796887**

October 2003

Revision 0

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1.0 Introduction

In accordance with Contract Number DACA21-96-D-0018, Task Order CK10, Shaw Environmental, Inc. (Shaw) will conduct 3X scrap removal at Training Areas T-38 and T-24A at Fort McClellan (FTMC), Alabama. Shaw will perform this work under the direction of the U.S. Army Corps of Engineers (USACE), Mobile District.

1.1 Project Description

The U.S. Army has determined that 3X scrap material consists of chemical warfare materiel (CWM) scrap and ordnance and explosives (OE) scrap, and exists within two subsurface geophysical anomalies at T-38, and within six subsurface geophysical anomalies at T-24A. These two locations are identified on Figure 1-1. For purposes of this work assignment, the Army has also determined that 3X scrap does not include scrap metal or vehicle parts. To accomplish this task order, Shaw and their subcontractors will perform:

- Unexploded ordnance (UXO) construction support
- Chemical agent air monitoring support
- Excavation and backfill activities
- Sorting, packaging, transportation of 3X scrap
- Thermal treatment of 3X scrap to 5X and subsequent disposal of 5X scrap
- Collection and analysis of investigation-derived waste (IDW) samples
- Disposal of IDW
- Closure report preparation.

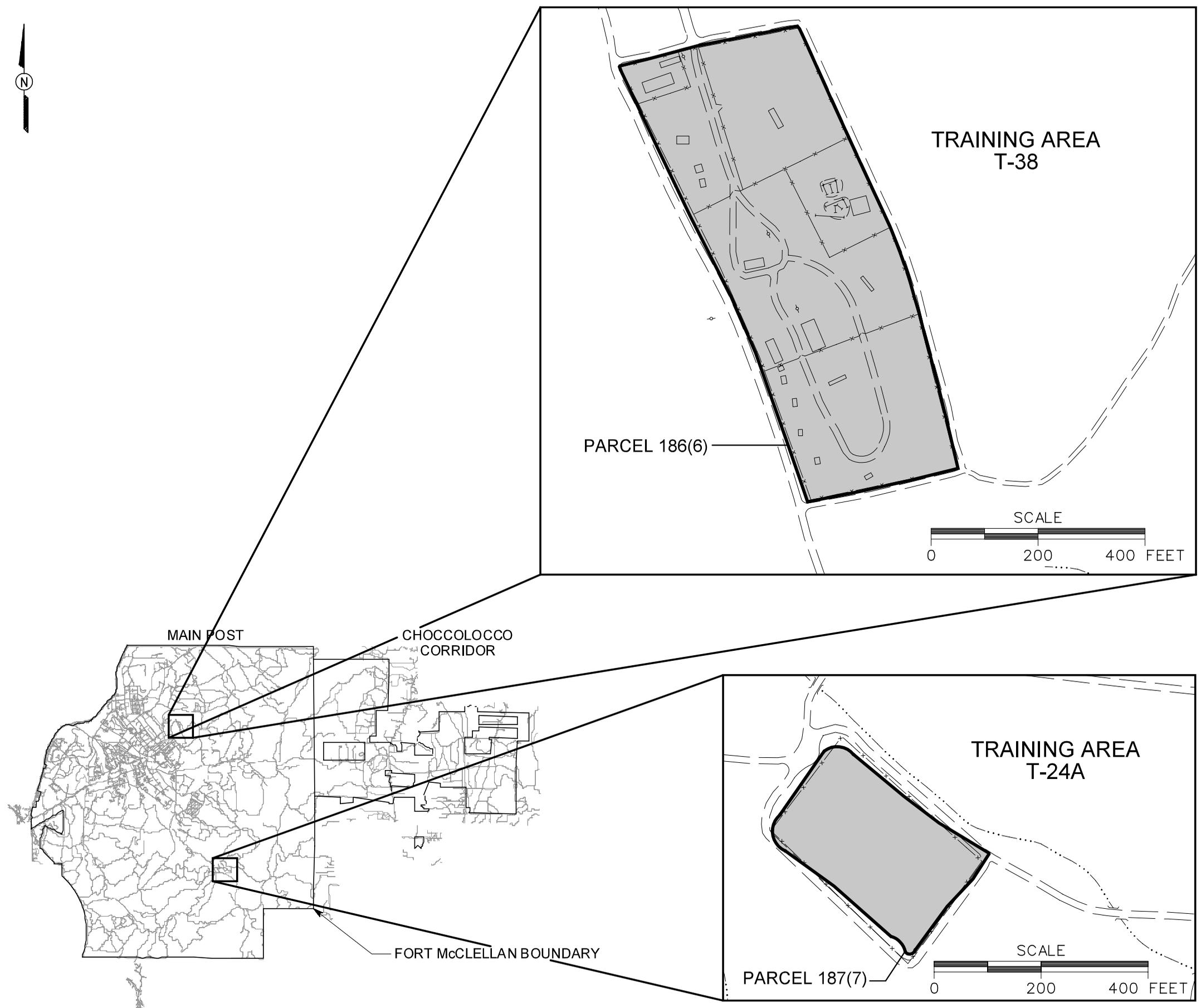
Decontamination Levels. An agent symbol with a single “X” indicates the item has been partially decontaminated of the indicated agent; further decontamination is required before the item is moved. An agent with three Xs (“XXX”) indicates that the item has been surface decontaminated by locally approved procedures, bagged or contained in an agent-tight barrier, of sufficient volume to permit sample air to be withdrawn without being diluted with incoming air, and/or that monitoring has verified that concentrations are at an acceptable level.

An agent with five Xs (“XXXXX”) indicates an item has been decontaminated completely of the indicated agent and may be released for general use or sold to the general public (US Army, PAM 385-61).

1.2 Site Descriptions and Previous Investigations

Training Area T-38 and T-24A were previously investigated for CWM and CWM breakdown products. The investigations did not reveal the presence of CWM or CWM breakdown products in environmental media located at either site. The investigations are summarized below.

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LEGEND

-  UNIMPROVED ROADS AND PARKING
-  BUILDING
-  PARCEL BOUNDARY
-  SURFACE DRAINAGE / CREEK
-  FENCE
-  UTILITY POLE

FIGURE 1-1
 AREA MAP
 TRAINING AREA T-38
 FORMER TECHNICAL ESCORT
 REACTION AREA, PARCEL 186(6)
 AND TRAINING AREA T-24A
 FORMER CHEMICAL MUNITIONS
 DISPOSAL AREA, PARCEL 187(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



1.2.1 Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6)

Training Area T-38 was the Former Technical Escort Reaction Area, also known as the Toxic Gas Yard. Approximately 6 acres in size, the site is located along a topographic ridge, Reservoir Ridge, east of Ruskin Avenue and the cantonment area on the Main Post. The fenced area in the northeastern portion of the parcel was referred to as the Toxic Agent (or Gas) Yard. The training area was reportedly used from 1961 to 1972 for training Technical Escort Unit (TEU) personnel in techniques of eliminating toxic hazards caused by mishaps to chemical munitions during transport.

The area also was used for storage of toxic agents and munitions. The storage facilities included four 1-ton containers of distilled mustard (HD). In addition, decontaminants were reportedly stored in at least two locations and were used for demonstration purposes. Extensive decontamination was reportedly conducted at the site for spills and for decontaminating training aids. The types of decontaminants used, quantities, and frequency of use are unknown but are assumed to include decontamination agent non-corrosive (DANC), supertropical bleach (STB) and decontamination solution number 2 (DS2) (Environmental Science and Engineering, Inc. [ESE], 1998). From the early 1980s Training Area T-38 was used as a chemical agent identification area.

Training Area T-38 is fenced, with an entrance gate in the northern section. Reportedly, a former disposal pit area approximately 10 by 20 by 10 feet (ft) used for disposal of decontaminants and other hazardous wastes and a burial site for the drum of HD are located in the central-eastern and southern portions of the site, respectively.

Site elevation ranges from approximately 1,030 feet near the southwest part of the site to approximately 975 feet on the northeastern corner of the site, sloping radially to the north, northeast, and east. Cave Creek is located approximately 1,000 feet to the north of T-38 and flows to the west. The soil type at Training Area T-38 is classified as Anniston gravelly clay loam 10 to 15 percent slope, severely eroded (AbD3). The soil type is characterized by strongly acid, deep, well-drained soils that have developed in old local alluvium. The surface horizon is mainly very dark brown loam, and the subsoil is mainly dark red sandy clay loam. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil. These soils occur on uplands and foot slopes. Permeability is moderate, infiltration is moderately low, runoff is medium and rapid and the capacity for supplying available moisture is low. Natural fertility is low to moderate, and organic matter is low.

The depth to groundwater at the site is approximately 55 to 129 feet below land surface (bls) (Science Applications International Corporation [SAIC], 2000). Typically, depth to bedrock is approximately 10 feet or greater (U.S. Department of Agriculture, 1961).

Site Investigation, SAIC, 1993. The site investigation included limited geophysical surveys and soil samples collected from four locations suspected to be areas of prior site activity. The soil samples collected were screened for HD, nerve agent (VX), and sarin (GB) using a miniature continuous air monitoring system (MINICAMS). Chemical agents were not detected in the screening samples. In addition, chemical agent degradation products were not detected in the laboratory (SAIC, 1993).

Remedial Investigation, SAIC, 1995. The remedial investigation conducted included additional geophysical surveys, soil sampling, and the installation of monitoring wells and one soil boring into the disposal pit. Also, numerous shallow soil samples were screened using MINICAMS. Chemical agent was not detected in the soil samples collected. Volatile organic compound (VOC) contamination was discovered in the groundwater, however (SAIC, 2000).

Engineering Evaluation/Cost Analysis, Parsons Engineering Science, Inc. [Parsons], 2002. Investigations conducted at T-38 to address the presence or absence of CWM or other subsurface disposal included geophysical surveys, excavation of suspect anomalies, continuous air monitoring using MINICAMS, trenching, additional soil sampling, and laboratory analysis of the soils for GB, HD, and breakdown products (Parsons, 2002). Several geophysical grids were located in the suspected Toxic Gas Yard fenced area and the area of the reported disposal dump. A total of 25 anomalies were identified. Two large anomalies associated with the disposal sump (T38-12 and T38-13) (Figure 1-2) are the subject of this 3X scrap removal effort (Table 1-1). Eleven soil samples were collected from the two excavation pits. Chemical agents were not detected during air monitoring, headspace screening, or laboratory analysis of the samples (Parsons, 2002).

1.2.2 Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7)

The Former Chemical Munitions Disposal Area, Parcel 187(7), occupies approximately 1.5 acres on the Main Post south of Holloway Hill near the center of several overlapping ranges. The parcel is fenced and posted. This former chemical munitions disposal area was used from an unknown date until 1973. Area T-24A is located within Range 24A. This area was previously used as a rifle range and machine gun range and contained an explosive ordnance disposal (EOD) site. Training sites within the parcel included two square burning pits, each measuring

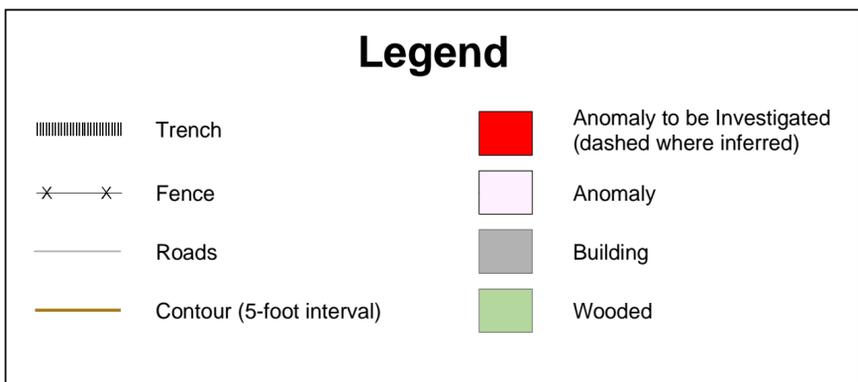
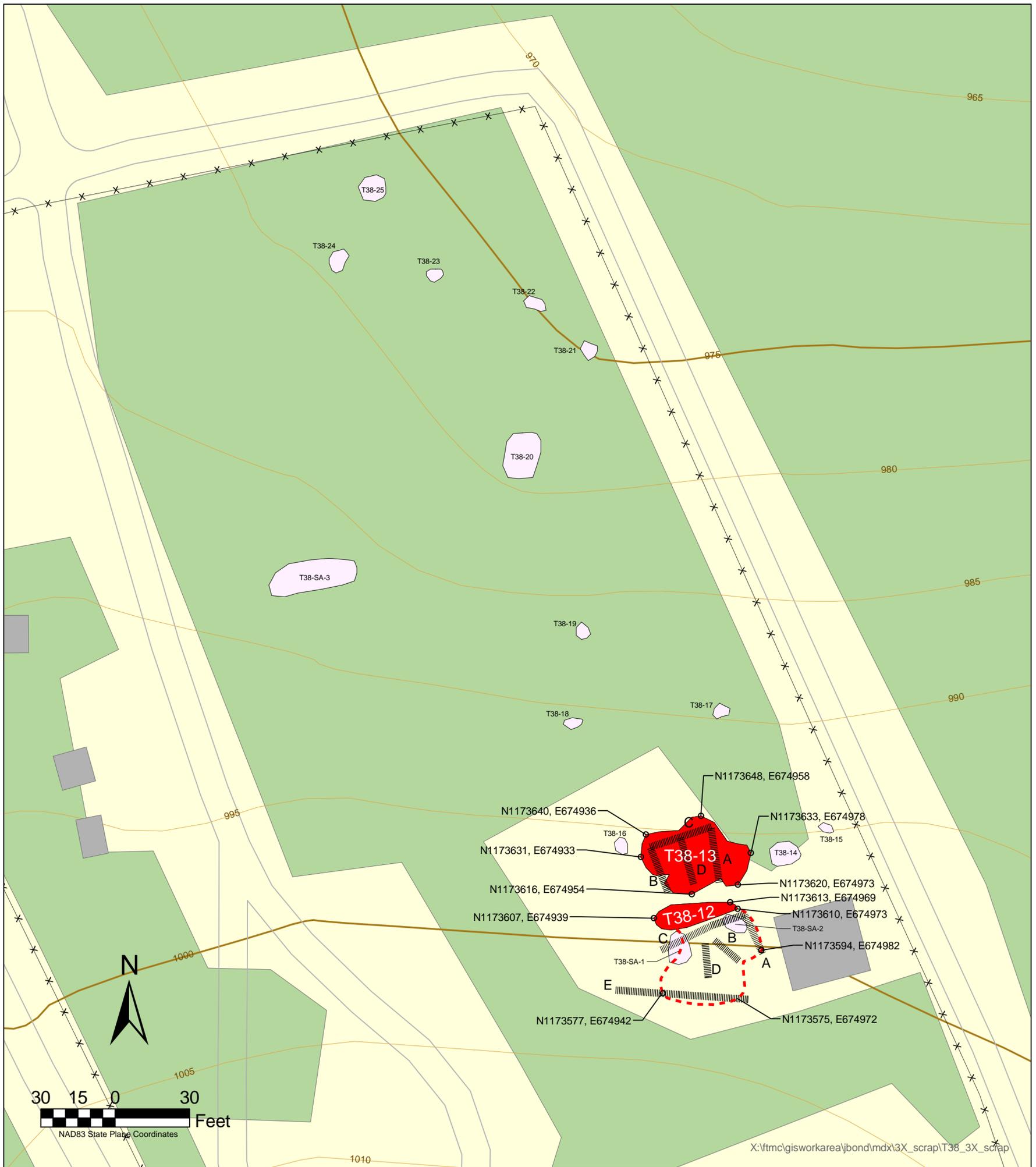


Figure 1-2
T-38 Anomalies
 Training Area T-38:
 Former Technical Escort
 Reaction Area, Parcel 186(6)

Table 1-1

**3X Scrap Removal Anomalies at T-38
Training Area T-38: Former Technical Escort Reaction Area, Parcel 186(6)
Fort McClellan, Calhoun County, Alabama**

Anomaly Location	Anomaly Type	Trench Dimensions Length (ft) x Width (ft) x Depth (ft)	Trench Contents (Removed, except as noted)
T38-12	CS	Trench A: 20 x 3 x 6	55-gal CWM drum, partial
	O	Trench C	White residue, burlap (left in place)
	S	Trench D	STB drums (left in place)
	n/a	Trench E	none
T38-13	S, CS	Trench A: 21 x 3 x 4	8-gal (50 LB) STB drum, 55-gal CWM drum, 4.2-in mortar
	S, OS	Trench B: 23 x 3 x 3.5	Metal lid (left in place), crushed DS2 container (left in place), rusted STB drums (left in place), aluminum FS smoke balls
	S, OS, CS	Trench C: 31 x 3 x 6	Glass vial, aluminum spheres, FS smoke, 55-gal CWM drum, rusted STB drums (left in place), 4.2-in mortar
	CS, S	Trench D: 16 x 3 x 9.5	4.2-in mortar, glass vial, brown bottle, 55-gal CWM drum, rusted STB drums (left in place)

Notes:

- CS - Chemical warfare materiel scrap.
- CWM - Chemical warfare materiel.
- DS2 - Decontamination solution number 2.
- FS - Fuming sulfuric acid.
- n/a - Not applicable.
- O - Other.
- OS - Ordnance scrap.
- S - Other metallic scrap.
- STB - Supertropical bleach.

approximately 16 by 16 feet. Training activities conducted at this site reportedly included disposal of chemical warfare munitions filled with phosgene (carbonyl chloride or “CG”), 3-quinuclidinyl benzilate (BZ), GB, and HD. The decontaminants reportedly used at this site were STB and DS2.

The two square burning pits were used in chemical munitions disposal training. Each pit’s depth has been assumed to be 6 ft, based on standard operating procedures. Personnel interviewed during the environmental baseline survey site visit recall the pits measuring approximately 12 ft across and 4 ft deep. This area may have experienced a large HD spill, according to Weston (Weston, 1990). After each training exercise, the area was sprayed with STB (ESE, 1998). Each pit was reportedly filled with soil at closure in 1973. During the 1973 closure, soil samples were collected from 1 to 4 inches in depth and analyzed for CWM. HD, CG, BZ, and GB were not detected in the surface samples collected by the Army in 1973 (SAIC, 1993).

The soils at the ranges near Training Area T-24A are composed of the Anniston and Allen Series soils. The Anniston and Allen Series of soils consist of strongly acid, deep, well-drained soils that have developed in old local alluvium. The parent material washed from adjacent, higher-lying Linker, Muskingum, Enders, and Montevallo soils, which developed from weathered sandstone, shale, and quartzite. These sites contain sandstone and quartzite gravel and cobbles, which measure as much as 8 inches in diameter, on the surface and throughout the soil. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high. Organic matter is moderately low (U.S. Department of Agriculture, 1961).

The elevation at Parcel 187(7) ranges from approximately 1,000 feet to 1,025 feet, with the ground surface sloping from the southeast to the northwest across the site. A small creek flows north along a small valley to the South Branch Cane Creek.

Site Investigation, SAIC, 1993. Four subsurface soil samples were collected in 1993; field screening and laboratory analysis did not detect GB, HD, or their breakdown products (SAIC, 1993).

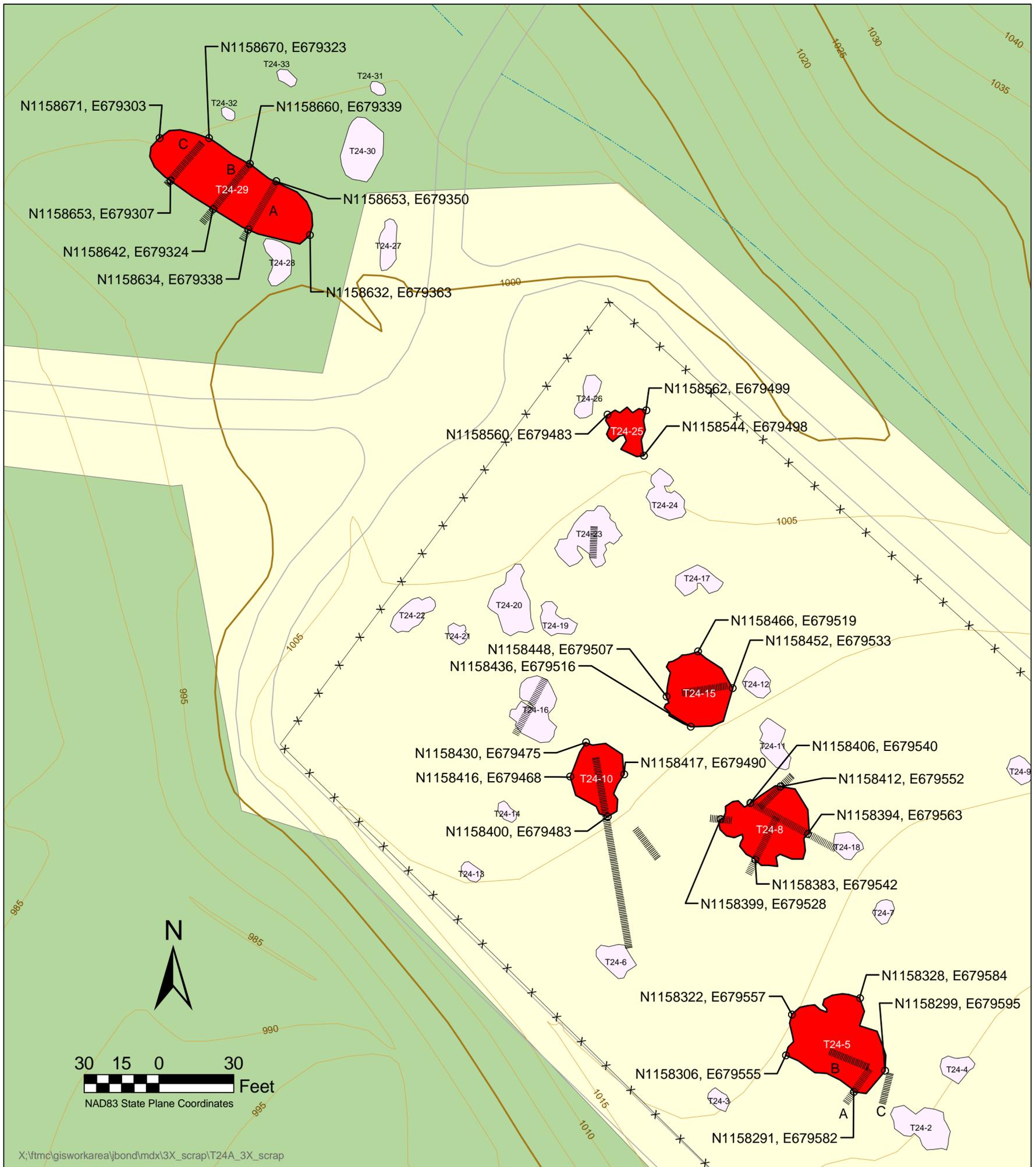
Remedial Investigation, SAIC, 1995. The remedial investigation conducted in 1995 included magnetometer, screening of surface soils using MINICAMS, test pits, well installation, and soil, surface water and sediment sampling. Test trenches were excavated by TEU in one of the burn pits. Materials encountered in the pit included charred wood, nails, and gas can handles. Moderately weathered bedrock was encountered at depths of 4 to 6 ft BLS. Excavation was discontinued after ordnance was encountered. Three soil samples were collected from the pit.

Field screening of soils for CWM and laboratory analysis for CWM breakdown products did not indicate the presence of CWM in soils. Metals, VOCs, semivolatile organic compounds (SVOCs), and possibly explosives were detected in these soil samples. Occurrence of these compounds is consistent with former use as an EOD site. Field screening and laboratory analyses of surface water samples did not detect CWM compounds (HD and GB) or their breakdown products. The surface water samples contained metals. Groundwater samples contained benzene, phenol, pentachlorophenol, and trace metals (SAIC, 2000).

Engineering Evaluation/Cost Analysis, Parsons, 2002. Investigations conducted at T-24A to address the presence or absence of CWM or other subsurface disposal included geophysical surveys, excavation of suspect anomalies, continuous air monitoring using MINICAMS, trenching, additional soil sampling, and laboratory analysis of the soils for GB, HD, and breakdown products (Parsons, 2002). The geophysical surveys occurred in two separate areas: a 100-by-100-ft grid located over the possible burial pit northwest of the fenced area and a 220-by-340-ft grid located inside the fenced area. Of the 36 anomalies identified, six were selected (Figure 1-3) for removal under the 3x scrap removal plan (Table 1-2). These anomalies are estimated to contain approximately 1,474 cubic yards of material. The Parsons excavation included eight soil samples. Edgewood Chemical and Biological Center (ECBC) screened the samples for CG, GB, and HD prior to shipment to the ECBC analytical laboratory. The samples were analyzed for GB, HD, 1,4-thioxane, and 1,4-dithiane. The analytical results did not indicate any residual agents or degradation products (Parsons, 2002).

1.3 Other Investigations

Shaw has completed an SI and two phases of an RI to further define the extent of VOCs in groundwater at the Ranges Near Training Area T-24 Alpha [Parcels 88(7), 108(7), 112Q, 113Q-X, 123Q, 187(7), 213Q, and 214Q]. To date, 58 monitoring wells have been installed and 116 groundwater samples have been collected. VOCs (including benzene, carbon tetrachloride, and chloroform) were detected in groundwater at concentrations exceeding human health risk screening levels. Presently, Shaw is defining the horizontal and vertical extent of groundwater contamination.



Legend

- | | |
|--|--|
|  Trench |  Anomaly (to be investigated) |
|  Fence |  Anomaly |
|  Roads |  Wooded |
|  Contour (5-foot interval) | |
|  Surface Drainage Feature (dashed where intermittent) | |

Figure 1-3
T-24A Anomalies
 Training Area T-24A:
 Former Chemical Munitions
 Disposal Area, Parcel 187(7)

Table 1-2

**3X Scrap Removal Anomalies at T-24A
Training Area T-24A: Former Chemical Munitions Disposal Area, Parcel 187(7)
Fort McClellan, Calhoun County, Alabama**

Anomaly Location	Anomaly Type	Trench Dimensions Length (ft) x Width (ft) x Depth (ft)	Trench Contents (Removed, except as noted)
T24-5	CS	10 x 3 x 4	Empty 155mm projectile with shipping plug, banding, charred wood
T24-8		Investigated by TEU in 1993.	
T24-10		Investigated by TEU in 1993.	
T24-15	CS	20 x 3 x 6.5	Five 155mm and five 105mm projectiles, one 4.2-in. mortar, one 5-in. rocket with head, five 115mm rocket motors, concrete practice bombs
T24-25	CS		CWM drum, partial (left in place)
T24-29	CS	Trench A: 20 x 3 x 3	One 105mm projectile, car parts, scrap, trash, charred wood
		Trench B: 20 x 3 x 6	
		Trench C: 20 x 3 x 3	

Notes:

CS - Chemical warfare materiel scrap.

CWM - Chemical warfare materiel.

TEU - Technical Escort Unit.

2.0 Field Activities

2.1 Mobilization

To support the 3X scrap removal field activities at Training Areas T-38 and T-24A (the project site), Shaw will mobilize a site manager, superintendent, equipment operator, four construction technicians, UXO supervisor, three UXO technicians, UXO quality control specialist, transportation and disposal coordinator, and health and safety officer. Prior to mobilization, the names of all UXO personnel, their qualifications, and their UXO database numbers will be provided to the USACE OE Safety Specialist for all UXO personnel. Mobilization activities will occur from the Shaw-Knoxville and Shaw-Atlanta offices. Knoxville and Atlanta activities will include procurement, assembly, and shipping necessary supplies to FTMC.

Equipment to be mobilized includes a flat deck power screen, one trackhoe (Cat 320 or equivalent), one rubber tire loader, one skid steer Bobcat, four-wheel drive pickup trucks, and site monitoring instrumentation. Additional supplies will be procured from the Shaw-FTMC office from pre-approved vendors and shipped directly to the site. These supplies include but are not limited to: several 1-cubic yard fiber boxes (called “hot box”), sampling equipment, and personal protective equipment (PPE).

After field mobilization, Shaw personnel will attend a preconstruction meeting and safety orientation to review the proposed approach and the sequencing of work and to ensure that clear lines of communication are established. All necessary medical monitoring/analysis and site-specific safety training will be conducted at this time.

Initial mobilization activities will include establishing work zones and delineating control areas for support zones. In addition Shaw will set up perimeter boundaries for excavation, establish exclusion areas, set up the screening plant, and clear and grub the site for access and maneuverability. Further decontamination procedures, task hazard analysis, PPE requirements, emergency response contingency plan, training requirements and a medical surveillance program are included in the site-specific safety and health plan.

Existing roads will be upgraded as necessary to provide access to the work areas, and road maintenance will continue as necessary throughout the project. Erosion and sedimentation controls will not be required for the project. Site conditions will dictate placement or realignment of identified equipment. Site layout plans have been included as Figures 2-1 and 2-2.

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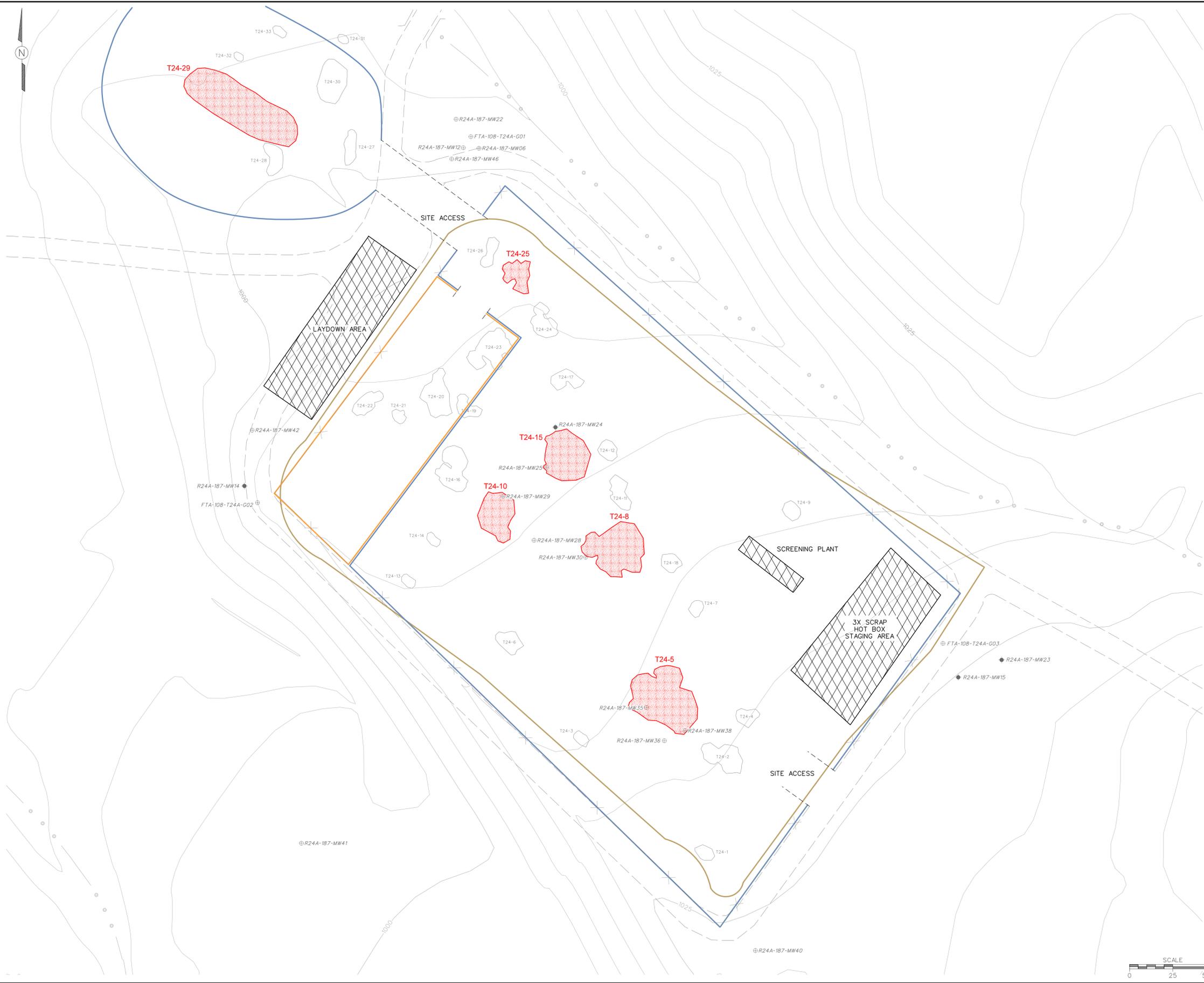
- LEGEND:**
- UNIMPROVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
 - TREES / TREELINE
 - PARCEL BOUNDARY
 - EXCLUSION ZONE
 - CONTAMINATION REDUCTION ZONE
 - FENCE
 - UTILITY POLE
 - EXPLORATORY TRENCH (PARSONS ENGINEERING SCIENCE, INC., 2002, FINAL EE/CA)
 - GEOPHYSICAL ANOMALIES
 - EXISTING BEDROCK MONITORING WELL LOCATION
 - EXISTING RESIDUUM MONITORING WELL LOCATION

FIGURE 2-1
 T-38 SITE LAYOUT MAP
 TRAINING AREA T-38: FORMER
 TECHNICAL ESCORT REACTION AREA
 PARCEL 186(6)
 U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT MCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018

Shaw Environmental, Inc.

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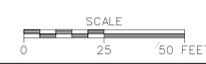
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- LEGEND:**
- UNIMPROVED ROADS AND PARKING
 - TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL = 5 FEET)
 - PARCEL BOUNDARY
 - EXCLUSION ZONE
 - CONTAMINATION REDUCTION ZONE
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - GEOPHYSICAL ANOMALIES
 - EXISTING BEDROCK MONITORING WELL LOCATION
 - EXISTING RESIDUUM MONITORING WELL LOCATION

FIGURE 2-2
 T-24A SITE LAYOUT MAP
 TRAINING AREA T-24A: FORMER
 CHEMICAL MUNITIONS DISPOSAL AREA
 PARCEL 187(7)

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



2.2 Site Monitoring

During initial baseline, excavation, scrap sorting and screening activities, and site closeout, continuous near real-time monitors will be used to monitor the ambient air of the project site for chemical agents, volatile organics, and explosion levels. MINICAMS will be setup near the excavation and will monitor for chemical agents during removal activities. In addition, the health and safety officer will periodically monitor the excavation with a photoionization detector and lower explosion level/oxygen meter per Shaw health and safety standard HS 307.

Air monitoring support will be provided by QuickSilver Analytics, Inc. (QuickSilver) of Maryland. Chemical agents to be monitored are HD and lewisite (L) and GB and VX. In addition, Category 2 compounds will be monitored: cyanogen chloride (CK) and CG. One near-real-time (NRT) agent air monitor (e.g., MINICAMS) will be required for GB and VX and a second NRT agent monitor will be used for HD and L. For the Category 2 compounds, Dräger® tubes will be used. The NRT agent monitors are to be used at the excavation site to monitor the air in the workspace of the workers. QuickSilver will provide backup air monitoring equipment capable of monitoring HD/L and GB/VX.

At least three Depot Area Agent Monitoring Stations (DAAMS) will be deployed at the perimeter of the work site to determine if any of the monitored compounds have left the site (perimeter monitoring). These samples will be routinely collected but analyzed only if the NRT monitors alarm.

Air monitoring surveys will occur prior to excavation (baseline), during excavation, and 3X clearing of waste in the hot boxes. This includes daily instrument performance checks and calibration as necessary. The *Chemical Agent Monitoring Plan* is included in the site-specific safety and health (SSHP) as Attachment 5.

If the presence of chemical agent is indicated during site monitoring, excavation, or 3X clearing of hot boxes, the reporting procedures established in “*Transition Force Standard Operating Procedures for Responding to Suspected CWM*” (Fort McClellan, Alabama, DAIM-BO-H-MC, Memorandum, dated 26 September 2003) will be followed. This SOP is included as Attachment 6 of the SSHP.

2.3 Excavation of 3X Material

After the anomalies have been surveyed and staked, excavation of the soil and 3X material will begin with a track excavator (Cat 320 or equivalent). The excavation and material handling will

be performed in accordance with the approved UXO construction support plan and the (SSHP) plan. The anomalies to be excavated are displayed on Figures 2-1 and 2-2 and described in Tables 1-1 and 1-2.

Excavation will begin at the edge of the anomaly farthest from the screening plant and will progress vertically and horizontally toward the plant. Excavation will cease once the anomaly boundaries have been reached or no further evidence of OE scrap is evident within the surveyed anomaly boundaries. If material is still present once excavation boundaries have been reached, Shaw will not continue excavation without explicit authority from USACE representatives. Entry into the excavation is not anticipated; however, because of the potential for UXO, close inspection of material in the excavation walls or floor may be required. Shaw will follow health and safety procedures HS300 and HS307 to ensure the safe entry of personnel into the excavation. The excavations will be either sloped or tiered depending upon the depth of the excavation, soil matrix, and/or surrounding conditions.

As the soil and 3X material are excavated, it will be placed to the side of the excavation and spread in an elongated stockpile to provide easy and quick inspection by UXO personnel. After sufficient quantities have been stockpiled and inspected, the excavated material will be transported to a flat deck screen for segregation of soil and 3X debris. The material will be loaded onto the screen with a rubber tire loader and will first pass over a 5-inch grizzly before entering the hopper. The grizzly will keep any objects greater than 5 inches (debris, rocks, etc.) from entering the screening devices. On occasion, the rejected material pile (objects greater than 5 inches) may be reloaded over the grizzly to ensure material separation during the screening process. The screened material will then travel across two 10-foot vibrating beds. The first bed will remove objects between 3 to 5 inches and discard them by a conveyor belt to one side of the screening unit. The second bed will remove objects between 1½ to 3 inches and discard them by a separate conveyor belt to the other side of the screen. The final material discharged through the screen will be less than 1 ½ inches in size. This process will generate four piles to be screened by UXO technicians. Material from the piles will be sorted into the following categories: soil, 3X scrap, and non-3X scrap. Car parts and other miscellaneous steel (non-OE) are non-3X scrap and will be placed in a bin to be sold as scrap steel. The 3X scrap will be monitored as described in Section 2.4 and packaged as identified in Section 2.6. Because soils segregated from the screening operation are non-3X material, they will be transported by the rubber tire loader and placed back into the excavation.

2.4 Monitoring and Identification of 3X Material

Excavated 3X material will be placed in special 1-cubic-yard fiber boxes for monitoring. The boxes will remain at the project site in direct sunlight to assist in the creation of headspace gases. After the boxes have achieved and maintained a minimum temperature of 70 degrees Fahrenheit for a minimum of 4 hours, the vapors inside the headspace in the box will be monitored for indications of chemical agent using the MINICAMS. For nonpermeable materials, shorter equilibrium times may be allowed. Each box will be used as a “hot box” and will be tested for chemical agent prior to offsite transportation (USACE, 2002).

2.5 Certification and Verification of 3X and OE Scrap

The senior UXO supervisor will certify that all items are free of dangerous or hazardous materials. An inventory will be produced for each fiber box of OE-related scrap utilizing the DD Form 1348-1A as required by DOD 4160.21-M-1, Chapter 4. The UXO quality control specialist will perform audits that monitor the collection of all scrap certification. The SUXOS will certify, and the USACE’s OE Safety Specialist will verify, that the scrap metal is free of explosive hazards.

Once inspected, certified, verified, and demilitarized as required, OE scrap will be placed in the fiber-boxes for shipping and banded. Each box will have a detailed inventory of the 3X scrap and an inert certification for each item. Non-OE scrap will be collected and disposed with other nonhazardous wastes generated by Shaw at FTMC.

2.6 Packaging of 3X Material

As the 3X scrap is removed from each of the four discharge locations of the screening plant it will be cleaned when determined by the Technicians or QA/QC Officer to minimize the weight, prior to packaging in the Department of Transportation (DOT)-approved plastic-lined 1-cubic-yard fiber boxes. After the soils and debris have been screened for chemical agent contaminated media (CACM), the 3X scrap will be placed into the boxes. Once the box has reached maximum capacity (by either weight or volume), the plastic liner will be sealed and the box closed and banded shut. All hot boxes will be closed and banded at the end of each workday to ensure security. These boxes will be attached to a pallet for maneuverability and to support load-bearing strength of up to 2,000 pounds. Each box will have a detailed inventory of the 3X scrap inside and a certification (as referenced in Section 2.5). In the event items are encountered that remain structurally sound, they will be packaged and sampled as described above. After screening for CACM the items will be removed from the fiber box and “deformed” and repackaged before transportation off site.

2.7 Transportation and Disposal of 3X Scrap

Transportation. Transportation of the 3X scrap material will be provided by Tri-State Motor Transit Co. (Tri-State) of Joplin, Missouri. Tri-State is a qualified and licensed DOT hazardous waste material hauler. They will ship the 1-cubic-yard fiber boxes to an approved incinerator for final disposal of the 3X scrap. After each of the boxes has been tested and confirmed agent-free (through head-space analysis), it will be loaded via forklift into a standard enclosed trailer with an over-the-road capacity of 80,000 pounds. The proper shipping papers will accompany each load, including a non-hazardous manifest, an inventory of contents for each box, and a certification of OE scrap for each box. The boxes will be shipped directly from FTMC to the disposal facility signature-secure. Each shipping container will be labeled "CONTAINS XXX MATERIAL, TO BE OPENED BY AUTHORIZED PERSONNEL ONLY." Placards placed on the boxes and the truck will indicate nonregulated waste.

Disposal. The 3X scrap will be subjected to thermal treatment at a thermal treatment facility (EBV Explosives Environmental Co. of Joplin, Missouri). Incineration will be accomplished using U.S. Environmental Protection Agency- and state-approved permitted emissions incinerator, appropriate engineering controls, and continuous monitoring to assure emissions are within source emission limits (allowable stack concentrations) per Army standards in *Toxic Chemical Agent Safety Standards*, Pamphlet 385-61, March 2002. The thermal treatment will consist of a minimum 1,000-degree Fahrenheit treatment sustained for a minimum of 15 minutes.

After completion of thermal treatment, the disposal facility will provide a certification that the 3X scrap is reclassified as 5X scrap. The 5X material will either be disposed at a Subtitle D landfill or circulated into the metal scrap market.

In the event that items are unearthed and remain structurally sound, Shaw will, after consulting with the SUXOS, either "deform" the item on site or negotiate with the facility to provide this service. At the facility, this activity would occur after completion of the thermal treatment. In either instance, the item would be demilitarized per military specifications.

Shaw will initiate the approval process by providing a 3X profile package as required by the disposal facility for USACE review.

2.8 Surveying

The sidewalls of the anomalies to be excavated will be located in the field using global positioning system (GPS) or conventional civil survey techniques. Figures 1-2 and 1-3 portray horizontal survey coordinates to assist in identifying the anomaly boundaries. At the conclusion of field activities, the boundaries of the actual 3X scrap removal excavations will be surveyed to identify their locations.

Horizontal coordinates will be recorded using a GPS to an accuracy within 1 meter. Horizontal coordinates will be referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum (NAD83), 1983. Elevations will be referenced to the North American Vertical Datum of 1988. Procedures to be used for GPS surveying are described in Section 4.4.1.1 of the installation-wide sampling and analysis plan (SAP) (IT Corporation, 2002). Conventional land survey requirements are presented in Section 4.4.1.2 of the SAP.

2.9 Investigation-Derived Waste

Solid IDW will consist of PPE. The PPE will be collected and placed in a roll-off box at the Shaw FTMC office. Once the roll-off has reached capacity, a sample of the material will be collected and submitted for analysis to determine waste stream characterization. It is anticipated that the PPE will be disposed of as a regulated nonhazardous waste and placed in a subtitle D landfill for final disposition.

3.0 Closure Report

At the conclusion of field activities, a closure report will be submitted. The report will summarize anomaly excavation, excavation contents and 3X scrap discoveries, results of ambient air monitoring and hot box sampling, packaging and transporting of 3X scrap materials, thermal treatment of the 3X scrap and certification to 5X scrap, and the final disposition of the certified 5X scrap. The closure report will include figures for T-38 and T-24A identifying the horizontal extent of all excavations and photograph documentation from beginning of excavation to final disposition, including incineration.

4.0 References

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ATTACHMENT 1
LIST OF ABBREVIATIONS AND ACRONYMS

List of Abbreviations and Acronyms

2,4-D	2,4-dichlorophenoxyacetic acid	AUF	area use factor	CESAS	Corps of Engineers South Atlantic Savannah
2,4,5-T	2,4,5-trichlorophenoxyacetic acid	AWARE	Associated Water and Air Resources Engineers, Inc.	CF	conversion factor
2,4,5-TP	2,4,5-trichlorophenoxypropionic acid	AWQC	ambient water quality criteria	CFC	chlorofluorocarbon
3D	3D International Environmental Group	AWWSB	Anniston Water Works and Sewer Board	CFDP	Center for Domestic Preparedness
AB	ambient blank	'B'	Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero)	CFR	Code of Federal Regulations
AbB3	Anniston gravelly clay loam, 2 to 6 percent slopes, severely eroded	BCF	blank correction factor; bioconcentration factor	CG	phosgene (carbonyl chloride)
AbC3	Anniston gravelly clay loam, 6 to 10 percent slopes, severely eroded	BCT	BRAC Cleanup Team	CGI	combustible gas indicator
AbD3	Anniston and Allen gravelly clay loams, 10 to 15 percent slopes, eroded	BERA	baseline ecological risk assessment	ch	inorganic clays of high plasticity
Abs	skin absorption	BEHP	bis(2-ethylhexyl)phthalate	CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
ABS	dermal absorption factor	BFB	bromofluorobenzene	CIH	Certified Industrial Hygienist
AC	hydrogen cyanide	BFE	base flood elevation	CK	cyanogen chloride
ACAD	AutoCadd	BG	Bacillus globigii	cl	inorganic clays of low to medium plasticity
AcB2	Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded	BGR	Bains Gap Road	Cl	chlorinated
AcC2	Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded	bgs	below ground surface	CLP	Contract Laboratory Program
AcD2	Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded	BHC	hexachlorocyclohexane	cm	centimeter
AcE2	Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded	BHHRA	baseline human health risk assessment	CN	chloroacetophenone
ACGIH	American Conference of Governmental Industrial Hygienists	BIRTC	Branch Immaterial Replacement Training Center	CNB	chloroacetophenone, benzene, and carbon tetrachloride
AdE	Anniston and Allen stony loam, 10 to 25 percent slope	bkg	background	CNS	chloroacetophenone, chloropicrin, and chloroform
ADEM	Alabama Department of Environmental Management	bls	below land surface	CO	carbon monoxide
ADPH	Alabama Department of Public Health	BOD	biological oxygen demand	CO ₂	carbon dioxide
AEC	U.S. Army Environmental Center	Bp	soil-to-plant biotransfer factors	Co-60	cobalt-60
AEDA	ammunition, explosives, and other dangerous articles	BRAC	Base Realignment and Closure	CoA	Code of Alabama
AEL	airborne exposure limit	Braun	Braun Intertec Corporation	COC	chain of custody; chemical of concern
AET	adverse effect threshold	BSAF	biota-to-sediment accumulation factors	COE	Corps of Engineers
AF	soil-to-skin adherence factor	BSC	background screening criterion	Con	skin or eye contact
AHA	ammunition holding area	BTAG	Biological Technical Assistance Group	COPC	chemical of potential concern
AL	Alabama	BTEX	benzene, toluene, ethyl benzene, and xylenes	COPEC	constituent of potential ecological concern
ALARNG	Alabama Army National Guard	BTOC	below top of casing	CPSS	chemicals present in site samples
ALAD	δ-aminolevulinic acid dehydratase	BTV	background threshold value	CQCSM	Contract Quality Control System Manager
ALDOT	Alabama Department of Transportation	BW	biological warfare; body weight	CRDL	contract-required detection limit
amb.	amber	BZ	breathing zone; 3-quinuclidinyl benzilate	CRL	certified reporting limit
amsl	above mean sea level	C	ceiling limit value	CRQL	contract-required quantitation limit
ANAD	Anniston Army Depot	Ca	carcinogen	CRZ	contamination reduction zone
AOC	area of concern	CaCO ₃	calcium carbonate	Cs-137	cesium-137
AP	armor piercing	CAA	Clean Air Act	CS	ortho-chlorobenzylidene-malononitrile
APEC	areas of potential ecological concern	CAB	chemical warfare agent breakdown products	CSEM	conceptual site exposure model
APT	armor-piercing tracer	CACM	Chemical Agent Contaminated Media	CSM	conceptual site model
AR	analysis request	CAMU	corrective action management unit	CT	central tendency
ARAR	applicable or relevant and appropriate requirement	CBR	chemical, biological, and radiological	ctr.	container
AREE	area requiring environmental evaluation	CCAL	continuing calibration	CWA	chemical warfare agent; Clean Water Act
AS/SVE	air sparging/soil vapor extraction	CCB	continuing calibration blank	CWM	chemical warfare material; clear, wide mouth
ASP	Ammunition Supply Point	CCV	continuing calibration verification	CX	dichloroformoxime
ASR	Archives Search Report	CD	compact disc	'D'	duplicate; dilution
AST	aboveground storage tank	CDTF	Chemical Defense Training Facility	D&I	detection and identification
ASTM	American Society for Testing and Materials	CEHNC	U.S. Army Engineering and Support Center, Huntsville	DAAMS	depot area agent monitoring station
AT	averaging time	CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	DAF	dilution-attenuation factor
ATSDR	Agency for Toxic Substances and Disease Registry	CERFA	Community Environmental Response Facilitation Act	DANC	decontamination agent, non-corrosive
ATV	all-terrain vehicle			°C	degrees Celsius

List of Abbreviations and Acronyms (Continued)

°F	degrees Fahrenheit	EPIC	Environmental Photographic Interpretation Center	g/m ³	gram per cubic meter
DCA	dichloroethane	EPRI	Electrical Power Research Institute	G-856	Geometrics, Inc. G-856 magnetometer
DCE	dichloroethene	ER	equipment rinsate	G-858G	Geometrics, Inc. G-858G magnetic gradiometer
DDD	dichlorodiphenyldichloroethane	ERA	ecological risk assessment	GAF	gastrointestinal absorption factor
DDE	dichlorodiphenyldichloroethene	ER-L	effects range-low	gal	gallon
DDT	dichlorodiphenyltrichloroethane	ER-M	effects range-medium	gal/min	gallons per minute
DEH	Directorate of Engineering and Housing	ESE	Environmental Science and Engineering, Inc.	GB	sarin (isopropyl methylphosphonofluoridate)
DEP	depositional soil	ESMP	Endangered Species Management Plan	gc	clay gravels; gravel-sand-clay mixtures
DFTPP	decafluorotriphenylphosphine	ESN	Environmental Services Network, Inc.	GC	gas chromatograph
DI	deionized	ESV	ecological screening value	GCL	geosynthetic clay liner
DID	data item description	ET	exposure time	GC/MS	gas chromatograph/mass spectrometer
DIMP	di-isopropylmethylphosphonate	EU	exposure unit	GCR	geosynthetic clay liner
DM	dry matter; adamsite	Exp.	explosives	GFAA	graphite furnace atomic absorption
DMBA	dimethylbenz(a)anthracene	E-W	east to west	GIS	Geographic Information System
DMMP	dimethylmethylphosphonate	EZ	exclusion zone	gm	silty gravels; gravel-sand-silt mixtures
DO	dissolved oxygen	FAR	Federal Acquisition Regulations	gp	poorly graded gravels; gravel-sand mixtures
DOD	U.S. Department of Defense	FB	field blank	gpm	gallons per minute
DOJ	U.S. Department of Justice	FD	field duplicate	GPR	ground-penetrating radar
DOT	U.S. Department of Transportation	FDC	Former Decontamination Complex	GPS	global positioning system
DP	direct-push	FDA	U.S. Food and Drug Administration	GRA	general response action
DPDO	Defense Property Disposal Office	Fe ⁺³	ferric iron	GS	ground scar
DPT	direct-push technology	Fe ⁺²	ferrous iron	GSA	General Services Administration; Geologic Survey of Alabama
DQO	data quality objective	FedEx	Federal Express, Inc.	GSBP	Ground Scar Boiler Plant
DRMO	Defense Reutilization and Marketing Office	FEMA	Federal Emergency Management Agency	GSSI	Geophysical Survey Systems, Inc.
DRO	diesel range organics	FFCA	Federal Facilities Compliance Act	GST	ground stain
DS	deep (subsurface) soil	FFE	field flame expedient	GW	groundwater
DS2	Decontamination Solution Number 2	FFS	focused feasibility study	gw	well-graded gravels; gravel-sand mixtures
DSERTS	Defense Site Environmental Restoration Tracking System	FI	fraction of exposure	H&S	health and safety
DWEL	drinking water equivalent level	Fil	filtered	HA	hand auger
E&E	Ecology and Environment, Inc.	Flt	filtered	HC	mixture of hexachloroethane, aluminum powder, and zinc oxide (smoke producer)
EB	equipment blank	FMDC	Fort McClellan Development Commission	HCl	hydrochloric acid
EBS	environmental baseline survey	FML	flexible membrane liner	HD	distilled mustard (bis-[dichloroethyl]sulfide)
EC ₅₀	effects concentration for 50 percent of a population	f _{oc}	fraction organic carbon	HDPE	high-density polyethylene
ECBC	Edgewood Chemical Biological Center	FOMRA	Former Ordnance Motor Repair Area	HE	high explosive
ED	exposure duration	FOST	Finding of Suitability to Transfer	HEAST	Health Effects Assessment Summary Tables
EDD	electronic data deliverable	Foster Wheeler	Foster Wheeler Environmental Corporation	Herb.	herbicides
EF	exposure frequency	FR	Federal Register	HHRA	human health risk assessment
EDQL	ecological data quality level	Frtn	fraction	HI	hazard index
EE/CA	engineering evaluation and cost analysis	FS	field split; feasibility study	H ₂ O ₂	hydrogen peroxide
Elev.	elevation	FSP	field sampling plan	HPLC	high-performance liquid chromatography
EM	electromagnetic	ft	feet	HNO ₃	nitric acid
EMI	Environmental Management Inc.	ft/day	feet per day	HQ	hazard quotient
EM31	Geonics Limited EM31 Terrain Conductivity Meter	ft/ft	feet per foot	HQ _{screen}	screening-level hazard quotient
EM61	Geonics Limited EM61 High-Resolution Metal Detector	ft/yr	feet per year	hr	hour
EOD	explosive ordnance disposal	FTA	Fire Training Area	HRC	hydrogen releasing compound
EODT	explosive ordnance disposal team	FTMC	Fort McClellan	HSA	hollow-stem auger
EPA	U.S. Environmental Protection Agency	FTRRA	FTMC Reuse & Redevelopment Authority	HTRW	hazardous, toxic, and radioactive waste
EPC	exposure point concentration	g	gram	'I'	out of control, data rejected due to low recovery

List of Abbreviations and Acronyms (Continued)

IASPOW	Impact Area South of POW Training Facility	LC	liquid chromatography	MPA	methyl phosphonic acid
IATA	International Air Transport Authority	LCS	laboratory control sample	MPM	most probable munition
ICAL	initial calibration	LC ₅₀	lethal concentration for 50 percent population tested	MQL	method quantitation limit
ICB	initial calibration blank	LD ₅₀	lethal dose for 50 percent population tested	MR	molasses residue
ICP	inductively-coupled plasma	LEL	lower explosive limit	MRL	method reporting limit
ICRP	International Commission on Radiological Protection	LOAEL	lowest-observed-adverse-effects-level	MS	matrix spike
ICS	interference check sample	LRA	land redevelopment authority	mS/cm	millisiemens per centimeter
ID	inside diameter	LT	less than the certified reporting limit	mS/m	millisiemens per meter
IDL	instrument detection limit	LUC	land-use control	MSD	matrix spike duplicate
IDLH	immediately dangerous to life or health	LUCAP	land-use control assurance plan	MTBE	methyl tertiary butyl ether
IDM	investigative-derived media	LUCIP	land-use control implementation plan	msl	mean sea level
IDW	investigation-derived waste	max	maximum	MtD3	Montevallo shaly, silty clay loam, 10 to 40 percent slopes, severely eroded
IEUBK	Integrated Exposure Uptake Biokinetic	MB	method blank	mV	millivolts
IF	ingestion factor; inhalation factor	MCL	maximum contaminant level	MW	monitoring well
ILCR	incremental lifetime cancer risk	MCLG	maximum contaminant level goal	MWI&MP	Monitoring Well Installation and Management Plan
IMPA	isopropylmethyl phosphonic acid	MCPA	4-chloro-2-methylphenoxyacetic acid	Na	sodium
IMR	Iron Mountain Road	MCPP	2-(2-methyl-4-chlorophenoxy)propionic acid	NA	not applicable; not available
in.	inch	MCS	media cleanup standard	NAD	North American Datum
Ing	ingestion	MD	matrix duplicate	NAD83	North American Datum of 1983
Inh	inhalation	MDC	maximum detected concentration	NaMnO ₄	sodium permanganate
IP	ionization potential	MDCC	maximum detected constituent concentration	NAVD88	North American Vertical Datum of 1988
IPS	International Pipe Standard	MDL	method detection limit	NAS	National Academy of Sciences
IR	ingestion rate	mg	milligrams	NCEA	National Center for Environmental Assessment
IRDMIS	Installation Restoration Data Management Information System	mg/kg	milligrams per kilogram	NCP	National Contingency Plan
IRIS	Integrated Risk Information Service	mg/kg/day	milligram per kilogram per day	NCRP	National Council on Radiation Protection and Measurements
IRP	Installation Restoration Program	mg/kgbw/day	milligrams per kilogram of body weight per day	ND	not detected
IS	internal standard	mg/L	milligrams per liter	NE	no evidence; northeast
ISCP	Installation Spill Contingency Plan	mg/m ³	milligrams per cubic meter	ne	not evaluated
IT	IT Corporation	mh	inorganic silts, micaceous or diatomaceous fine, sandy or silt soils	NEW	net explosive weight
ITEMS	IT Environmental Management System™	MHz	megahertz	NFA	No Further Action
'J'	estimated concentration	µg/g	micrograms per gram	NG	National Guard
JeB2	Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded	µg/kg	micrograms per kilogram	NGP	National Guardsperson
JeC2	Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded	µg/L	micrograms per liter	ng/L	nanograms per liter
JfB	Jefferson stony fine sandy loam, 0 to 10 percent slopes have strong slopes	µmhos/cm	micromhos per centimeter	NGVD	National Geodetic Vertical Datum
JPA	Joint Powers Authority	MeV	mega electron volt	Ni	nickel
K	conductivity	min	minimum	NIC	notice of intended change
K _d	soil-water distribution coefficient	MINICAMS	miniature continuous air monitoring system	NIOSH	National Institute for Occupational Safety and Health
kg	kilogram	ml	inorganic silts and very fine sands	NIST	National Institute of Standards and Technology
KeV	kilo electron volt	mL	milliliter	NLM	National Library of Medicine
K _{oc}	organic carbon partitioning coefficient	mm	millimeter	NO ₃ ⁻	nitrate
K _{ow}	octonal-water partition coefficient	MM	mounded material	NPDES	National Pollutant Discharge Elimination System
KMnO ₄	potassium permanganate	MMBtu/hr	million Btu per hour	NPW	net present worth
L	liter; Lewisite (dichloro-[2-chloroethyl]sulfide)	MNA	monitored natural attenuation	No.	number
L/kg/day	liters per kilogram per day	MnO ₄ ⁻	permanganate ion	NOAA	National Oceanic and Atmospheric Administration
l	liter	MOA	Memorandum of Agreement	NOAEL	no-observed-adverse-effects-level
LAW	light anti-tank weapon	MOGAS	motor vehicle gasoline	NR	not requested; not recorded; no risk
lb	pound	MOUT	Military Operations in Urban Terrain	NRC	National Research Council
LBP	lead-based paint	MP	Military Police	NRCC	National Research Council of Canada

List of Abbreviations and Acronyms (Continued)

NRHP	National Register of Historic Places	PFT	portable flamethrower	RI	remedial investigation
NRT	near real time	PG	professional geologist	RL	reporting limit
ns	nanosecond	PID	photoionization detector	RME	reasonable maximum exposure
N-S	north to south	PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes	ROD	Record of Decision
NS	not surveyed	PM	project manager	RPD	relative percent difference
NSA	New South Associates, Inc.	POC	point of contact	RR	Range residue
nT	nanotesla	POL	petroleum, oils, and lubricants	RRF	relative response factor
nT/m	nanoteslas per meter	POTW	publicly owned treatment works	RSD	relative standard deviation
NTU	nephelometric turbidity unit	POW	prisoner of war	RTC	Recruiting Training Center
nv	not validated	PP	peristaltic pump; Proposed Plan	RTECS	Registry of Toxic Effects of Chemical Substances
O ₂	oxygen	ppb	parts per billion	RTK	real-time kinematic
O ₃	ozone	ppbv	parts per billion by volume	RWIMR	Ranges West of Iron Mountain Road
O&G	oil and grease	PPE	personal protective equipment	SA	exposed skin surface area
O&M	operation and maintenance	ppm	parts per million	SAD	South Atlantic Division
OB/OD	open burning/open detonation	PPMP	Print Plant Motor Pool	SAE	Society of Automotive Engineers
OD	outside diameter	ppt	parts per thousand	SAIC	Science Applications International Corporation
OE	ordnance and explosives	PR	potential risk	SAP	installation-wide sampling and analysis plan
oh	organic clays of medium to high plasticity	PRA	preliminary risk assessment	SARA	Superfund Amendments and Reauthorization Act
OH•	hydroxyl radical	PRG	preliminary remediation goal	sc	clayey sands; sand-clay mixtures
ol	organic silts and organic silty clays of low plasticity	PS	chloropicrin	Sch.	schedule
OP	organophosphorus	PSSC	potential site-specific chemical	SCM	site conceptual model
ORC	Oxygen Releasing Compound	pt	peat or other highly organic silts	SD	sediment
ORP	oxidation-reduction potential	PVC	polyvinyl chloride	SDG	sample delivery group
OSHA	Occupational Safety and Health Administration	QA	quality assurance	SDWA	Safe Drinking Water Act
OSWER	Office of Solid Waste and Emergency Response	QA/QC	quality assurance/quality control	SDZ	safe distance zone; surface danger zone
OVM-PID/FID	organic vapor meter-photoionization detector/flame ionization detector	QAM	quality assurance manual	SEMS	Southern Environmental Management & Specialties, Inc.
OWS	oil/water separator	QAO	quality assurance officer	SF	cancer slope factor
oz	ounce	QAP	installation-wide quality assurance plan	SFSP	site-specific field sampling plan
PA	preliminary assessment	QC	quality control	SGF	standard grade fuels
PAH	polynuclear aromatic hydrocarbon	QST	QST Environmental, Inc.	Shaw	Shaw Environmental, Inc.
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity	qty	quantity	SHP	installation-wide safety and health plan
Parsons	Parsons Engineering Science, Inc.	Qual	qualifier	SI	site investigation
Pb	lead	R	rejected data; resample; retardation factor	SINA	Special Interest Natural Area
PBMS	performance-based measurement system	R&A	relevant and appropriate	SL	standing liquid
PC	permeability coefficient	RA	remedial action	SLERA	screening-level ecological risk assessment
PCB	polychlorinated biphenyl	RAO	remedial action objective	sm	silty sands; sand-silt mixtures
PCDD	polychlorinated dibenzo-p-dioxins	RBC	risk-based concentration; red blood cell	SM	Serratia marcescens
PCDF	polychlorinated dibenzofurans	RCRA	Resource Conservation and Recovery Act	SMDP	Scientific Management Decision Point
PCE	perchloroethene	RCWM	Recovered Chemical Warfare Material	s/n	signal-to-noise ratio
PCP	pentachlorophenol	RD	remedial design	SO ₄ ⁻²	sulfate
PDS	Personnel Decontamination Station	RDX	cyclotrimethylenetrinitramine	SOD	soil oxidant demand
PEF	particulate emission factor	ReB3	Rarden silty clay loams	SOP	standard operating procedure
PEL	permissible exposure limit	REG	regular field sample	SOPQAM	U.S. EPA's <i>Standard Operating Procedure/Quality Assurance Manual</i>
PERA	preliminary ecological risk assessment	REL	recommended exposure limit	sp	poorly graded sands; gravelly sands
PES	potential explosive site	RFA	request for analysis	SP	submersible pump
Pest.	pesticides	RfC	reference concentration	SPCC	system performance calibration compound
PETN	pentaerythritoltetranitrate	RfD	reference dose	SPCS	State Plane Coordinate System
		RGO	remedial goal option	SPM	sample planning module

List of Abbreviations and Acronyms (Continued)

SQRT	screening quick reference tables	TOC	top of casing; total organic carbon	WWII	World War II
Sr-90	strontium-90	TPH	total petroleum hydrocarbons	XRF	x-ray fluorescence
SRA	streamlined human health risk assessment	TR	target cancer risk	yd ³	cubic yards
SRM	standard reference material	TRADOC	U.S. Army Training and Doctrine Command		
Ss	stony rough land, sandstone series	TRPH	total recoverable petroleum hydrocarbons		
SS	surface soil	TSCA	Toxic Substances Control Act		
SSC	site-specific chemical	TSDF	treatment, storage, and disposal facility		
SSHO	site safety and health officer	TWA	time-weighted average		
SSHP	site-specific safety and health plan	UCL	upper confidence limit		
SSL	soil screening level	UCR	upper certified range		
SSSL	site-specific screening level	'U'	not detected above reporting limit		
SSSSL	site-specific soil screening level	UIC	underground injection control		
STB	supertropical bleach	UF	uncertainty factor		
STC	source-term concentration	USACE	U.S. Army Corps of Engineers		
STD	standard deviation	USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine		
STEL	short-term exposure limit	USAEC	U.S. Army Environmental Center		
STL	Severn-Trent Laboratories	USAEHA	U.S. Army Environmental Hygiene Agency		
STOLS	Surface Towed Ordnance Locator System [®]	USACMLS	U.S. Army Chemical School		
Std. units	standard units	USAMPS	U.S. Army Military Police School		
SU	standard unit	USATCES	U.S. Army Technical Center for Explosive Safety		
SUXOS	senior UXO supervisor	USATEU	U.S. Army Technical Escort Unit		
SVOC	semivolatile organic compound	USATHAMA	U.S. Army Toxic and Hazardous Material Agency		
SW	surface water	USC	United States Code		
SW-846	U.S. EPA's <i>Test Methods for Evaluating Solid Waste: Physical/Chemical Methods</i>	USCS	Unified Soil Classification System		
		USDA	U.S. Department of Agriculture		
SWMU	solid waste management unit	USEPA	U.S. Environmental Protection Agency		
SWPP	storm water pollution prevention plan	USFWS	U.S. Fish and Wildlife Service		
SZ	support zone	USGS	U.S. Geological Survey		
TAL	target analyte list	UST	underground storage tank		
TAT	turn around time	UTL	upper tolerance level; upper tolerance limit		
TB	trip blank	UXO	unexploded ordnance		
TBC	to be considered	UXOQCS	UXO Quality Control Supervisor		
TCA	trichloroethane	UXOSO	UXO safety officer		
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin	V	vanadium		
TCDF	tetrachlorodibenzofurans	VC	vinyl chloride		
TCE	trichloroethene	VOA	volatile organic analyte		
TCL	target compound list	VOC	volatile organic compound		
TCLP	toxicity characteristic leaching procedure	VOH	volatile organic hydrocarbon		
TDEC	Tennessee Department of Environment and Conservation	VQlfr	validation qualifier		
TDGCL	thiodiglycol	VQual	validation qualifier		
TDGCLA	thiodiglycol chloroacetic acid	VX	nerve agent (O-ethyl-S-[diisopropylaminoethyl]-methylphosphonothiolate)		
TEA	triethylaluminum	WAC	Women's Army Corps		
Tetryl	trinitrophenylmethylnitramine	Weston	Roy F. Weston, Inc.		
TERC	Total Environmental Restoration Contract	WP	installation-wide work plan		
THI	target hazard index	WRS	Wilcoxon rank sum		
TIC	tentatively identified compound	WS	watershed		
TLV	threshold limit value	WSA	Watershed Screening Assessment		
TN	Tennessee	WWI	World War I		
TNT	trinitrotoluene				

ATTACHMENT 2
RESPONSE TO FTMC AND CEHNC COMMENTS

DESIGN REVIEW COMMENTS

PROJECT Second Backcheck 3X Scrap Removal (10-063-03) CN

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| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input checked="" type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
| <input type="checkbox"/> ARCHITECTURAL | <input type="checkbox"/> ELECTRICAL | <input type="checkbox"/> ESTIMATING | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW Backcheck
 DATE 6 Nov 2003
 NAME Kellie Williams / ED-SY-S/ 256-895-1584-

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	CEHNC-ED-SY-S has reviewed this document and has the following comment(s).	
2.	PC#2.2	<p>The contractor has missed the point of this comment. I could not find a section or any procedures on what the ONSITE contractor personnel are to do in case they encounter suspect CWM while they are removing the 3X scrap. Will they run upwind? Conduct gross decontamination? Secure the item with plastic? Secure the area at a safe distance till EOD arrives? What will the project team do?</p>	<p>Comment noted. The following text will be added to Section 5.1 of the Contingency Plan per the discussion held on November 7, 2003 between CEHNC, USACE, and Shaw.</p> <p>In the event that chemical agent or a suspect CWM item is encountered during operations, site workers will be alerted to evacuate the site upwind. The initial exclusion zone for suspected agent or CWM will be established a minimum of 450 feet upwind. The suspect item will not be disturbed after discovery. EOD and the Site Safety and Health Officer (SSHO) will be notified immediately. EOD will mitigate the situation according to the procedures outlined in detail in Section 2.2 of the UXO Safety Plan.</p> <p>Following an alarm, all personnel will immediately evacuate the site. Two UXO technicians will cover the monitored CWM item and the end of the monitoring hose with plastic sheeting (or a tarp) and place sandbags (or suitable weighted objects) on the sheeting to secure it. Prior to exiting the exclusion zone, the UXO technicians will retrieve the DAAMS station, carry it to the monitoring personnel, and place it into a Ziploc bag.</p>

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT Second Backcheck 3X Scrap Removal (10-063-03) CN

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| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input checked="" type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
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| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW Backcheck
 DATE 6 Nov 2003
 NAME Kellie Williams / ED-SY-S/ 256-895-1584-

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
3.	Medical Support	The contractor not Huntsville needs to do an assessment and determine that the potential of encountering agent is remote. If the contractor determines this, then the medical support agreements are not necessary.	<p>Comment noted. The following statement will be added to Attachment 2 of the SSHP.</p> <p>Shaw has reviewed known site history, the results of previous investigations, and documentation provided by the Army for Training Area T-38 and T-24A. Based on this review, Shaw agrees with the Army's determination that the probability of encountering chemical agent during 3X scrap removal activities at either of these sites is remote.</p>
4.	Medical Support	MOA. Was the Mobile District Attorney given the regulation that requires the MOA to be updated annually? It may still be valid but the regulation states that it will be updated annually. However, if it is determined that the potential of encountering agent is remote the MOA isn't even required.	<p>Comment noted. Discussions held on November 7, 2003 between CEHNC (K. Williams), USACE, and Shaw, have resolved this issue.</p>
5.	PC#4	<p>Why will you evacuate the site if 3X scrap is found to have levels greater than the AEL? This doesn't make sense. I do not believe that EOD is equipped to handle agent levels greater than the AEL. Please discuss what they will do. Please explain. Also, explain why 3X scrap found to contain levels greater than the AEL will not be decontaminated. Also, discuss what will happen to the scrap, as it cannot be transported.</p> <p>ACTION CODES W - WITHDRAWN A - ACCEPTED/CONCUR N - NON-CONCUR D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED</p>	<p>Comment noted. The following text will be added to Section 5.2 of the Contingency Plan per the discussion held on November 7, 2003 between CEHNC (K. Williams), USACE, and Shaw.</p> <p>If the GC/MSD monitoring of the 3X material confirms the presence of chemical agent >1.0 AEL, the site will be evacuated and the CACM secured. The CACM will remain in possession of the Army pending final Army disposition.</p>

Name: Bill Shanks Date: 10 October 2003		Comment Response Matrix for the Draft Final Site-Specific Work Plan 3X Scrap Removal Training Area T-38 and Training Area T-24A		
Who	Page	Line	Comment and Rationale	Response to Comment
BRS	1-1	9-12	The information in the sentence on these lines should be changed to clarify that one of the six anomalies stated as being at T-24A is not within the area identified as Training Area T-24A on Figure 1-1. Rationale: One of the six anomalies is outside the boundaries of the area shown as Training Area T-24A on Figure 1-1.	Comment noted. However, the sentence referenced is a general statement that 3X scrap exists within the anomalies. It is not a specific statement that the anomalies exist within the areas identified on Figure 1-1. The locations of the anomalies are described on page 1-5 and clearly portrayed on Figures 1-3 and 2-2. No text or figure modifications are necessary.
BRS	1-1	32	Delete "or sold to the general use". Rationale: The words need to be deleted for the sentence to be grammatically correct.	Agree.
BRS	1-1	38	Change "locate" to "located". Rationale: The word needs to be changed for the sentence to be grammatically correct.	Agree.
BRS	1-1 thru 1-5	Paragraph 1.2	Add applicable information from the recent investigations by Shaw/IT to this paragraph. Rationale: Shaw/IT has conducted extensive investigations in the areas but no information from these investigations is included in the paragraph.	Comment noted. Section 1.2 is provided to describe previous investigations. The reviewer references work currently being conducted by Shaw. This work is unrelated to the 3X scrap removal (i.e., an RI for VOCs in groundwater). However, a new Section 1.3 will be added to briefly describe the RI.
BRS	2-5	Figure 1-2 and Lines 34- 36	It should be clarified whether the "Anomaly Boundary Inferred from Trenching" is to be excavated during the 3X scrap removal. Rationale: According to the legend, the solid red areas on the figure are the areas to be investigated however, in paragraph 2.8 it states Figures 2-3 and 2-4 (see comment below) portray horizontal survey coordinates to assist in identifying the sidewalls of the anomalies to be excavated. This would seem to indicate that the area shown as "Anomaly Boundary Inferred from Trenching" which has horizontal survey coordinates shown would also be excavated. If the area is not to be excavated, the reason for showing should be explained.	Comment noted. The legend on Figure 1-2 will be modified.
BRS		Table 1-1	Add "O" to the Notes at the bottom of the table. Rationale: The acronym "O" is used in the table but not included in the notes to explain the acronyms used.	Agree.
RS		Table 1-2	Information shown in the table for anomaly locations T24-8 and T24-10 should be clarified/corrected. Rationale: The table information shows "Investigated by TEU in 1993" but does not provide any information on the type of ordnance found. The information in lines 36-37, page 1-4 indicates the ordnance was encountered during the RI in 1995 not the SI in 1993 and lines 1-3, page 3 of the SSHP identifies the ordnance found.	Disagree. The <i>Final CWM EE/CA</i> (Parsons, 2002) reports "Investigated by TEU in 1993" and does not provide any information on the potential contents of anomalies T24-8 or T24-10. These anomalies are believed to be the locations of possible burn pits that were used for decontamination. The ordnance referenced was found in T24-5, T24-15, and T24-29, as described in Table 1-2.

Name: Bill Shanks Date: 10 October 2003		Comment Response Matrix for the Draft Final Site-Specific Work Plan 3X Scrap Removal Training Area T-38 and Training Area T-24A		
Who	Page	Line	Comment and Rationale	Response to Comment
BRS	2-5	35	Change "Figures 2-3 and 2-4" to "Figures 1-2 and 1-3". Rationale: The correct figures are 1-2 and 1-3 instead of 2-3 and 2-4.	Agree.
BRS	4-1	10-11	Change the reference information on these lines to the Final CWM EE/CA June 2002. Rationale: The information referenced in this document is from the Final CWM EE/CA not the Final CWM Work Plan.	Agree.
BRS	4-1		Add reference information for the SAIC RI in 1995. Rationale: The SAIC RI is referenced in the document but is not included in the references list.	Disagree. The SAIC RI conducted in 1994 and reported on in 1995 is included as part of the SAIC 2000 documentation (<i>Remedial Investigation/Baseline Risk Assessment, SAIC, 2000</i>).
BRS		SSHP, Fort McClellan Project Emergency Contacts	Delete "Military Police (SSG Busch)" and "Baltzell Gate Guard Shack" from the list of contacts. Rationale: The Transition Force no longer has Military Police and the Baltzell Gate Guard Shack has been transferred to the JPA and is not manned.	Agree.
BRS	ii, SSHP		Change the page numbers for Tables 3-1, 4-1 and 4-2 from 8, 9 and 9 to 9, 10 and 10 respectively. Rationale: The page numbers listed for the tables are incorrect.	Agree.
BRS	3, SSHP	3	Change "1994" to "1995". Rationale: Information in other areas of this document indicates the RI was in 1995 instead of 1994.	Disagree. Much of the RI was conducted by SAIC in 1994 and then reported on in 1995.
BRS	10, SSHP	21-23	Change the information on these lines to indicate that the Chemical Agent Monitoring Plan has been added instead of that it will be added prior to the work being initiated. Rationale: The Chemical Agent Monitoring Plan has been added as Attachment 5 to the SSHP.	Agree.
BRS	i, UXO Safety Plan		Change the page number for paragraph 2.7.5 from 14 to 15. Rationale: The paragraph is on page 15 instead of page 14.	Agree.
BRS	i, Atch 5, SSHP		Change the title of paragraph 4.0 from "3X Monitoring" to "3X Scrap Certification". Rationale: The correct title of the paragraph is 3X Scrap Certification.	Comment noted. The text and TOC will be modified to indicate the correct section title: "3X Scrap Monitoring".
BRS	i, Atch 5, SSHP		Change the title of paragraph 4.3.3 from "Drager Tubes" to "GC/MSD/FPD" and the title of paragraph 4.3.4 from "Backup Equipment" to "Drager Tubes". Rationale: The correct titles of the paragraphs are GC/MSD/FPD and Drager Tubes.	Agree.

DESIGN REVIEW COMMENTS

PROJECT 3X Scrap Removal at Former Fort McClellan CN 10-063-03

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| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input checked="" type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
| <input type="checkbox"/> ARCHITECTURAL | <input type="checkbox"/> ELECTRICAL | <input type="checkbox"/> ESTIMATING | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW Comment Backcheck 09/03
 DATE 15 October 2003
 NAME Kellie Williams / ED-SY-S/ 256-895-1584-

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	CEHNC-ED-SY-S has reviewed this document and has the following comment(s).	
2.	General	Contingency Plan. 1. Recommend taking the contingency plan out of the Chemical Agent Monitoring Plan. It needs to be easy to find in case of an emergency. 2. The plan does not discuss procedures to follow during an unplanned discovery of an actual CWM item. 3. Contingency Plan discusses only the reporting procedures "if the presence of chemical agent is indicated". There needs to be a procedure on the mitigation of the situation.	1. Comment noted. Sections 3.4 and 4.4, "Contingency Plan – Required Response Actions" will be relocated to the back of the Chemical Agent Monitoring Plan. A thumb tab will be provided for easy access in the event of an emergency. 2. Agree. It is the responsibility of EOD to respond to an unplanned discovery. 3. Comment noted. A sentence will be added to the contingency plan stating that in the event of a detection of chemical agent above the AEL, the area will be evacuated, and EOD will be notified to mitigate the situation.
3.	Medical Support	If there is a potential of a working being exposed to chemical agent, medical support requirements must be met. I do not see the potential of agent exposure detailed anywhere in this plan. If medical support requirements are necessary, a. The MOA with the hospital needs to be updated. The requirement is now that it is updated on an annual basis. b. Hospital personnel will, at minimum need refresher training and may need an 8-hour course due to personnel turn over in the last 3 years. c. Paramedics trained in chemical casualty care will need to be onsite during operations. ACTION CODES W - WITHDRAWN A - ACCEPTED/CONCUR N - NON-CONCUR D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED	The potential for agent exposure is detailed in Attachment 2 to the SSHP. As determined in the CEHNC-approved <i>Final CWM EE/CA</i> (Parsons, 2002) and the <i>Probability Assessment</i> for T-38 and T-24A (approved by the BRAC Environmental Coordinator), the "probability of encountering chemical agent when removing 3X is considered remote." The probability assessments allow the work to be completed as if the work were being conducted on "non-CWM sites" (and/or non-chemical agent sites). a. Comment noted. USACE-Mobile District attorneys have reviewed the MOA and determined that it is still valid. The USACE-Mobile District has notified the hospital

DESIGN REVIEW COMMENTS

PROJECT 3X Scrap Removal at Former Fort McClellan CN 10-063-03

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| <input type="checkbox"/> ENVIR PROT & UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
| <input type="checkbox"/> ARCHITECTURAL | <input type="checkbox"/> ELECTRICAL | <input type="checkbox"/> ESTIMATING | <input type="checkbox"/> OTHER |
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REVIEW Comment Backcheck 09/03
 DATE 15 October 2003
 NAME Kellie Williams / ED-SY-S/ 256-895-1584-

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
4.	3X Process	I was not able to locate the process for 3X scrap when the results of the headspace indicate or confirm the presence of agent.	<p>regarding this project. The Final 3X Scrap Removal work plan will be provided to the hospital prior to initiating field activities.</p> <p>b. Disagree. Because CEHNC has determined that the probability of encountering chemical agent is remote, the Army believes that this comment does not apply.</p> <p>c. Disagree. Because CEHNC has determined that the probability of encountering chemical agent is remote, the Army believes that this comment does not apply.</p> <p>Comment noted. A sentence will be added to the contingency plan stating that in the event of a detection of chemical agent above the AEL, the area will be evacuated, and EOD will be notified.</p>
5.	Decon	As requested in my previous comment, the plan needs to include site-specific procedures for decontamination. This needs to include, but is not limited to, personnel emergency decon procedures and the decontamination of 3X scrap if monitoring indicates the presence of agent.	<p>Comment noted. Section 2.3, <i>Personnel Decontamination</i>, will be added to the SSHP. Attachment 8 will include other relevant sections from the Installation-Wide Work Plan.</p> <p>Please note: 3X scrap will not be decontaminated under this work plan should monitoring indicate the presence of agent.</p>
6.	Site Control	This plan needs to have a site-specific discussion on site control as requested in my previous comment.	<p>Comment noted. A section summarizing this procedure will be added to the SSHP as Attachment 8.</p> <p>Site control to the active work areas will be instituted by limiting access to only approved and authorized employees. All personnel will</p>

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT 3X Scrap Removal, Ft. McClellan I04ALFTMC01SAM

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| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW Draft Site Specific Work Plan
 DATE 15 August 2003
 NAME Randy Harris/OE-S/(256) 656-2392

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	I have reviewed the subject document and have the following comments.	Comment noted.
2.	General	Several places in the work plan, the contractor states that if an OE item is encountered, it will be marked. Need to describe in detail the proposed disposition of hazardous OE (UXO).	Agree. The text will be modified in the Draft Final Work Plan. An appendix will be added to the UXO plan -- <i>OE and Range Residue Inspection, Certification, and Final Disposition Procedures.</i>
3.	Para. 2.7.5	Para. 2.7.5 says that Shaw will not perform any OE destruction incidental to operations associated with this project. But the organization chart has a position for "UXO Disposal". Please clarify.	Agree. However, the responsibilities of UXO construction support generally include UXO disposal; therefore, the organization chart includes a placeholder for this activity.
4.	Para. 2.7.6	Need to define in detail the certification and veriwho will certify and verify OE scrap that is accounted for on DD Form 1348-1.	<p>Agree. The text will be modified in the Draft Final Work Plan:</p> <p>The SUXOS will certify, and the USACE OE Safety Specialist will verify, that the material is free of explosive materials.</p>

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

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REVIEW Draft
 DATE Monday, September 29, 2003
 NAME Hank Hubbard 256-895-1586

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	The OE-CX has reviewed this plan and has the following comment(s):	Comment noted.
2.	General	Ensure Mr. Levy signs the Probability Assessments prior to going intrusive.	Agree.
3.	Para 1.1	the use of CWM in this paragraph does not clearly depict what we are talking about here. I would recommend using the phrase "chemical agent contaminated media" "CACM". I believe this more clearly defines what we are looking for on this project. I'm sure there are several other places in this plan where this may be applied.	Agree. Text will be modified as suggested. Chemical Agent Contaminated Media (CACM) will be substituted as appropriate.
4.	General	How do you intend to identify the 3X material? This is critical.	<p>The 3X material was originally identified by Parsons Engineering, Inc. using excavation, air monitoring, soil sampling, and laboratory analysis as described in the <i>Final Chemical Warfare Materiel (CWM) Engineering Evaluation/Cost Analysis (EE/CA), Fort McClellan, Alabama, June 2002.</i></p> <p>The 3X scrap material will be identified by Shaw OE personnel during excavation, sorting, and screening using visual observation. (This will not include scrap metal or vehicle parts.)</p>
5.	Para 2.5	There is a "certified and verified" process now being used by this center that requires dual signatures, one from the contractor and one from USACE on scrap.	<p>Agree. Text has been added to reflect the requirements found in <i>Corps of Engineers Contractors Ordnance and Explosives (OE), Range Residue (RR) Inspection, Certification and Final Disposition Procedures</i>, 6 August 2001. This document outlines the use of <i>DD Form 1348-1A</i> for certifying, verifying, and signing.</p>

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

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| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
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REVIEW _____

DATE Monday, September 29, 2003

NAME Hank Hubbard 256-895-1586

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
6.	General	Ensure all UXO personnel are qualified for the positions they're in.	Agree. Prior to mobilization, a memorandum will be prepared and sent to USACE-Mobile containing the qualifications of all UXO personnel. In addition, the UXO database numbers will be provided for all UXO positions.
7.	Para 2.1	You discuss 4.2" mortars in the text, but do not list them in the bulletized listing, why not?	4.2" mortars will be added to the list.
8.	Tables 4-1 and 4-2	Do not mention the chemical warfare agents at all, where is that info?	A new Table 2-1, <i>Toxicological and Physical Properties of Chemicals</i> will be added to Section 2 of the SSHP. Additionally, Shaw has confirmed and agreed to the action levels associated with alarm values set on the MINICAMS near real time monitors. The action levels (75% of the TWA for HD, L, GB and VX) will be added to Table 4-1. Shaw has also confirmed the location and monitoring frequency of site operations. This new information will be added to Table 4-2.
9.	UXO Plan	para 1.0, in the bold statement, recommend replacing the word "materiel" with "agent"	Agree. The text will be modified.
10.	MSDSs	what about CK, AC, PS?	MSDSs for cyanogen chloride, hydrogen cyanide, and chloropicrin will be added to Attachment 4.

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT Fort McClellan S:28July03

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| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
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| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW T-38 & T-24A 3X Removal Action
 DATE 28 Jul 03
 NAME Betina V. Martin Johnson, OE-CW

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1	Note to PM	I have reviewed the document entitled " Draft Site Specific Work Plan – 3X Scrap Removal – Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6), Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7) at Fort McClellan, Calhoun County, Alabama dated 15 Jul 03 " and have the following comments. This review does not provide approval only technical assistance for the subject operations.	Comment noted.
2	Note to PM	Suggest that OE Safety, CEHNC Safety, and the OE-CX review portions of this plan as indicated below.	Comment noted.
3	Section 1.1 Line 10	Add the word "scrap" after (CWM).	Agree.
4	Page 1-3, Lines 35-37	Indicate the value added for the last sentence. In any case, CWM should be chemical agent.	Agree. The sentence will be deleted from the text. CWM will be changed to chemical agent.
5	Note to PM/OE Safety	Determine approval authority for UXO qualified workers. Is Mobile District an executing removal district for Ordnance and Explosives or has Savannah District provided Mobile the authority to execute this work?	Approval authority for UXO workers is not required. The material to be removed is 3X scrap metal (per CEHNC) and is not OE scrap.
6	General	Map of exclusion zone around both sites, T-38 and T-24A, is suggested.	Agree. Figures 2-1 and 2-2 will be updated.
7	General	Has Shaw obtained an agreement with the local hospital, Northeast Regional Medical Center and the local Emergency Management Services (EMS) in the event personnel are exposed to chemical agent?	A memorandum of agreement (MOA) between the Army (USACE-Mobile) and the Northeast Alabama Regional Medical Center will be used if required. A copy of the MOA, dated 10 March 2000, is included as Attachment 7 of the Safety and Health Plan.
8	Page 2-3, Lines 21-23	Include reference to section 2.4 for head spacing materials for agent. In other words, if the car parts and other miscellaneous steel (non-OE) are head-spaced and clear for agent, then they may be sold as scrap steel.	Agree. Text will be added referring to Section 2.4 and monitoring 3X scrap.

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT Fort McClellan S:28July03

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|---|--|---|---|
| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
| <input type="checkbox"/> ARCHITECTURAL | <input type="checkbox"/> ELECTRICAL | <input type="checkbox"/> ESTIMATING | <input checked="" type="checkbox"/> OTHER |
| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW T-38 & T-24A 3X Removal Action
 DATE 28 Jul 03
 NAME Betina V. Martin Johnson, OE-CW

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
9	Certification of 3X and OE Scrap	Please indicate or provide standard form to be signed stating the 3X and OE scrap may be relinquished to disposal facility. Consult OE Safety for final language.	Text has been added to reflect the requirements found in "Corps of Engineers Contractors Ordnance and Explosives (OE), Range Residue (RR) Inspection, Certification and Final Disposition Procedures" 6 August 2001.
10	Page 2-4, Line 15 & 22	Change "CWM" to "chemical agent".	Agree. The text will be changed as suggested.
11	General	Please provide name and location of disposal facility. Also, facility should be informed about the history of each site.	EBV Explosives Environmental Company of Joplin, Missouri.
12	Page 2-5, Line 16-19	Confirmation should be made that the intact item is not OE or CWM. Include the words "After consultation with the SUXOS...."	Agree. The text will be modified.
13	Page 2-6, Section 2.9	Define procedures for handling agent-contaminated soil in the event it is uncovered during the removal action.	If agent is detected, personnel will evacuate the area; no provisions are made to handle agent-contaminated soils.
14	Fort McClellan Project Emergency Contacts	Update this chart. The following names and numbers should appear for the chemical agent emergencies and UXO Emergencies, respectively. Chemical Agent Emergencies (Wilson Walters), 256-990-1512 backup 256-895-1543. UXO Emergencies (OE Safety), 256-895-1598. The cell phone listed for Ken Barnet is a Foster Wheeler cell phone. Also, it is my understanding the Mr. Ellis Pope no longer works on this project but rather Lee Coker.	Agree. The chart will be updated. The emergency contact personnel and phone numbers will be revised in accordance with the latest information.
15	Figure 1-1 of SSHP	Disposal Facility, MINICAMS, and Transportation Firm need to be identified prior to proceeding with the removal action.	Agree. The disposal facility, MINICAMS, and transportation firms have been identified. Figure 1-1 of the SSHP will be updated.
16	Page 7 of SSHP, 3.0 Personal Protective Equipment	Recommend that CEHNC Safety and/or OE-CX/OE Safety review this section.	Comment noted.

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT Fort McClellan S:28July03

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| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
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| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW T-38 & T-24A 3X Removal Action
 DATE 28 Jul 03
 NAME Betina V. Martin Johnson, OE-CW

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
17	Section 4.0 Site Monitoring; First Sentence	Change "chemical materiel (CWM)" to "chemical agent".	Agree. The text will be modified.
18	Page 9, Section 4.0, last paragraph, first sentence	Drop "CWM."	Agree. The text will be modified.
19	Table 4-1	Include action levels and Equipment Calibration for Chemical Agents	Agree. The action levels (75% of the TWA for HD, L, GB and VX) will be added to Table 4-1. Equipment calibration information for chemical agent monitoring will is provided in the chemical agent monitoring plan (Attachment 5 of the UXO Construction Support Plan).
20	Table 5-1A	Recommend CEHNC Safety review this Activity Hazard Analysis	Comment noted.
21	Site Specific UXO Safety Plan Attachment	Recommend OE Safety/OE-CX review this portion of the plan.	Comment noted.
22	Page 1 of UXO Safety Plan, Line 25	Remove the word "materials" after "CWM." Suggest spelling out CWM as Chemical Warfare Materiel.	Agree. The text will be modified.
23	Page 3, Technical Management Plan, Section 2.2 Lines 18-20	Suggest re-wording as follows: "Shaw is not authorized to perform CWM-related tasks. The likelihood of encountering CWM during 3X removal actions at T-38 and T-24A is remote; however, if CWM is encountered, the procedures listed below will be followed.	Agree. The text will be modified.

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT Fort McClellan 3X Scrap Removal Plan

CN 07-220-03

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| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input checked="" type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
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| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW Unsigned Draft dated July 2003
 DATE 18 August 2003
 NAME Kellie Williams / ED-SY-S/ 256-895-1584-

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	CEHNC-ED-SY-S has reviewed this document for <i>chemical agent safety precautions</i> and has the following comments.	Comment noted.
2.	General	Recommend in the work plan that it discusses that T-38 and Site 24A were investigated for CWM and the results of the investigation. It states this much later in the plan but it is important to have upfront for the reader to understand the contents of the plan.	Agree. Text will be added on page 1-1 in Section 1.2.
3.	SSHP	Page 7. Plan states that Saran-coated tyvek be used for sites with chemical agent. Saran-coated type is not approved for work with agent. You need to stress that if agent is detected the workers will immediately evacuate the area.	<p>Agree. The use of Saran-coated Tyvek is based on several factors: 1) previous site investigations, including the analysis of chemical warfare agents in soil and groundwater, as well as chemical agent degradation products, have not indicated chemical warfare agents in site media. 2) The chemical agent monitoring MINICAMS near real time (NRT) monitors will be configured to alarm at 75% of the TWA for the chemical agents of concern (HD, L, GB, and VX). Therefore, Shaw anticipates that the need for Tyvek "F" is unnecessary. However, in the event entry is necessary and is approved to reenter an area where the TWA was initially exceeded, i.e., (retrieve equipment or support equipment decontamination) appropriate and approved PPE will be utilized consistent with the Department of the Army Memorandum, <i>Generic Approval of Commercial Chemical Protective Equipment</i> (28 February 2002), and application use scenario(s) No 2 "Decontamination of agent contaminated media. For example, soil, debris, etc."</p> <p>Page 10 of the SSHP stresses the immediate stoppage of work and evacuation of the area if OE or CWM is encountered. This is reiterated in the Installation-Wide Sampling and Analysis Plan, Appendix A, Installation-Wide Safety and Health Plan (Feb. 2002). Table 4-1 will also be revised to reflect the action level for stoppage of work when chemical agents are identified with NRT monitors and confirmation analysis of the DAAMS tubes.</p>

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT Fort McClellan 3X Scrap Removal Plan

CN 07-220-03

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| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input checked="" type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
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REVIEW Unsigned Draft dated July 2003
 DATE 18 August 2003
 NAME Kellie Williams / ED-SY-S/ 256-895-1584-

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
4.	SSHP	Plan states that chemical agent monitoring will be added to the plan prior to the start of the work. Submit the plan for review once this information is included. It is difficult to review something when it is not contained in the plan. Most of the tables including PPE Criteria Table 3-1 and Table 4-1 have not included the chemical agent monitoring, the action levels and actions to be taken.	Agree. The UXO Construction Support Plan will contain a Chemical Agent Monitoring Plan as Attachment 5. Additionally, Tables 3-1 and 4-1 will be updated.
5.	SSHP	It appears that a risk assessment for Mr. Levy's signature has been included in the plan. This needs to be signed prior to the next submittal, as does the SSHP.	Agree. Signatures will be provided.
6.	Risk Assess.	Once of the criteria to use the risk assessment process is that a contingency plan be developed in case CWM is found. I did not find this in this plan.	Agree. A contingency plan will be included in the Chemical Agent Monitoring Plan.
7.	General	Many elements of a SSHP were not included in this plan. The ones that I need to review for safety precautions include decontamination, site control, training and medical support. All of the other elements should also be included. See ER 385-1-95 or -92 for all the required elements.	The Installation-Wide Safety and Health Plan (IWSHP) Section 6 details site control procedures, Section 7 describes decontamination, Section 9 outlines employee training, Section 10 describes medical surveillance, and Section 11 provides emergency procedures. The SSHP is to be used in conjunction with the IWSHP. The IWSHP is in strict compliance with ER 385-1-95 and/or -92.

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
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Final

Site-Specific Safety and Health Plan

**3X Scrap Removal at Training Areas T-38 and T-24A
Fort McClellan, Calhoun County, Alabama**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, Alabama 36602**

Prepared by:

**Shaw Environmental, Inc.
312 Directors Drive
Knoxville, Tennessee 37923**

**Task Order CK10
Contract No. DACA21-96-D-0018
Project No. 796887**

October 2003

Revision 0

The following Safety and Health Plan (SHP) has been designed for the methods presently contemplated by the company for execution of the proposed work. Therefore, the SHP may not be appropriate if the work is not performed by or using the methods presently contemplated by the company. In addition, as the work is performed, conditions different from those anticipated may be encountered and the SHP may have to be modified. Therefore, the company only makes representations or warranties as to the adequacy of the SSHP for currently anticipated activities and conditions. This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Revision 1 and the Installation-Wide Ordnance and Explosives Management Plan, Fort McClellan, Alabama.

Final

Site-Specific Safety and Health Plan Attachment Approval

3X Scrap Removal

Training Area T-38

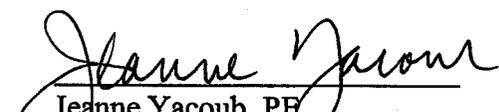
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Training Area T-24A

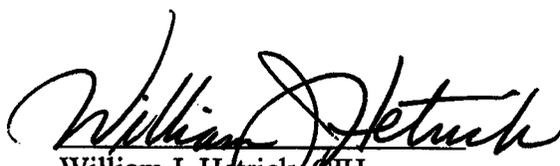
Former Chemical Munitions Disposal Area, Parcel 187(7)

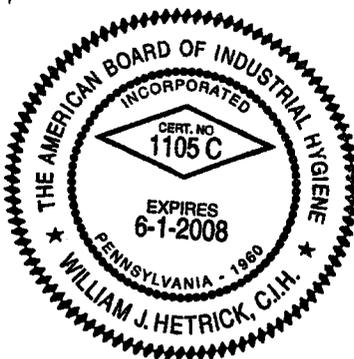
Fort McClellan, Calhoun County, Alabama

I have read and approve this site-specific safety and health plan attachment for the 3X Scrap Removal: Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6); and Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7), Fort McClellan, Calhoun County, Alabama, with respect to project hazards, regulatory requirements, and Shaw procedures.


Jeanne Yacoub, PE
Project Manager

10/27/03
Date


William J. Hetrick, CIH
Health & Safety Manager



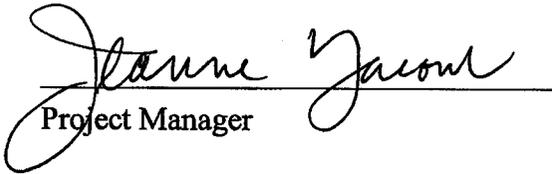
10/23/03
Date


Norm Honea
Site Manager

10/29/03
Date

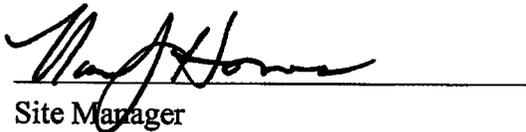
Acknowledgements

The approved version of this site-specific safety and health plan (SSHP) for the 3X Scrap Removal at Training Areas T-38 and T-24A at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every 6 months until project completion.


Project Manager

10/27/03
Date

I acknowledge receipt of this SSHP attachment from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and the health and safety manager.


Site Manager

10/29/03
Date

Fort McClellan Project Emergency Contacts

Range Control Office (Main Post)	(256) 848-6772
Fire Department (on post)	911
Fire Department (off post)	(256) 237-3541
Ambulance (off post)	911
Regional Medical Center	(256) 235-5121
DOD Guard Force (Mr. Bolton)	(256) 848-5680, 848-4732
Anniston Police Department	(256) 238-1800
Chemical Agent Emergencies	(256) 895-1598
Wilson Walters	(256) 990-1512, (256) 895-1543
UXO Emergencies	(256) 895-1598
OE Safety	(256) 895-1598
UXO Nonemergencies/Reporting Only (Ronald Levy)	(256) 848-3758
National Response Center & Terrorist Hotline.....	(800) 424-8802
Poison Control Center.....	(800) 462-0800
EPA Region IV	(404) 562-8725
Ronald Levy, Chief, FTMC Environmental Management.....	(256) 848-3758
Lee Coker, U.S. Army Corps of Engineers.....	(251) 690-3099
Jeanne Yacoub, Shaw Project Manager	(770) 663-1429
Bill Hetrick, Shaw H&S Manager	direct dial (865) 692-3571
Dr. Jerry H. Berke, Health Resources Occupational Physician	(800) 350-4511

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1.0 Site Work Plan Summary

Project Objective. Shaw will conduct 3X scrap removal at two anomalies identified by U.S. Army Engineering and Support Center, Huntsville as containing 3X material at Training Area T-38 and six anomalies identified at Training Area T-24A. The Army has determined that 3X scrap material consists of CWM- and OE-related scrap. 3X scrap does not include scrap metal or vehicle parts.

The anomalies identified at T-38, T38-12, and T38-13 are estimated to contain approximately 296 cubic yards of material. Shaw has estimated that approximately 10 percent is 3X material. The 3X material will be excavated, separated from the soil and debris, sorted, packaged and shipped to an off-site disposal facility for thermal decontamination to 5X standards.

The anomalies identified at T-24A, T24-5, T24-8, T24-10, T24-15, T24-25, and T24-29 are estimated to contain approximately 1,474 cubic yards of material. Shaw has estimated that approximately 10 percent is 3X material. The 3X material will be excavated, separated from the soil and debris, sorted, packaged and shipped to an off-site disposal facility for thermal decontamination to 5X standards.

Project Tasks

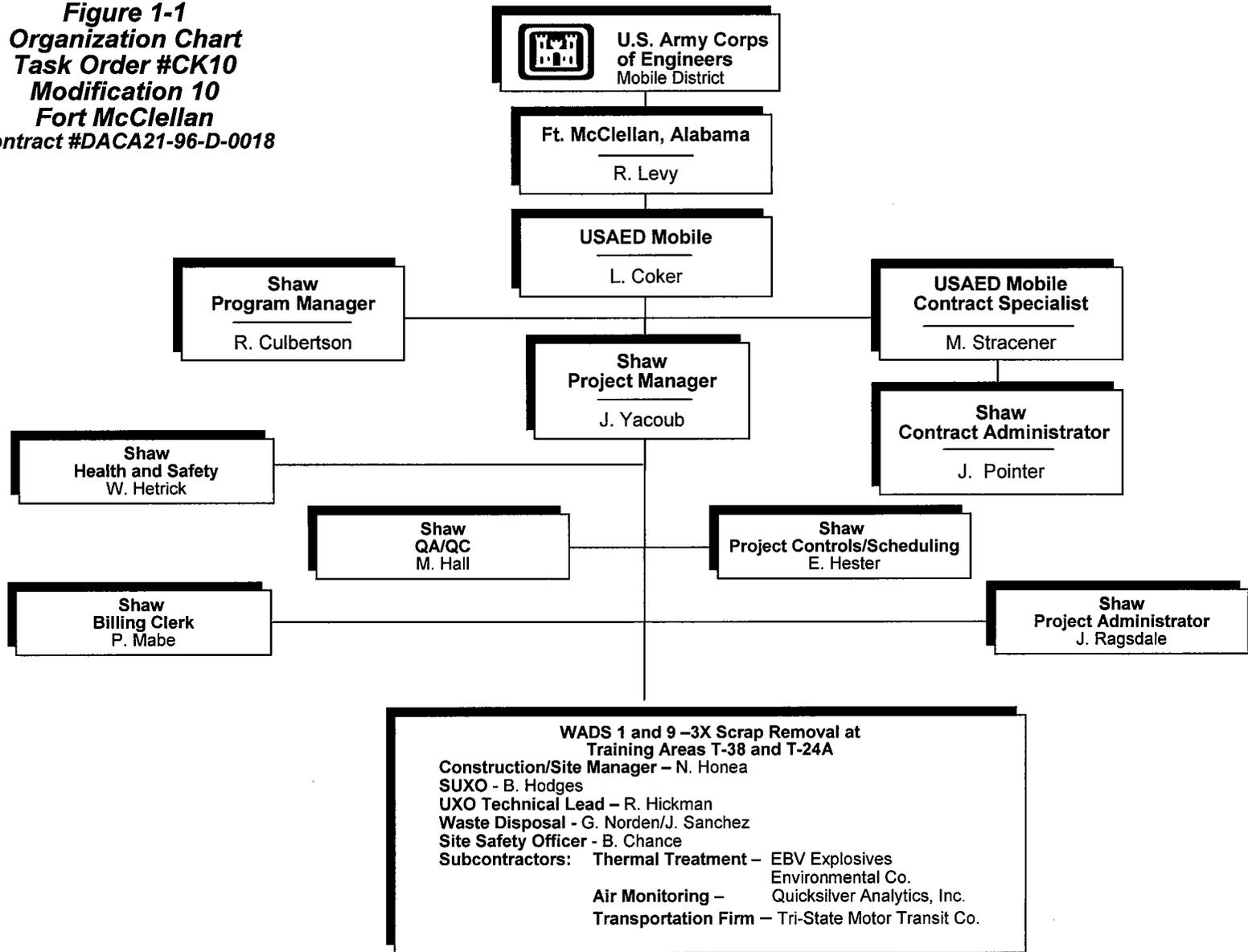
- Excavation of anomalies under UXO construction support
- UXO construction support: for identification of 3X materials, segregation from non-3X scrap and inventory, and screening of debris and soil
- Exposure monitoring
- Packaging of inert 3X scrap for shipment.

Personnel Requirements. Up to 10 employees. See Figure 1-1 for an organization chart.

Note: All personnel on this site shall have received training, informational programs, and medical surveillance as outlined in the installation-wide safety and health plan (SHP) for site investigations at FTMC, and be familiar with the requirements of this site-specific SHP (SSHP).

This SSHP must be used in conjunction with the FTMC project-wide SHP and the FTMC installation-wide OE Management Plan as well as the site UXO Safety Plan and the Chemical Agent Monitoring Plan, Attachments 3 and 5, respectively.

**Figure 1-1
 Organization Chart
 Task Order #CK10
 Modification 10
 Fort McClellan
 Contract #DACA21-96-D-0018**



2.0 Site Characterization and Analysis

2.1 Anticipated Hazards

The activity hazard analysis in Chapter 5.0 contains project-specific practices utilized to reduce or eliminate anticipated site hazards. The activity hazard analysis (AHA) indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. Specific attention is essential to be given to the UXO safety plan attachment (Attachment 3) and the UXO AHA. Below each task is a list of hazards and specific actions that will be taken to control the respective hazards. These control measures may include work practice controls, engineering controls, and/or use of appropriate personal protective equipment (PPE). The following information on both training sites describes the primary chemical hazard with some details on the use and application. The anticipated exposure potential is moderate for these materials, therefore, thorough review and understanding of their chemical nature and behavior is part of the site orientation all employees involved will need to receive. Appendices III and IV of the installation-wide safety and health plan (dated 2/02) shall be used for this training. In the event an employee needs medical assistance and can be taken to the hospital (Northeast Regional Medical Center), a hospital emergency route map is included on Attachment 1. Additional information on chemical agent event reporting procedures is included as Attachment 6. A memorandum of agreement between the Army and the hospital is included as Attachment 7.

Site T-24A. Training Area 24A (T-24A) is located within Range 24A and is the focus of CWM concerns. Range 24A is located southeast of the cantonment area and 1.7 miles east of Ford Hill in a valley. Range 24A occupies about 60 acres, with about 1.5 acres comprising T-24A. This training area include two square burning pits, each 16 feet on a side, enclosed within a fenced area.

T-24A was used from some unknown date (before 1949) until 1973. The range and associated training area fall within historic artillery training areas. The types of items used in this area include:

- 37mm, 75mm, and 155mm projectiles
- 3-inch Stokes, 81mm, and 6-inch Newton Stokes mortars
- Machine guns and other small arms
- 4.2-inch mortars.

Two 81mm mortar rounds were discovered on the site in 1991. Two fuzeed 105mm rounds, one 155mm round, four 4.2-inch mortar rounds, a burster tube, and smoke rounds were discovered during trenching in the RI conducted in 1994.

T-24A was used for chemical munitions disposal training. Agents used included phosgene (CG), BZ, sarin (GB), and distilled mustard (HD). The quantities of agent used in this area greatly exceeded the amounts used for the training exercises at other ranges. Some records reported the quantity of HD to be 4.46 kilograms, about 1,000 times the amount used in other exercises. For CG, incapacitating agent (BZ), and GB, the quantities used were 40 mL, one M-6 canister, and 740 grams, respectively.

Two burn pits were used for decontamination. The pits were about 25 square meters in area and unknown depth (possibly 6 feet based on Standard Operating Procedures [SOP]). Following each exercise, the area was checked for contamination and sprayed with STB.

Upon closure in 1973, the fenced area and training aids were decontaminated with DS-2. Training aids which were decontaminated included 105mm and 155mm projectiles. The pits were covered with soil and no surface contamination was found to remain.

Site T-38. Site T-38, also called the Technical Escort Reaction Area is located north of the cantonment area on Reservoir Ridge. The site encompasses about 6 acres that includes several fenced subsections. The fenced area in the northern part of T-38 was referred to as the Toxic Agent Yard or Toxic Gas Yard.

The site was used from 1961 to 1972 for training TEU personnel in techniques for eliminating toxic hazards caused by mishaps to chemical munitions during transportation. Extensive decontamination was reportedly conducted at this site for spills and for decontaminating training aids, including a railroad flatcar. The types of decontaminants used, quantities, and frequency of use are unknown but assumed to include STB, Decontamination Solution Number 2 (DS2), and Decontaminating Agent Non-Corrosive (DANC). A 'road accident site' at the southern end was where spill training with GB reportedly occurred.

T-38 was also reportedly used for storage of toxic agents and munitions, including GB, nerve agent (VX), and HD. However, subsequent interviews indicated storage of GB and VX was in the ASP located at the base of Reservoir Ridge (Igloos 13 and 14) and only HD was stored at T-

38. Chemical agent storage included four 1-ton containers of HD. Decontaminants were also stored here in at least two locations.

Surface soil contaminated with HD was found in January 1973, but was not detected a few months later in March. The type and extent of decontamination that occurred in the interim is unknown. A conclusion was drawn in previous reports that subsurface contamination may still exist due to the use of chemical agents on the surface over time. Both HD and VX were considered as potentially present in the subsurface.

Following are the types of chemical agents and decontaminates that were utilized in training exercises at sites T-38 and T-24A.

- HD (Distilled Mustard)
- DANC (Decontamination Agent Non-corrosive: DANC)
- DS2 (Decontamination Solution Number 2)
- CG (Phosgene)
- GB (Sarin)
- VX (Nerve agent).

HD. HD (bis-[2-chloroethyl] sulphide) is an oily chemical that has a high boiling point. HD was used extensively in WWI. HD hydrolyzes quickly in nature. If diluted, it degrades to form thiodiglycol and if concentrated, it forms either 1,4-dithiane or 1,4-oxathiane.

DANC. Prior to WWII, a well known and often used decontaminating agent, DANC may have been used or disposed of at the site in conjunction with other types of decontaminates such as DS2 and/or supertropical bleach (STB). DANC is a 6.25 percent solution of RH-195 (1,3-dichloro-5, 5-dimethylhydantion) in 1,1,2,2-tetrachloroethane (acetylene tetrachloride) and was disposed as a satisfactory HD decontaminant in small-scale operations. It is an effective decontaminant for arsenals, if sufficient time is allowed for it to react.

DS2. DS2 is a clear solution general purpose decontaminant consisting of 70 percent diethylenetriamine, 28 percent solvent (ethylene glycol monomethylether) and 2 percent active agent booster (sodium hydroxide). DS2 decontaminant reacts with GB and HD to effectively reduce their hazard within 5 minutes of application. It is effective for all toxic chemical agents. DS2 was applied manually or by using a portable decontaminating apparatus such as the M11.

Phosgene. CG (carbonyl chloride) a gaseous chemical agent used in WWI. CG has a vapor density of 3.4 compared to air and is readily hydrolyzed under usual field conditions.

GB. (Sarin Nerve Agent), A gaseous chemical agent that produced hydrogen fluoride under acidic conditions, isopropyl and alkaline conditions.

VX. (Nerve Agent). An oily liquid similar in appearance to motor oil and more persistent and toxic than the “G” series of nerve agents.

The toxicological properties and information on exposure effects and first-aid are included in Table 2-1. Attachment 4 provides information on the specific chemical agents of concern for this project.

Because UXO concerns are also relevant to the 3X scrap excavation at both sites, a OE/UXO/CWM hazard evaluation has been conducted for each site and is included as Attachment 2.

CWM were previously used at this site. However, the evaluation of CWM to be present and pose significant hazards in conjunction with the current task to be performed was determined to be low potential.

The presence of UXO, while anticipated to be low at both T-38 and T-24A, requires that the procedures contained in the Site Specific UXO Safety Plan and Installation-Wide Ordnance and Explosives Management Plan shall be followed for all site activities associated with these excavation activities.

2.2 General Site Information

Location of Site. FTMC is located in the foothills of the Appalachian Mountains of northeastern Alabama near the cities of Anniston and Weaver in Calhoun County. FTMC is approximately 60 miles northeast of Birmingham, 75 miles northwest of Auburn and 95 miles west of Atlanta, Georgia. FTMC consists of three main areas of government-owned and leased properties: Main Post, Pelham Range and Choccolocco Corridor. The Pelham Range consists of approximately 22,245 acres to the west of U.S. Highway 431. Training Agent T-38 is located east of the Cantonment Area of the Main Post on Reservoir Ridge. T-24A is also east of the Cantonment Area of the Main Post.

Table 2-1

**Toxicological and Physical Properties of Chemicals
Excavation of 3X Scrap at Training Sites T-38 and T-24A
Fort McClellan
Calhoun County, Alabama**

(Page 1 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Arsenic and soluble inorganic compounds (as As) [7740-38-2]	NA	NA	Inh Abs Ing Con	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances; hyperpigmentation of the skin (carcinogenic); peripheral neuropathy, respiratory irritation.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediately medical attention	0.01 mg/m ³ 0.2 mg/m ³ (Ca-29 CFR 1910.1018 Inorganic compounds)	C0.002 mg/m ³	PEL TLV REL	Ca [100 mg/m ³]
DS2	None	?	Inh Ing Con	Direct contact will corrode skin, cause corneal opacification, severe burns, and esophageal stricture; inhalation may cause CNS depression, liver damage, nausea, vomiting, and respiratory irritation. Repeated skin and respiratory exposure can cause skin sensitization and asthma.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention. Give milk/water if conscious.	1 ppm 1 ppm 5.2 mg/m ³	- - Ceiling	TLV TLV TLV TLV	
Fuel oil (diesel oil, medium)	None	None	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, substernal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention			PEL TLV REL	

Table 2-1

**Toxicological and Physical Properties of Chemicals
Excavation of 3X Scrap at Training Sites T-38 and T-24A
Fort McClellan
Calhoun County, Alabama**

(Page 2 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Gasoline [8006-61-9]	None	0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	300 ppm Ca, lowest feasible conc. (LOQ 15 ppm)	500 ppm	PEL TLV REL	1400 ppm 10% LEL
GB	None	None	Abs	Anticholinesterase agent producing cholinergic poisoning; tightness in chest, wheezing, increased bronchial secretion, cough, breathing difficulty, pulmonary edema, death; CNS depression, coma, convulsion; sweating; salivation, abdominal cramps, heartburn, belching, diarrhea, involuntary defecation.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		C0.0001 mg/m ³	AEL	0.2 mg/m ³
Hydrogen chloride (hydrochloric acid) [74-90-8]	12.74	0.255–10.6	Inh Ing Con	Inflamed nose, throat, larynx; cough, burns throat, choking; burns eyes, skin; dermatitis; in animals; laryngeal spasm; pulmonary edema.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention		C5 ppm C5 ppm C5 ppm	PEL TLV REL	100 ppm
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43–200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm 500 ppm	PEL TLV REL	2,000 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
Excavation of 3X Scrap at Training Sites T-38 and T-24A
Fort McClellan
Calhoun County, Alabama**

(Page 3 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Lewisite (Arsenic trichloride)	None	None	Inh Con	Blister agent. Geranium-like odor. Systemic poison causing pulmonary edema, diarrhea, restlessness, subnormal temperature, and low blood pressure.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		C0.003 mg/m ³	AEL	
Methanol	10.85	4.2-5960	Inh Abs Ing Con	Irritated eyes, headache, drowsiness, lightheadedness, nausea, vomiting, disturbance in vision, blindness.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Fresh air Swallow: Immediate medical attention		200 ppm (skin) 200 ppm (skin) 200 ppm	PEL TLV REL	6000 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
Excavation of 3X Scrap at Training Sites T-38 and T-24A
Fort McClellan
Calhoun County, Alabama**

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Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Mustard gas	None	0.0006 mg/m ³	Abs Inh	Garlic-like odor. Eye and respiratory tract irritation; redness of skin and blisters develop 4 to 24 hours after exposure; hoarseness, sore throat, coughing, pulmonary edema	Treat like a thermal burn. Do not break blisters. Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.	Q	C0.003 mg/m ³	AEL	0.5 mg/m ³
Nitric acid [7697-37-2]	11.95	0.3–1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm 4 ppm	PEL TLV REL	100 ppm
Phosgene (CG)	11.55	?	Inh Con	Irritated eyes, nose and upper respiratory tract; wheezing and difficulty in breathing; eye and skin burns; pulmonary edema.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support	0.1 ppm 0.1 ppm 0.1 ppm	15-minute ceiling 0.1 ppm	PEL TLV REL	2 ppm

Table 2-1

**Toxicological and Physical Properties of Chemicals
Excavation of 3X Scrap at Training Sites T-38 and T-24A
Fort McClellan
Calhoun County, Alabama**

(Page 5 of 6)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
2,4,6-Trinitrotoluene (TNT) [118-96-7]	10.59	?	Inh Abs Ing Con	Liver damage, jaundice; cyanosis; sneezing coughing, sore throat; peripheral neuropathy, muscular pain; kidney damage; cataract; sensitive dermatitis; leukocytosis; anemia; cardiac irregularities.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.5 mg/m ³ (skin) 0.5 mg/m ³ (skin) 0.5 mg/m ³ (skin)		PEL TLV REL	NE
VX	None	?	Abs	Anticholinesterase agent producing cholinergic poisoning; tightness in chest, wheezing, increased bronchial secretion, cough, breathing difficulty, pulmonary edema, death; CNS depression, coma, convulsion; sweating; salivation, abdominal cramps, heartburn, belching, diarrhea, involuntary defecation.	Eye: Irrigate immediately. Transfer to medical facility Skin: Remove victim from area immediately. Flush skin and clothes with bleach within 1 minute. Cut and remove contaminated clothing, then wash skin again with bleach and then with soap and water. Transfer to medical facility. Breath: Remove from area immediately. Transfer to medical facility.		C0.00001 mg/m ³	AEL	0.4 mg/m ³

^aIP = Ionization potential (electron volts).

^bRoute = Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; Con, Skin and/or eye contact.

^cTWA = Time-weighted average. The TWA concentration for a normal work day (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.

^dSTEL = Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.

^ePEL = Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).

AEL = Airborne Exposure Limit.

TLV = American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value—TWA.

Table 2-1

Toxicological and Physical Properties of Chemicals Excavation of 3X Scrap at Training Sites T-38 and T-24A Fort McClellan Calhoun County, Alabama

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REL = National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.

¹IDLH (NIOSH)—Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. No. 90-117, 1990).

C = Ceiling limit value which should not be exceeded at any time.

Ca = Carcinogen.

NA = Not applicable.

? = Unknown.

LEL = Lower explosive limits.

LC₅₀ = Lethal concentration for 50 percent of population tested.

LD₅₀ = Lethal dose for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).

References:

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Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.

Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.

Verschueren, K., *Handbook of Environmental Data on Organic Chemicals*, Van Nostrand and Reinhold, 1977.

Warning Properties of Industrial Chemicals—Occupational Health Resource Center, Oregon Lung Association.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

Duration of Planned Employee Activity. Employee activity duration is anticipated to be less than four weeks.

Pathways for Hazardous Substance Dispersion. Possible pathways for hazardous substances in the area are soils and groundwater. Primary routes of exposure are inhalation, ingestion, and contact, as described in Attachment 4.

2.3 Personnel Decontamination

In the event a ring-off occurs on near real time chemical agent monitors (MINICAMS), employees will immediately don emergency escape supplied air egress packs and be immediately evacuated upwind of the suspect area. Hudson sprayers shall be prepared in advance and on standby containing a 5 to 10 percent bleach solution (Clorox). The Clorox bleach solution will be used to wash-off potential contamination from gloves, boots, and protective clothing and the protective clothing carefully removed and placed into labeled, sealed plastic bags. Following the removal of the personal protective equipment, a second wash of the affected employee shall commence using Clorox bleach solution followed by a thorough rinse using potable water. If confirmation of chemical agent monitoring determines the presence of a chemical agent, affected employees shall be transported to the North East Alabama Regional Medical Center for evaluation in accordance with the Memorandum of Agreement between the U.S. Army Corps of Engineers and Northeast Alabama Regional Medical Center (Attachment 7).

2.4 Excavation Operation

All excavation operations will comply with the USACE Safety and Health Requirements Manual (EM 385-1-1, dated 3 September 1996) and Shaw E&I's Trenching and Excavation Procedure HS307. Under no circumstances are employees to enter any excavation unless concurrent approval is given by the site excavation competent person, the site safety UXO specialist, and clearance air monitoring is conducted using MINICAMS; notification to the health and safety manager as required in HS307, is necessary as well.

3.0 Personal Protective Equipment

The work activities will begin in the following levels of protection. Also, a completed description of Level D, Modified Level D, and Level C PPE is provided. Any change in PPE that may be required will require approval by the Shaw H&S manager and project manager.

Task	Initial Level of PPE
Initial UXO avoidance sweep and equipment staging	Level D
Excavation operations at T-28 and T-24A	Modified Level D with escape pack
Identification of 3X materials	Modified Level D* with escape pack
Screening of debris and soil	Modified Level D* with escape pack
MINICAM and DAAMS sampling	Modified Level D* with escape pack
Packaging of scrap for shipment	Modified Level D* with escape pack

*Initial level will be raised to Level C or higher if air monitoring results in the breathing zone (BZ) are greater than action levels. Consideration for the adequacy of any PPE upgrade or downgrade based on chemical agent exposure will require approval by the Shaw H&S manager, project manager, and USACE site representative.

Latex or Nitrile gloves shall be used to minimize dermal contact with groundwater soil or surface contaminants on scrap and debris.

Level D. The minimal level of protection that will be required of Shaw personnel at the site will be Level D. The following equipment will be used for Level D protection:

- Coveralls or work clothing
- Leather work gloves (when necessary)
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).
- Latex or Nitrile gloves during groundwater sampling activities.

Modified Level D. The following equipment will be used for Level D-Modified protection:

- Permeable Tyvek, Kleenguard, or its equivalent (Saran-coated tyvek where potential chemical agents are anticipated)

- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment)
- Escape/egress air supply pack (where chemical agents are suspected).

Note: In addition to modified Level D PPE, the operator of high-pressure water jetting equipment (if necessary for vehicle wash down, cleaning, or decontamination) shall wear metatarsal guards for the feet, shin guards and a face shield.

Level C. Level C protection (or higher level) will not be used unless air-monitoring data indicate the need for upgrade; however, Level C equipment shall be readily available on site. The following equipment will be used for Level C protection:

- National Institute of Occupational Safety and Health/Mine Safety and Health Administration-approved full-face, air-purifying respirators equipped with organic vapor/acid gas cartridge in combination with high-efficiency particulate air filter
- Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer)
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment)
- Escape/egress air supply pack (where chemical agents are suspected).

Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall wear metatarsal guards for the feet; shin guards, and a face shield may be used to minimize water spray to the respirator lens and cartridges.

Table 3-1 lists the PPE selection matrix and the O₂/CGI acceptable limits of exposure for VOCs, oxygen, and flammable vapors. Section 3.2 in the Chemical Agent Monitoring Plan, Attachment 5, lists action level criteria for chemical agents and response actions to take should an action level be exceeded.

Table 3-1

**PPE Selection Matrix
Fort McClellan, Calhoun County, Alabama**

	Combustible Gas/Oxygen Analyzer	FID or PID Reading	Action
Level D	< 10% LEL > 19.5% O ₂ to ≤ 23% O ₂	1 to 5 ppm greater than background No suspect contamination	Level D PPE will be used for staging equipment, and UXO surface sweeps. Level D Modified PPE required for excavation, identification of 3X materials, and screening of debris
Level C	< 10% LEL > 19.5% O ₂ to ≤ 23% O ₂	> 5 ppm < 20 ppm	Continuous breathing zone PID readings between 5-20 ppm above background and benzene detected - Level C. Notify the H&S manager.
Stop Work ^a	> 10% LEL > 23% O ₂ < 19.5% O ₂	≥ 20 ppm	Stop work and evacuate work area. Notify the H&S manager.

^a Stop work until cause of elevated readings determined and corrected. Work shall not resume without written permission from project manager and project H&S manager. If conditions cannot be corrected, SSHP should be revised to deal with new conditions.

- FID - Flame ionization detector.
- O₂ - Oxygen
- PID - Photoionization detector.
- LEL - Lower explosive limit.
- PPE - Personal protective equipment.
- ppm - Parts per million.
- H&S - Health and safety.
- % - Percent.

4.0 Site Monitoring

The environmental contaminants of concern resulting from activities at the training sites T-38 and T-24A include metals, nitroaromatics, semivolatile organic compounds and chemical warfare materiel (CWM) or chemical agent contaminated media (CACM). Soil sampling by Science Applications International Corporation (SAIC) in 1991 at T-38 included (MINICAMS) and nine soil samples analyzed for GB, HD, VX, 1,4-Thioxane, and 1,4-dithane. No concentrations were reported above the reporting limits. Similarly, in 2001 Parsons analyzed eight soil samples for GB, HD, 1,4-thioxane, and 1,4-dithane with no detection above laboratory reporting limits. Nevertheless, monitoring using MINICAMS and Depot Air Agent Monitoring System (DAAMS) tubes will be conducted for worker safety during intrusive operations.

Chemical. Air monitoring shall be performed by the site safety and health officer or qualified subcontractor during the performance of excavation and scrap handling operations. A calibrated photo ionization detector (i.e., HNu PI-101 or equivalent) organic vapor analyzer will be utilized to monitor the sampling locations and BZs to determine if any organic material may be present that would necessitate upgrading of the protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the work areas and BZs to determine if any combustible/flammable oxygen levels may be present that would necessitate evacuation of the work area. Table 4-1 indicates action levels and PPE criteria for both sites and Table 4-2 lists the initial air monitoring frequency for OVA and CGI use. Chemical agent monitoring is included in this plan as Attachment 5. As noted in detail in the work plan, excavation and screening activities will be monitored for chemical agents, volatile organics, and explosive limits. A MINICAMS will be set up near the excavation and will monitor for chemical agents during removal activities. In addition, the Health and Safety officer will periodically monitor the excavation with a photoionization detector (PID) and an lower explosion level/oxygen (LEL/O₂) meter per Shaw Health and Safety standard HS 307.

Air monitoring support will be provided for chemical agents: HD, L, GB, VX, CK, and CG. One near real time (NRT) agent air monitor (e.g., MINICAMS) will be required for GB and VX and a second NRT will be used for HD and L. The NRT agent monitors are to be used within the exclusion zone of each excavation site to monitor potential worker exposure. The contractor will provide a backup NRT monitor capable of monitoring either HD and L or GB and VX.

Table 4-1

**Action Levels and Equipment Calibration
Excavation of 3X Scrap at Training Sites T-38 and T-24A
Ft. McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level C PPE

Analyte	Action Level ^a	Required Action
VOCs	≥ 20 ppm above background in BZ	Stop work, evacuate work area; contact CIH and USACE ^b .
Oxygen	≥ 20%, <23%	Normal operations
	< 20%, >23%	Stop work, evacuate work area; Contact CIH ^b
Flammable vapors	≥ 10% LEL	Stop work, evacuate work area/ Contact CIH ^b
	< 10% LEL	Continue operations, monitor for VOCs

When in Level D Modified/D PPE

Analyte	Action Level ^a	Required Action ^b
VOCs	≥ 5 ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE; Contact CIH ^b
Oxygen	≥ 20%, <23%	Normal operations
	< 20%, >23%	Stop work, evacuate work area; Contact CIH
Flammable vapors	≥ 10% LEL	Stop work, evacuate work area Contact CIH ^b
	< 10% LEL	Continue operations, monitor for VOCs

When in Support Zone

Analyte	Action Level ^a	Required Action
VOCs	≥ 1 ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.

Table 4-1

**Action Levels and Equipment Calibration
Excavation of 3X Scrap at Training Sites T-38 and T-24A
Ft. McClellan, Calhoun County, Alabama**

(Page 2 of 2)

Monitor Type	Calibration Method	Calibration Frequency	Maintenance Schedule
Combustible gas indicator (CGI)/oxygen meter	CGI sensor calibrated against known concentration of pentane or hexane (demonstration bottle). Zero setting checked in noncontaminated air. Oxygen sensor calibrated daily to 20.8 percent in fresh noncontaminated air.	CGI span calibrated once per day. CGI zero checked daily. Oxygen sensor calibrated daily. Note: If confined space entry monitoring is required the Oxygen shall be calibrated daily with a known oxygen deficient concentration.	Instrument cleaned as needed and no less than annually. Oxygen sensor changed annually. CGI sensor checked annually and changed if necessary.
Photoionization detector (PID)	PID zeroed in clean air. Span calibrated using known concentration of isobutylene (calibration bottle).	PID zeroed and span checked daily at start of work day.	Annual cleaning by qualified technician. Annual calibration of electronics by qualified technician. Clean lamp if sensitivity drops or if used in very dusty environment.

^a Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

^b Contact with the H&S manager must be made prior to continuance of work. The H&S manager may then initiate perimeter/integrated air sampling along with additional engineering controls.

- VOC - Volatile organic compound.
- ppm - Parts per million.
- LEL - Lower explosive limit.
- BZ - Breathing zone.
- PPE - Personal protective equipment.
- CIH - Certified Industrial Hygienist.
- USACE - United States Army Corps of Engineers.
- > - Greater than or equal to.
- < - Less than.
- > - Greater than.
- H&S - Health and safety.

No one is permitted to downgrade levels of PPE without authorization from the H&S manager.

Table 4-2

**Air Monitoring Frequency and Location
Excavation of 3X Scrap at Training Sites T-38 and T-24A
Ft. McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Excavation operations with UXO personnel	OV Monitor CGI	Initially for location, then periodically every 30 to 60 minutes	BZ of employees
Screening and segregation operations	OV Monitor CGI	Periodically every 30 to 60 minutes and when necessary	BZ of employees
Surface soil and scrap	OV Monitor CGI	As needed if unusual soil or odor conditions are observed	BZ of employees

OV - Organic vapor
CGI - Combustible gas indicator.
BZ - Breathing zone.

The Chemical Agent Monitoring Plan (Attachment 5) provides the essential detail and action levels which must be observed during the 3X scrap removal process as well as actions to be taken in the event an action level is exceeded.

The action level criteria used for chemical agent monitoring is 75% of the permissible time weighted average (TWA) airborne exposure limit (AEL) for each chemical listed in Section 3.2 of the Chemical Agent Monitoring Plan.

At least two DAAMS will be deployed at the perimeter of the work site to determine if any of the monitored compounds have left the site (perimeter monitoring). These samples will be routinely collected but only analyzed if the NRT monitors alarm.

Air monitoring surveys will occur prior to excavation (baseline), during excavation, screening operations, 3X clearing of waste in the hot boxes, and during closeout. This includes daily instrument performance checks and calibration.

Only 3X scrap material (OE) is anticipated in the excavations. If any OE material is encountered that cannot be positively identified as inert; or if there is any indication of the presence of CWM materials, all work will be immediately halted, the site evacuated, and the appropriate individuals notified (i.e., the site and project managers, the FTMC Base Environmental Coordinator, and the USACE representative).

While the exposure potential is anticipated to be low, emergency escape supplied air packs shall be utilized during all activities for which monitoring utilizing MINICAMS and DAAMS tubes are required. The chemical agent monitoring plan and the UXO Safety Plan will be reviewed by all site employees prior to the initiation of work activities. A transition force SOP for responding to suspected CWM is included as Attachment 6.

Unexploded Ordnance. UXO support for excavation and screening are specified in the site-specific UXO safety plan. The UXO specialists will perform UXO avoidance sweeps prior to moving the heavy equipment onto the site. During this operation, UXO on the surface will be detected and marked for avoidance during field operations. Additionally, continuous excavation and screening operation inspections will be performed.

If UXO, or any suspect CWM, is encountered, personnel will contact the site manager and UXO specialist immediately. All personnel will immediately evacuate the site according to the criteria in the UXO safety plan.

5.0 Activity Hazard Analysis

The attached activity hazard analysis (Tables 5-1A and B) is provided for the following activities:

- UXO operations, screening, and segregation
- Trenching and excavation.

All injuries and illnesses must be immediately reported to the site manager or the site safety and health officer, who will then notify off-site personnel and organizations as necessary.

If hospital care must be provided, the victim shall be treated at Northeast Regional Medical Center. Directions to the hospital and hospital route map are provided in Attachment 1. A copy of the memorandum of agreement between the hospital and the USACE is provided in Attachment 7.

Before initiation of work activities, the site UXO safety officer, the site safety and health officer, or both, will ensure that the Northeast Regional Medical Center is apprised of the nature of the work and potential hazards that could be encountered.

Attachment 8 of this plan includes relevant sections from the Installation-Wide Work Plan (site control, decontamination, site monitoring, and employee training).

Table 5-1A

**Activity Hazard Analysis for Unexploded Ordnance Operations
Ft. McClellan, Calhoun County, Alabama**

(Page 1 of 5)

Principal Steps	Potential Hazards	Recommended Controls
Transportation of explosive materials (if required)	Accidental detonation of explosives	Explosives will be transported in accordance with 49 Code of Federal Regulations (CFR) Parts 100-199.
		Explosives will be transported in closed vehicles whenever possible
		Observe the U.S. Army Engineering and Support Center, Huntsville, Safety Concepts and Basic Considerations for Unexploded Ordnance (UXO) Operations.
		When using an open vehicle, explosives will be covered with a flame resistant tarpaulin.
		Motor vehicles will be shut off when loading/unloading explosives.
		Beds of vehicles will have either a nonconductive bed liner, dunnage, or sand bags to protect the explosives from contact with the metal bed and fittings.
		Initiating explosives, such as blasting caps, will remain separated at all times.
		Each vehicle used for the transport of ordnance and explosives (OE) will be outfitted with a fire extinguisher and first aid kit.
	Do not fuel trucks when loaded with OE.	
		Unqualified Drivers
	Vehicle operations	Drivers will observe all posted speed limits while operating a motor vehicle on a public roadway.
		Vehicles transporting explosives off road will not exceed 25 MPH.
		Chock wheels when loading or unloading OE-related materials.
Storage of explosive materials (if required)	Accidental detonation of explosives	Materials will be stored in accordance with federal, state, and local regulations.
		Refer to the Standard Operating Procedure for the Storage of Explosive Materials.
Surveying and establishing boundaries and grids.	Accidental detonation of explosives	Personnel involved will attend a site-specific OE/UXO recognition class prior to the commencement of any site activity.

Table 5-1A

**Activity Hazard Analysis for Unexploded Ordnance Operations
Ft. McClellan, Calhoun County, Alabama**

(Page 2 of 5)

Principal Steps	Potential Hazards	Recommended Controls
Surveying and establishing boundaries and grids (continued)	Accidental detonation of explosives (continued)	Observe the U.S. Army Engineering and Support Center, Huntsville, Safety Concepts and Basic Considerations for UXO Operations. UXO personnel will escort non-UXO personnel at all times. Mark and avoid UXO. Only UXO personnel will handle OE waste. Check location with magnetometer prior to driving stakes.
	Wildlife, slips, trips, falls, insects, poisonous plants, use of hand tools	Refer to the Activity Hazard Analysis for Site Preparation located in the <i>Site Safety and Health Plan (SSHP)</i> .
UXO Down hole Survey (Primarily for Well Installation)	Accidental detonation of explosives	Personnel involved will attend a site-specific OE/UXO recognition class prior to the commencement of any site activities.
		Observe the U.S. Army Engineering and Support Center, Huntsville, Safety Concepts and Basic Considerations for UXO Operations.
		UXO personnel will escort non-UXO personnel at all times.
		Mark and avoid UXO. Only UXO personnel will handle OE/UXO.
		Perform magnetometer check of borehole every 2 feet of drilling.
Abandon borehole if metal is detected during down hole inspection.		
Clearing and Grubbing	Accidental detonation of explosives	Observe the U.S. Army Engineering and Support Center, Huntsville, Safety Concepts and Basic Considerations for UXO Operation
		Personnel involved will attend a site-specific OE/UXO recognition class prior to the commencement of any site activities.
		Be alert and mark all OE located.
		Only clear and grub to within 4 inches of the ground surface.
		UXO trained personnel will escort non-UXO personnel at all times.
		Surface sweeps will be conducted with magnetometers or other suitable geophysical instrumentation to identify potential OE.
	Wildlife, slips-trips-falls, chainsaw operations, poisonous plants, use of hand tools	Refer to Activity Hazard Analysis for Site Preparation located in the FTMC SSHP.

Table 5-1A

**Activity Hazard Analysis for Unexploded Ordnance Operations
Ft. McClellan, Calhoun County, Alabama**

(Page 3 of 5)

Principal Steps	Potential Hazards	Recommended Controls
Transportation of OE Waste (if applicable)	Accidental detonation of explosives	No personnel allowed in OE cargo department of vehicle.
		No OE allowed in passenger compartment of vehicle.
		Block, brace, secure OE.
		No smoking in vehicles used for transport of OE/UXO waste.
	Vehicle operations	Placard vehicle in accordance with U.S. Department of Transportation (DOT) regulations
		Vehicles transporting explosives off road will not exceed 25 MPH.
UXO Screening and Segregation of 3X Scrap	Accidental detonation of explosives/CWM exposure	Drivers will observe all posted speed limits while operating a motor vehicle on a public roadway.
		Observe UXO safety precautions contained in USACE-Huntsville Division Safety Concepts and Basic Considerations for UXO Operations.
		Adhere to monitoring plan for CWM using MINICAMS and DAAMS tubes.
OE-Related 3X Scrap/Demilitarization	Accidental detonation of explosives	Observe procedures outlined in EOD/TM/TO 60A 1-1-31.
		Observe UXO safety precautions contained in USACE-Huntsville Division Safety Concepts and Basic Considerations for UXO Operations.
Inspections/Certification of 3X-Related Scrap	Accidental detonation of explosives/CWM exposure	Only UXO technicians will perform explosive demilitarization of OE-related scrap.
		Observe UXO safety precautions contained in USACE-Huntsville Division Safety Concepts and Basic Considerations for UXO Operation.
		Only UXO technicians will inspect OE-related scrap in conjunction with MINICAM monitoring.
		Personnel in the immediate vicinity of OE-related scrap inspections will be kept to the minimum necessary for safe operations but no less than two UXO technicians.
Hand Excavation of UXO	Accidental detonation	Observe requirements of DOD 4160.12-M-1.
		Observe the U.S. Engineering and Support Center, Huntsville, Safety Concepts and Basic Considerations for UXO Operations.

Table 5-1A

**Activity Hazard Analysis for Unexploded Ordnance Operations
Ft. McClellan, Calhoun County, Alabama**

(Page 4 of 5)

Principal Steps	Potential Hazards	Recommended Controls
Hand Excavation of UXO (continued)	Accidental detonation (continued)	Only UXO technicians will excavate or handle UXO.
		Personnel in the immediate vicinity of UXO operations will be kept to the minimum necessary for safe operations but no less than two UXO technicians.
		Do not subject UXO to heat, shock, or friction.
		Only hand excavation permitted when within 1 foot of UXO.
		Magnetometers will be used frequently to pinpoint the location of UXO.
Excavation of UXO With Earth-Moving Machinery (EMM) (Observation)	Accidental detonation of explosives	Establish exclusion zone (EZ); post warning signs, maintain site control.
		Stop all UXO operations when non-UXO trained personnel are within the EZ.
		Observe UXO safety precautions contained in USACE-Huntsville Division Safety Concepts and Basic Considerations for UXO operations.
		EMM will be used to excavate to no greater than 1-foot of UXO.
		Hand excavation shall be used within 12 inches of a potential subsurface UXO.
		Only excavation necessary to identify the UXO will be accomplished.
		Spotters will be utilized at all times during mechanized excavation of UXO.
		Geophysical instrumentation will be used to frequently pinpoint the location of UXOs.
		If more than one EMM is used on the same site, they will be separated by at least 100 meters during excavation.
		Multiple search teams will be separated by a minimum of 50 meters.
	Minimize personnel exposure.	
	Refer to the Activity Hazard Analysis for Trenching/Excavation.	
	Operation of EMM by non-UXO personnel	Operators of EMM will be under the direct supervision of UXO personnel.
Slope and/or shore trenches or holes greater than 4 feet in depth.		
Excavation and trenching shall comply with the provisions of 29 CFR 1926 Subpart P and Shaw E&I H&S procedure HS 307 Trenching/Excavation.		

Table 5-1A

**Activity Hazard Analysis for Unexploded Ordnance Operations
Ft. McClellan, Calhoun County, Alabama**

(Page 5 of 5)

Principal Steps	Potential Hazards	Recommended Controls
<ul style="list-style-type: none"> • Vehicles • Fire extinguishers; first aid kits • Demolition materials • Explosives • Blocking, bracing, and cushioning materials • Manual hand tools • Mechanized equipment • EMM • Geophysical instrumentation • Global Positioning System instrumentation • Personal protective equipment • Communications equipment 	<ul style="list-style-type: none"> • Daily preventive maintenance and operational checks • First aid kits • Calibration of geophysical instrumentation 	<ul style="list-style-type: none"> • 40-hour qualification per 29 CFR 1910.120 • 8-hour refresher • UXO personnel EOD trained • Tailgate safety meetings • Site-specific orientation.

Table 5-1B

**Activity Hazard Analysis for Trenching/Excavation
Ft. McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Activity	Potential Hazards	Recommended Controls
Excavation Operations	Underground utilities	All underground utilities will be located prior to excavating.
	Open trenches	<p>Shaw Health and Safety Policy and Procedure HS307 "Excavation and Trenching" will be adhered to at all times.</p> <p>No employees will be permitted to enter excavations without the authorization of the site safety officer and the excavation safety competent person. Completion of Attachments 2 and 3 in HS307 will be required each time entry is to be made.</p>
	Contact with potentially contaminated materials UXO and CWM	Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized as specified in the site-specific HASP and site-specific UXO safety plan.
	Noise	Noise levels above 85 dBA mandates hearing protection.
	Equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic to be in a safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
Preventative maintenance procedures recommended by the manufacturer shall be followed.		
A lockout-tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.		
Machinery and mechanized equipment shall be operated only by designated personnel.		
Machinery or equipment requiring an operator shall not be permitted to run unattended.		
Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.		
All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.		
All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.		

Table 5-1B

**Activity Hazard Analysis for Trenching/Excavation
Ft. McClellan, Calhoun County, Alabama**

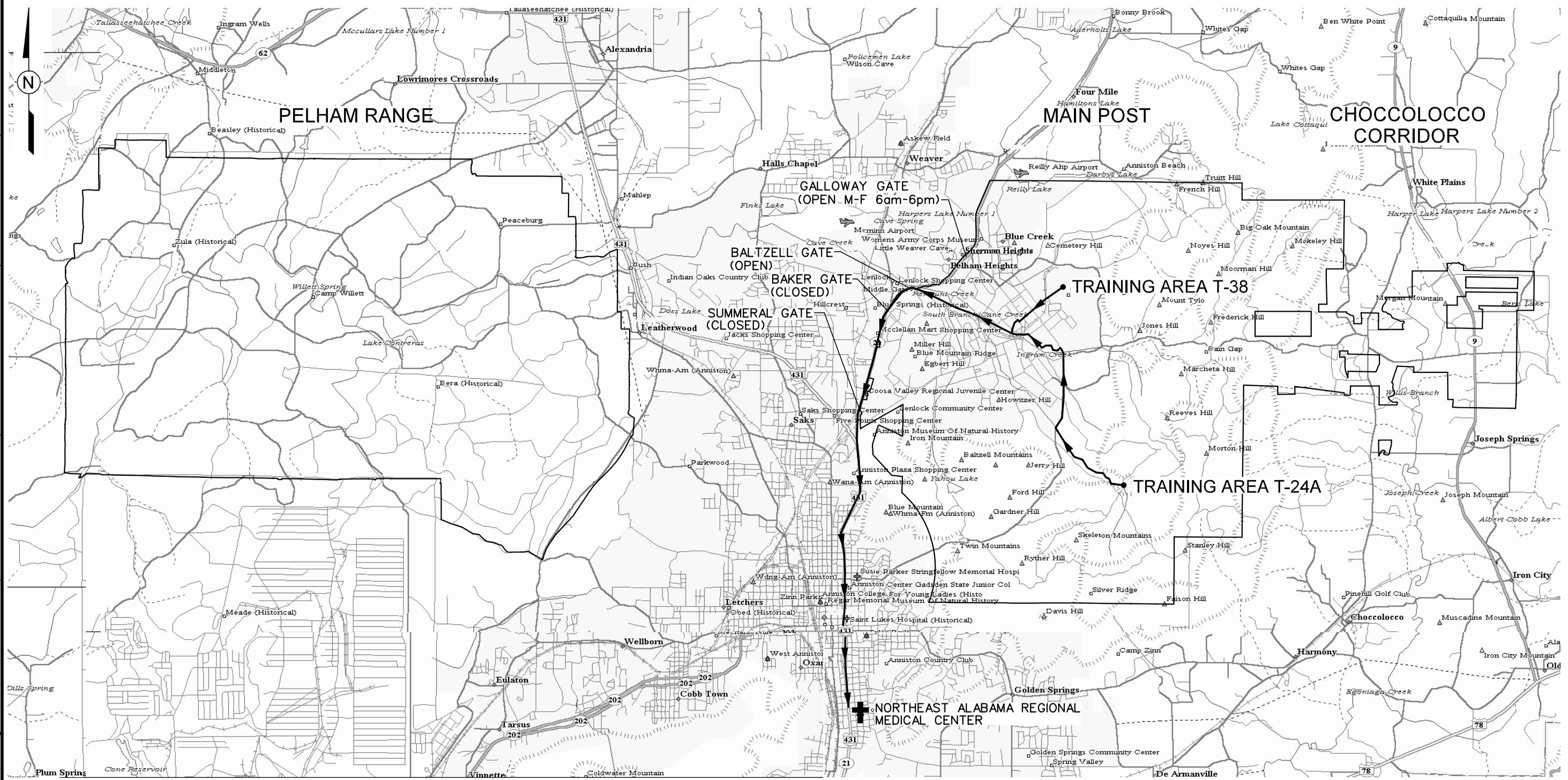
(Page 2 of 2)

Activity	Potential Hazards	Recommended Controls
Excavation Operations (continued)	Fire	Dry chemical fire extinguisher(s) will be readily available.
	Pinch points	Keep hands, fingers, and feet clear of moving parts.
	Heavy lifting	Any lifting over 60 pounds requires assistance or the use of a mechanical lifting device.
	Slip, trip, and fall hazards	Good housekeeping, keep work area clean. Continually inspect the work area for slip, trip, and fall hazards. Look where you step, ensure safe footing.
	Cut hazards.	Wear adequate hand protection.
	Traffic	Work area will be barricaded off.
		Personnel will wear reflective vests for high visibility.
	Hazard communication	Obtain MSDSs for materials used on site. Label all containers with identification of contents.
Equipment to be Used	Inspection Requirements	Training Requirements
<ul style="list-style-type: none"> • Heavy equipment • Shoring devices as determined by a qualified engineer 	<ul style="list-style-type: none"> • Pre-post maintenance • Visual prior to use 	<ul style="list-style-type: none"> • Tailgate safety meeting • Site-specific orientation • Hazardous waste operations • Hazard communication • Excavation safety

ATTACHMENT 1

T-38 and T-24A HOSPITAL EMERGENCY ROUTE

DWG. NO.: ... 796887es.775
 INITIATOR: G. SISCO
 DRAFT. CHECK. BY:
 PROJ. MGR.: J. YACOUB
 ENGR. CHECK. BY: S. MORAN
 DATE LAST REV.:
 STARTING DATE: 07/09/03
 DRAWN BY: D. BILLINGSLEY
 1/26/2004
 3:36:49 PM
 c:\cadd\Design\796887es.775



LEGEND:

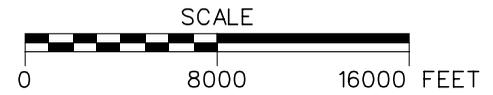
- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITAL
- INVESTIGATION SITES

DRIVING DIRECTIONS FROM BALTZELL GATE ROAD TO THE NORTHEAST ALABAMA MEDICAL CENTER

- LEAVING FORT MCCLELLAN ON BALTZELL GATE ROAD, TURN LEFT (SOUTH) ONTO AL HWY 21
- GO ~ 2.5 MILES WHERE AL HWY 21 MERGES WITH U.S. HWY 431 AND CONTINUE SOUTH
- CONTINUE SOUTH ON AL21/US431 FOR ~ 2.7 MILES
- TURN LEFT ONTO EAST 10th STREET
- GO ~ 0.2 MILE TO MEDICAL CENTER ON RIGHT
- NORTHEAST ALABAMA REGIONAL MEDICAL CENTER, 400 EAST 10 TH STREET
- PHONE NUMBER : (256) 235-5121

**FIGURE 5-1
HOSPITAL EMERGENCY ROUTE**

U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



ATTACHMENT 2

**EVALUATING OE/UXO/CWM HAZARDS
IN SUPPORT OF HTRW ACTIVITIES**



DEPARTMENT OF THE ARMY
HUNTSVILLE CENTER, CORPS OF ENGINEERS
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF:

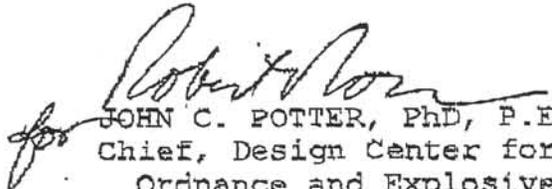
CEHNC-QE-DC (200-1C)

7 November 2003

MEMORANDUM FOR Commander, US Army Corps of Engineers, Mobile District, ATTN: Lee Coker (EN-GE), P O Box 2288, Mobile, AL 36628-0001

SUBJECT: Work Plan Concurrence

1. The Corps of Engineers, Huntsville Center has reviewed the "Site Specific Work Plan, 3X Scrap Removal, Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6), Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7), Fort McClellan, Calhoun County, Alabama". All comments have been satisfactorily addressed.
2. You have the US Army Corps of Engineers, Huntsville Center concurrence on this document.
3. If you have any questions, please call Dan Copeland at 256-895-1567.


for JOHN C. POTTER, PhD, P.E.
Chief, Design Center for
Ordnance and Explosives

Shaw has reviewed known site history, the results of previous investigations, and documentation provided by the Army for Training Area T-38 and T-24A. Based on this review, Shaw agrees with the Army's determination that the probability of encountering chemical agent during 3X scrap removal activities at either of these sites is remote.

DESIGN REVIEW COMMENTS

PROJECT Second Backcheck 3X Scrap Removal (10-063-03) CN

- | | | | |
|---|--|--|--------------------------------------|
| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input checked="" type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
| <input type="checkbox"/> ARCHITECTURAL | <input type="checkbox"/> ELECTRICAL | <input type="checkbox"/> ESTIMATING | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW Backcheck
 DATE 6 Nov 2003
 NAME Kellie Williams / ED-SY-S/ 256-895-1584-

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	CEHNC-ED-SY-S has reviewed this document and has the following comment(s).	
2.	PC#2.2	<p>The contractor has missed the point of this comment. I could not find a section or any procedures on what the ONSITE contractor personnel are to do in case they encounter suspect CWM while they are removing the 3X scrap. Will they run upwind? Conduct gross decontamination? Secure the item with plastic? Secure the area at a safe distance till EOD arrives? What will the project team do?</p>	<p>Comment noted. The following text will be added to Section 5.1 of the Contingency Plan per the discussion held on November 7, 2003 between CEHNC, USACE, and Shaw.</p> <p>In the event that chemical agent or a suspect CWM item is encountered during operations, site workers will be alerted to evacuate the site upwind. The initial exclusion zone for suspected agent or CWM will be established a minimum of 450 feet upwind. The suspect item will not be disturbed after discovery. EOD and the Site Safety and Health Officer (SSHO) will be notified immediately. EOD will mitigate the situation according to the procedures outlined in detail in Section 2.2 of the UXO Safety Plan.</p> <p>Following an alarm, all personnel will immediately evacuate the site. Two UXO technicians will cover the monitored CWM item and the end of the monitoring hose with plastic sheeting (or a tarp) and place sandbags (or suitable weighted objects) on the sheeting to secure it. Prior to exiting the exclusion zone, the UXO technicians will retrieve the DAAMS station, carry it to the monitoring personnel, and place it into a Ziploc bag.</p>

ACTION CODES W - WITHDRAWN
 A - ACCEPTED/CONCUR N - NON-CONCUR
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

DESIGN REVIEW COMMENTS

PROJECT Second Backcheck 3X Scrap Removal (10-063-03) CN

- | | | | |
|---|--|--|--------------------------------------|
| <input type="checkbox"/> SITE DEV & GEO | <input type="checkbox"/> MECHANICAL | <input checked="" type="checkbox"/> SAFETY | <input type="checkbox"/> SYSTEMS ENG |
| <input type="checkbox"/> ENVIR PROT& UTIL | <input type="checkbox"/> MFG TECHNOLOGY | <input type="checkbox"/> ADV TECH | <input type="checkbox"/> VALUE ENG |
| <input type="checkbox"/> ARCHITECTURAL | <input type="checkbox"/> ELECTRICAL | <input type="checkbox"/> ESTIMATING | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> STRUCTURAL | <input type="checkbox"/> INST & CONTROLS | <input type="checkbox"/> SPECIFICATIONS | |

REVIEW Backcheck
 DATE 6 Nov 2003
 NAME Kellie Williams / ED-SY-S/ 256-895-1584-

ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
3.	Medical Support	The contractor not Huntsville needs to do an assessment and determine that the potential of encountering agent is remote. If the contractor determines this, then the medical support agreements are not necessary.	<p>Comment noted. The following statement will be added to Attachment 2 of the SSHP.</p> <p>Shaw has reviewed known site history, the results of previous investigations, and documentation provided by the Army for Training Area T-38 and T-24A. Based on this review, Shaw agrees with the Army's determination that the probability of encountering chemical agent during 3X scrap removal activities at either of these sites is remote.</p>
4.	Medical Support	MOA. Was the Mobile District Attorney given the regulation that requires the MOA to be updated annually? It may still be valid but the regulation states that it will be updated annually. However, if it is determined that the potential of encountering agent is remote the MOA isn't even required.	<p>Comment noted. Discussions held on November 7, 2003 between CEHNC (K. Williams), USACE, and Shaw, have resolved this issue.</p>
5.	PC#4	<p>Why will you evacuate the site if 3X scrap is found to have levels greater than the AEL? This doesn't make sense. I do not believe that EOD is equipped to handle agent levels greater than the AEL. Please discuss what they will do. Please explain. Also, explain why 3X scrap found to contain levels greater than the AEL will not be decontaminated. Also, discuss what will happen to the scrap, as it cannot be transported.</p> <p>ACTION CODES W - WITHDRAWN A - ACCEPTED/CONCUR N - NON-CONCUR D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED</p>	<p>Comment noted. The following text will be added to Section 5.2 of the Contingency Plan per the discussion held on November 7, 2003 between CEHNC (K. Williams), USACE, and Shaw.</p> <p>If the GC/MSD monitoring of the 3X material confirms the presence of chemical agent >1.0 AEL, the site will be evacuated and the CACM secured. The CACM will remain in possession of the Army pending final Army disposition.</p>

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities

Date: 24-Sep-03

Name of person completing form: Steven Moran

Site Name: T-38

Title: Technical Lead

Job Number: 796887

Signature: *Steven G Moran*

1a. Have the historical records available for this HTRW site been reviewed? Yes No

If the answer to 1a. is yes, proceed to 1b.
If the answer to 1a. is no, review site information prior to completing this form.

1b. Is there recent information (site walk, worker interviews, etc.) that indicates a potential OE/CWM hazard at this site? Yes No

Proceed to 2.

2. According to the records review, is this site known or suspected to have been used for:

	Yes	No
2a. Manufacturing, production, or shipping of conventional or chemical warfare materiel (CWM) OE:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Live fire testing of any ordnance:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conventional or CWM OE training:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storage of conventional or CWM OE:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Disposal or demilitarization of conventional or CWM OE:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other (specify):		

	Yes	No
2b. Manufacturing, production, or shipping of chemical agent:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Research or testing of chemical agent:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Chemical agent related training:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Storage of chemical agent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Disposal or demilitarization of chemical agent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other (specify):		

Any 2a question answered "YES" indicates UXO support is required for all site activities. If all 2a questions are answered "NO", UXO support may not be required. Refer to Installation-Wide Safety and Health Plan (SHP) for additional information concerning UXO support. Proceed to question 2b.

Any 2b question answered "YES" requires the remainder of this form to be completed. If all 2b questions are answered "NO", real-time monitoring for chemical agent will not be required and completing the remainder of this form is not required. Refer to SHP for additional information concerning agent monitoring.

Additional space for notes and explanations on page 4.
Continue to page 2 of 4 -

Site Name: T-38

Job Number: 796887

Date: 24-Sep-03

3. For sites where the manufacturing, testing, storage, or disposal of CWM is suspected:	Yes	No
Is there evidence that the CWM is/was containerized in potentially unexploded ordnance:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is there evidence that the CWM is/was containerized in nonexplosive containers:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is there evidence that the CWM is open to the environment (i.e., in an open container or free liquid/solid in the soil/water):	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Has the site been previously monitored or sampled for chemical agent or agent breakdown products:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
For any "YES" above, was the agent or breakdown product identified?	<input type="checkbox"/>	<input type="checkbox"/>

For any "Yes", list types of agent (mustard, lewisite, etc.) and the form (in ordnance, in drum, etc.) the CWM is expected to be found (or state "unknown"):

The area was reportedly used for storage of HD. Decontamination occurred on site using DANC, STB, and DS2.

List agent breakdown products identified:

Thiodiglycol in 2 monitoring wells and 1,4-Dithiane in 1 well. Thiodiglycol in 1 soil boring (surface and subsurface soil [10-12']) and in 2 sediment samples. None of these concentrations exceeded their SSSLs.

4. Defining the Potential for the Presence of CWM:	Agent Monitoring Requirements for Site Activities:
<p>4a. High Presence Potential – Definition: CWM is known or highly suspected to be present at the site in a condition (within ordnance and/or nonexplosive container, or in an uncontainerized form in sufficient volume that weathering of the product has not rendered it harmless) that will cause potential harm to personnel if it is encountered.</p>	<p>Mandatory personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).</p>
<p>4b. Moderate Presence Potential - Definition: CWM is suspected to have been present at the site, but has been previously removed and/or decontaminated, or has been open to the environment such that it is expected to have degraded and been rendered harmless.</p>	<p>The need for personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples will be reviewed on a site-by-site basis. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).</p>
<p>4c. Low Presence Potential – Definition: No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.).</p>	<p>No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP.</p>

Continue to page 3 of 4 -

Site Name: T-38

Job Number: 796887

Date: 24-Sep-03

Based on the information available for this site, including information gathered during completion of this form, the potential for CWM to be present at this site, as defined above, is expected to be: **MODERATE**

Exceptions/Explanations:

(additional space for notes and explanations on page 4)

5. Based on the information provided in questions 1 through 5, above, the following guidelines will be used for establishing PPE requirements for activities to be performed at this site; Specific details are provided in the SSHP:

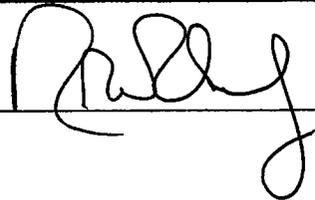
<p>5a. High Exposure Potential - High exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw CIH, PPE for all personnel in the exclusion zone at a site identified as having a "High Exposure Potential" will be Level B (supplied air) or Level C (full-face respirator with HEPA/Acid Gas/OV cartridges w/ emergency egress hood) and chemically resistant coveralls. Specific PPE requirements are in the SSHP for this site.</p>
<p>5b. Moderate Exposure Potential - Moderate exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw CIH, PPE for all personnel in the exclusion zone at a site identified as having a "Moderate Exposure Potential" will be Modified Level D (disposable coveralls and emergency egress hood) carried by all personnel. Specific PPE requirements are in the SSHP for this site.</p>
<p>5c. Low Exposure Potential - Low exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw CIH, no additional PPE requirements above those stated in the SSHP are needed for sites identified as having "Low Exposure Potential." Specific PPE requirements are in the SSHP for this site.</p>

Based on all available information, the exposure potential at this site is considered to be: **MODERATE**

Exceptions/Explanations: See attached letters and reference.

Review Signatures:

Shaw UXO Technical Manager



Date: 25/9/03

Shaw H&S Specialist



Date: 9/30/03

Site Name:T-38

Job Number: 796887

Date: 24-Sep-03

Additional Notes and Explanations:

See attached letter dated September 7, 2002 from Ellis Pope, USACE, Mobile District.

See attached memorandum dated Spetember 5, 2001 from John Potter, USACE, Huntsville Center.

Reference: Parsons, 2002. Final CWM EE/CA, Fort McClellan, Alabama, June.

These documents state that CWM or CWM breakdown products were not detected during the SI, RI, or EE/CA investigations conducted at T-38.

In addition, the EE/CA concluded that the probability of encountering CWM during follow-on intrusive activities at T-38 is considered remote* based on historical site uses and the results of previous investigations. Therefore, the installation commander, or designated representative, assumes the risk of conducting future site activities at T-38 as a non-CWM site.

* Army Regulation 385-10, updated February 2000, substitutes the word "seldom" and defines it as "remotely possible; could occur at some time."

See attached Probability Assessment Report dated September 2003, approved by Ron Levy, BRAC Environmental Coordinator, FTMC, Alabama.

Site Name: T-24A

Job Number: 796887

Date: 24-Sep-03

3. For sites where the manufacturing, testing, storage, or disposal of CWM is suspected:	Yes	No
Is there evidence that the CWM is/was containerized in potentially unexploded ordnance:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is there evidence that the CWM is/was containerized in nonexplosive containers:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is there evidence that the CWM is open to the environment (i.e., in an open container or free liquid/solid in the soil/water):	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Has the site been previously monitored or sampled for chemical agent or agent breakdown products:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
For any "YES" above, was the agent or breakdown product identified?	<input type="checkbox"/>	<input type="checkbox"/>

For any "Yes", list types of agent (mustard, lewisite, etc.) and the form (in ordnance, in drum, etc.) the CWM is expected to be found (or state "unknown"):

The site was used as a chemical munitions disposal area including CG, BZ, GB, and HD. Decontaminants included STB, and DS2.

List agent breakdown products identified:

Methylphosphonic acid was detected in 1 surface and 1 subsurface soil sample. Thiodiglycol was detected in 3 sediment samples and 1 groundwater sample. All detections were below SSSLs.

4. Defining the Potential for the Presence of CWM:	Agent Monitoring Requirements for Site Activities:
<p>4a. High Presence Potential – Definition: CWM is known or highly suspected to be present at the site in a condition (within ordnance and/or nonexplosive container, or in an uncontainerized form in sufficient volume that weathering of the product has not rendered it harmless) that will cause potential harm to personnel if it is encountered.</p>	<p>Mandatory personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).</p>
<p>4b. Moderate Presence Potential - Definition: CWM is suspected to have been present at the site, but has been previously removed and/or decontaminated, or has been open to the environment such that it is expected to have degraded and been rendered harmless.</p>	<p>The need for personal and perimeter air monitoring using the DAAMS, MINICAMS, and RTAP collection/analysis methods with off-site surety laboratory confirmation of all environmental samples will be reviewed on a site-by-site basis. Specific monitoring criteria (equipment types and sampling station placement, percentage of personnel monitored, etc.) to be established in the Site Specific Safety and Health Plan (SSHP).</p>
<p>4c. Low Presence Potential – Definition: No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.).</p>	<p>No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP.</p>

Continue to page 3 of 4 -

Site Name: T-24A

Job Number: 796887

Date: 24-Sep-03

Based on the information available for this site, including information gathered during completion of this form, the potential for CWM to be present at this site, as defined above, is expected to be: **MODERATE**

Exceptions/Explanations:

(additional space for notes and explanations on page 4)

5. Based on the information provided in questions 1 through 5, above, the following guidelines will be used for establishing PPE requirements for activities to be performed at this site; Specific details are provided in the SSHP:

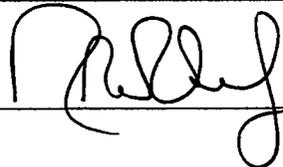
<p>5a. High Exposure Potential - High exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw CIH, PPE for all personnel in the exclusion zone at a site identified as having a "High Exposure Potential" will be Level B (supplied air) or Level C (full-face respirator with HEPA/Acid Gas/OV cartridges w/ emergency egress hood) and chemically resistant coveralls. Specific PPE requirements are in the SSHP for this site.</p>
<p>5b. Moderate Exposure Potential - Moderate exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw CIH, PPE for all personnel in the exclusion zone at a site identified as having a "Moderate Exposure Potential" will be Modified Level D (disposable coveralls and emergency egress hood) carried by all personnel. Specific PPE requirements are in the SSHP for this site.</p>
<p>5c. Low Exposure Potential - Low exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the Shaw CIH, no additional PPE requirements above those stated in the SSHP are needed for sites identified as having "Low Exposure Potential." Specific PPE requirements are in the SSHP for this site.</p>

Based on all available information, the exposure potential at this site is considered to be: **MODERATE**

Exceptions/Explanations: See attached letters and reference.

Review Signatures:

Shaw UXO Technical Manager



Date: 25 Sep 03

Shaw H&S Specialist



Date: 9/30/03

Site Name:T-24A

Job Number: 796887

Date: 24-Sep-03

Additional Notes and Explanations:

See attached letter dated September 7, 2002 from Ellis Pope, USACE, Mobile District.

See attached memorandum dated Spetember 5, 2001 from John Potter, USACE, Huntsville Center.

Reference: Parsons, 2002. Final CWM EE/CA, Fort McClellan, Alabama, June.

These documents state that CWM or CWM breakdown products were not detected during the SI, RI, or EE/CA investigations conducted at T-24A.

In addition, the EE/CA concluded that the probability of encountering CWM during follow-on intrusive activities at T-24A is considered remote* based on historical site uses and the results of previous investigations. Therefore, the installation commander, or designated representative, assumes the risk of conducting future site activities at T-24A as a non-CWM site.

* Army Regulation 385-10, updated February 2000, substitutes the word "seldom" and defines it as "remotely possible; could occur at some time."

See attached Probability Assessment Report dated September 2003, approved by Ron Levy, BRAC Environmental Coordinator, FTMC, Alabama.

Probability Assessment
3X Scrap Removal at Training Area T-38,
Former Technical Escort Reaction Area, Parcel 186(6)
Fort McClellan, Calhoun County, Alabama

1.0 INTRODUCTION

The U.S. Army is conducting environmental studies of the impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE contracted Shaw Environmental, Inc. (Shaw) to perform 3X scrap removal activities at Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6). In accordance with Department of the Army (DA) memorandum *Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance*, Army Regulation (AR) 385-10, *The Army Safety Program*, and AR 385-61, *Toxic Chemical Agent Safety Standards*, this document is provided to assess the probability of an accident occurring involving chemical agent contaminated media (CACM) during the 3X scrap removal at Training Area T-38.

2.0 SITE BACKGROUND

Training Area T-38 was the Former Technical Escort Reaction area also known as the Toxic Gas Yard. The site, approximately 6 acres in size, is located along a topographic ridge, Reservoir Ridge, east of Ruskin Avenue and the cantonment area on the Main Post. The fenced area in the northeastern portion of the parcel was referred to as the Toxic Agent (or Gas) Yard. The training area was reportedly used from 1961 to 1972 for training Technical Escort Unit (TEU) personnel in techniques of eliminating toxic hazards caused by mishaps to chemical munitions during transport.

The area also was used for storage of toxic agents and munitions. The storage facilities included four 1-ton containers of distilled mustard (HD). In addition, decontaminants were reportedly stored on at least two locations and were used for demonstration purposes. Extensive decontamination was reportedly conducted at the site for spills and for decontaminating training aids. The types of decontaminants used, quantities, and frequency of use are unknown, but are assumed to include decontamination agent noncorrosive (DANC), supertropical bleach (STB), and decontamination solution number 2 (DS2) (ESE, 1998).

Training Area T-38 is fenced with an entrance gate in the northern section. Reportedly, a former disposal pit, approximately 10 by 20 by 10 feet, was located in the central portion of the site and was used for disposal of decontaminants and other hazardous wastes. A burial site for an HD drum was also reportedly located in the southern portion of the site.

3.0 PREVIOUS INVESTIGATIONS

Previous investigations have been conducted at Training Area T-38, as summarized in the following paragraphs.

Site Investigation (SI). In 1993, Science Applications International Corporation (SAIC) conducted an SI that included limited geophysical surveys and collection of soil samples from four locations suspected to be areas of prior site activity. The soil samples collected were screened for HD, nerve agent (VX), and sarin (GB) using a miniature continuous air monitoring system (MINICAMS). Chemical agent was not detected in the screening samples. In addition, chemical agent degradation products were not detected in the laboratory (SAIC, 1993).

Remedial Investigation (RI). In 1995, SAIC conducted an RI at Training Area T-38 that included additional geophysical surveys, soil sampling, and the installation of monitoring wells and one soil boring into the disposal pit. Also, numerous shallow soil samples were screened using MINICAMS. Chemical agent was not detected in the soil samples collected. However, volatile organic compound (VOC) contamination was discovered in the groundwater consisting predominantly of chemical decontamination solutions (SAIC, 2000).

Chemical Warfare Materiel (CWM) Engineering Evaluation/Cost Analysis (EE/CA). In 2001, Parsons Engineering Science, Inc. (Parsons) conducted an EE/CA at T-38 to address potential CWM or other subsurface disposal. Field activities included geophysical surveys, excavation of suspect anomalies, continuous air monitoring using MINICAMS, trenching, soil sampling, and laboratory analysis of soil samples for GB, HD, and breakdown products (Parsons, 2002). CWM were not detected during air monitoring, headspace screening, or laboratory analysis of the samples. Parsons concluded that the probability of encountering chemical agent during follow-on intrusive activities at Training Area T-38 is considered remote (Parsons, 2002).

4.0 3X SCRAP REMOVAL ACTIVITIES

Shaw Environmental, Inc. (Shaw) will perform excavation activities at Training Area T-38 to locate, identify, sort, package, and verify 3X scrap material in preparation for off-site disposal (Shaw, 2003). Shaw will also perform UXO construction support incidental to the 3X scrap

removal activities. The anomalies to be excavated at T-38 are believed to be buried in disposal pits that were used to support the training exercises conducted from 1961 to 1972. Based on the results of previous investigations, Shaw does not expect to find any hazardous ordnance and explosives (OE) items or CACM. Only 3X scrap material is anticipated in the excavations. If OE material is encountered that cannot be positively identified as inert, or if there is any indication of the presence of CACM, all work will be immediately halted and the site will be evacuated.

During site activities chemical agent air monitoring will be performed. MINICAMS will be setup near the excavation and the screening to monitor for chemical agents during removal and sorting activities. Air monitoring support will be provided for chemical agents (HD, lewisite [L], GB, and VX) and Category 2 compounds (cyanogen chloride [CK] and phosgene [CG]). One near-real-time (NRT) agent air monitor (e.g., MINICAMS) will be required for GB and VX and a second NRT monitor will be used for HD and L. For the Category 2 compounds, Dräger® tubes will be used for air monitoring. Air monitoring surveys will occur prior to excavation (baseline) and during excavation, screening, 3X clearing of waste in the hot boxes, and during closeout.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on known site history and the results of previous investigations conducted at T-38, the probability of encountering chemical agent when removing 3X is considered “remote”, i.e., could occur at some time (also described ” in AR 385-10 and AR 385-61 as having a hazard probability of “seldom”). Therefore, this assessment concludes that there is a need for UXO construction support and chemical agent air monitoring to safely support 3X scrap removal activities at T-38.

6.0 REFERENCES

Environmental Science and Engineering, Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Parsons Engineering Science, Inc. (Parsons), 2002, *Final Chemical Warfare Materiel (CWM) Engineering Evaluation/Cost Analysis (EE/CA), Fort McClellan, Alabama*, June.

Science Applications International Corporation (SAIC), 2000, *Final Remedial Investigation/Baseline Risk Assessment Report, Fort McClellan, Alabama*, July.

Science Application International Corporation (SAIC), 1993, *Site Investigation Report, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Installation Restoration Division, Aberdeen Proving Ground, Maryland, August 31.

Shaw Environmental, Inc. (Shaw), 2003, *Site-Specific Work Plan, 3X Scrap Removal, Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) and Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7)*, July.

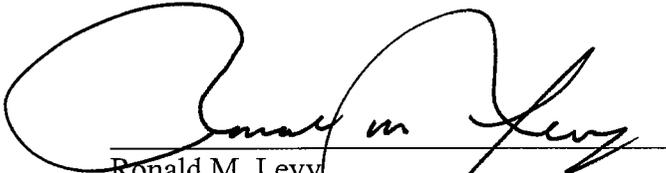
U.S. Department of the Army, 1998, *Interim Guidance for Biological Warfare Materiel (BWM) and Non-Stockpile Chemical Warfare (CWM) Response Activities*, April.

U.S. Department of the Army, 2000, *The Army Safety Program*, Army Regulation 385-10, February.

U.S. Department of the Army, 2002, *Toxic Chemical Safety Standards*, Army Regulation 385-61, March.

Approved by:

This document has been prepared in accordance with AR 385-10, AR 385-61, and Department of the Army memorandum "Interim Guidance for Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activities," which require that risk be determined to human health and the environment at potential non-stockpile CWM sites. I concur with the conclusions presented in this risk assessment document regarding the potential for encountering chemical agent during 3X scrap removal activities at Training Area T-38. Per the signed Oct 2002 CWM EE/CA Action Memorandum, the Army assumes the risk of conducting site activities as a non-CWM site.



Ronald M. Levy
BRAC Environmental Coordinator
Fort McClellan, Alabama

23 Sept 2003
Date

Probability Assessment 3X Scrap Removal at Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7) Fort McClellan, Calhoun County, Alabama

1.0 INTRODUCTION

The U.S. Army is conducting environmental studies of the impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE contracted Shaw Environmental, Inc. (Shaw) to perform 3X scrap removal activities at Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7). In accordance with Department of the Army (DA) memorandum *Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance*, Army Regulation (AR) 385-10, *The Army Safety Program*, and AR 385-61, *Toxic Chemical Agent Safety Standards*, this document is provided to assess the probability of an accident occurring involving chemical agent contaminated media (CACM) during the 3X scrap removal at Training Area T-24A.

2.0 SITE BACKGROUND

The Former Chemical Munitions Disposal Area, Parcel 187(7) occupies approximately 1.5 acres and is located on the Main Post south of Holloway Hill near the center of several overlapping ranges. The parcel is fenced and posted. This former chemical munitions disposal area was used from an unknown date until 1973. Area T-24A is located within Range 24A. This area was previously used as a rifle range and machine gun range, and contained an explosives ordnance disposal site. Training sites within the parcel included two burning pits, each measuring approximately 16 square feet. Training activities conducted at this site reportedly included disposal of chemical munitions filled with phosgene (CG), 3-quinuclidinylbenzilate (BZ), sarin (GB), and distilled mustard (HD). The decontaminants reportedly used on this site were supertropical bleach (STB) and decontamination solution number 2.

The two burning pits were used in chemical munitions disposal training. Each pit's depth was assumed to be approximately 6 feet based on standard operating procedures. Personnel interviewed during the environmental baseline survey site visit recall the pits measuring approximately 12 feet across and 4 feet deep (ESE, 1998). This area may have experienced a large HD spill, according to Weston. After each training exercise, the area was sprayed with STB (ESE, 1998). Each pit was reportedly filled with soil at closure in 1973. During the 1973

closure, the Army collected soil samples from 1 to 4 inches deep for chemical warfare material (CWM) analysis. HD, CG, BZ, and GB were not detected in the samples (SAIC, 1993).

3.0 PREVIOUS INVESTIGATIONS

Previous investigations have been conducted at Training Area T-24A, as summarized in the following paragraphs.

Site Investigation. In 1993, Science Applications International Corporation (SAIC) performed geophysical surveys and collected soil, surface water, and sediment samples at the site. Field screening and laboratory analysis of the samples did indicate the presence of GB, HD, or their breakdown products (SAIC, 1993).

Remedial Investigation (RI). SAIC conducted an RI at the site in 1995 consisting of a magnetometer survey, field screening of surface soils using a miniature continuous air monitoring system (MINICAMS), excavation of test pits, installation of monitoring wells, and collection and analysis of soil, surface water, and sediment samples. Test trenches were excavated by TEU in one of the burn pits. Materials encountered in the pit included charred wood, nails, and gas can handles. Excavation was discontinued after ordnance was encountered. Three soil samples were collected from the pit. Field screening of soils for CWM and laboratory analysis for CWM breakdown products did not indicate the presence of CWM in soils. Metals, volatile organic compounds, semivolatile organic compounds, and possibly explosives were detected in the soil samples. Field screening and laboratory analysis of surface water samples did not detect CWM compounds (HD and GB) or their breakdown products. The surface water samples contained metals. Groundwater samples contained benzene, phenol, pentachlorophenol, and trace metals (SAIC, 2000).

Chemical Warfare Materiel (CWM) Engineering Evaluation/Cost Analysis (EE/CA).

In 2001, Parsons Engineering Science, Inc. (Parsons) conducted an EE/CA at Training Area T-24A to address potential CWM or other subsurface disposal. Field activities included geophysical surveys, excavation of suspect anomalies, continuous air monitoring using MINICAMS, trenching, soil sampling, and laboratory analysis of soil samples for GB, HD, and breakdown products (Parsons, 2002). Chemical agents were not detected during air monitoring, headspace screening, or laboratory analysis of the samples. Parsons concluded that the probability of encountering CWM during follow-on intrusive activities at Training Area T-24A is considered remote (Parsons, 2002).

4.0 3X SCRAP REMOVAL ACTIVITIES

Shaw Environmental, Inc. (Shaw) will perform excavation activities at Training Area T-24A to locate, identify, sort, package, and verify 3X scrap material in preparation for off-site disposal (Shaw, 2003). Shaw will also perform UXO construction support incidental to the 3X scrap removal activities. The anomalies to be excavated at T-24A are believed to be burial disposal pits for 3X ordnance and explosives (OE) items that were used to support training exercises. Based on the results of previous investigations, Shaw does not expect to find any hazardous OE items or chemical agent contaminated media (CACM). Only 3X scrap material is anticipated in the excavations. If OE material is encountered that cannot be positively identified as inert, or if there is any indication of the presence of CACM, all work will be immediately halted and the site will be evacuated.

During site activities chemical agent air monitoring will be performed. MINICAMS will be setup near the excavation and the screening to monitor for chemical agents during removal and sorting activities. Air monitoring support will be provided for chemical agents (HD, lewisite [L], GB, and VX) and Category 2 compounds (cyanogen chloride [CK] and CG). One near-real-time (NRT) agent air monitor (e.g., MINICAMS) will be required for GB and VX and a second NRT monitor will be used for HD and L. For the Category 2 compounds, Dräger® tubes will be used for air monitoring. Air monitoring surveys will occur prior to excavation (baseline), during excavation, screening, 3X clearing of waste in the hot boxes, and during closeout.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on known site history and the results of previous investigations conducted at T-24A, the probability of encountering chemical agent when removing 3X is considered “remote”, i.e., could occur at some time (also described as having a hazard probability of “seldom” in AR 385-10 and AR 385-61). Therefore, this assessment concludes that there is a need for UXO construction support and chemical agent air monitoring to safely support 3X scrap removal activities at T-24A.

6.0 REFERENCES

Environmental Science and Engineering, Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, January.

Parsons Engineering Science, Inc. (Parsons), 2002, *Final Chemical Warfare Materiel (CWM) Engineering Evaluation/Cost Analysis (EE/CA), Fort McClellan, Alabama*, June.

Science Applications International Corporation (SAIC), 2000, ***Final Remedial Investigation/Baseline Risk Assessment Report, Fort McClellan, Alabama***, July.

Science Application International Corporation (SAIC), 1993, ***Site Investigation Report, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Installation Restoration Division, Aberdeen Proving Ground, Maryland, August 31.

Shaw Environmental, Inc. (Shaw), 2003, ***Site-Specific Work Plan, 3X Scrap Removal, Training Area T-38, Former Technical Escort Reaction Area, Parcel 186(6) and Training Area T-24A, Former Chemical Munitions Disposal Area, Parcel 187(7)***, July.

U.S. Department of the Army, 1998, ***Interim Guidance for Biological Warfare Materiel (BWM) and Non-Stockpile Chemical Warfare (CWM) Response Activities***, April.

U.S. Department of the Army, 2000, ***The Army Safety Program***, Army Regulation 385-10, February.

U.S. Department of the Army, 2002, ***Toxic Chemical Safety Standards***, Army Regulation 385-61, March.

Approved by:

This document has been prepared in accordance with AR 385-10, AR 385-61, and Department of the Army memorandum "Interim Guidance for Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activities," which requires that risk be determined to human health and the environment at potential non-stockpile CWM sites. I concur with the conclusions presented in this risk assessment document regarding the potential for encountering CWM during 3X scrap removal activities at Training Area T-24A. Per the signed Oct 2002 CWM EE/CA Action Memorandum, the Army assumes the risk of conducting site activities as a non-CWM site.



Ronald M. Levy
BRAC Environmental Coordinator
Fort McClellan, Alabama

23 Sept 2003
Date

ATTACHMENT 3

**SITE-SPECIFIC UXO SAFETY PLAN
FOR TRAINING SITES T-24A AND T-38**