

Draft
Site-Specific Safety and Health Plan Attachment
Remedial Investigation at
Former Large Caliber Weapons Range, Parcel 114Q-X

Fort McClellan
Calhoun County, Alabama
EPA ID No. AL7 210 020 562

Prepared for:

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Prepared by:

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Knoxville, Tennessee 37923

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

January 2003

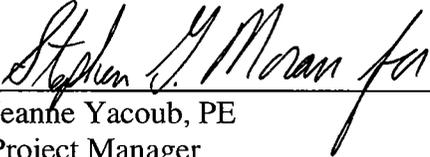
Revision 0

The following SSHP has been designed for the methods presently contemplated by the company for execution of the proposed work. Therefore, the SSHP 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 SSHP may have to be modified. Therefore, the company only makes representations or warranties as to the adequacy of this SSHP for currently anticipated activities and conditions.

This site-specific safety and health plan (SSHP) must be used in conjunction with the installation-wide safety and health plan, and the installation-wide ordnance and explosives management plan, Fort McClellan, Alabama.

**Site-Specific Safety and Health Plan Attachment Approval
Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific safety and health plan attachment for the remedial investigation at the Former Large Caliber Weapons Range, Parcel 114Q-X, Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

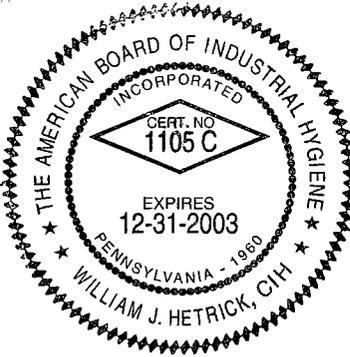


Jeanne Yacoub, PE
Project Manager

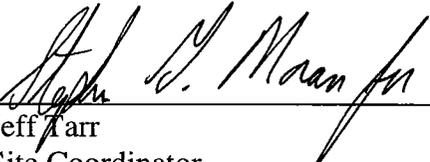
1/30/03
Date



Bill Hetrick, CIH
Health & Safety Manager



1/30/03
Date



Jeff Farr
Site Coordinator

1/30/03
Date

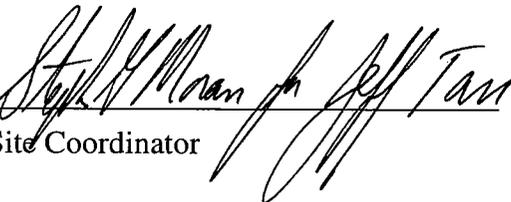
Acknowledgments

The final approved version of this site-specific safety and health plan (SSHP) attachment for the remedial investigation at the Former Large Caliber Weapons Range, Parcel 114Q-X, 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 six months until project completion.


Project Manager

1/30/03
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 Coordinator

01/30/03
Date

Fort McClellan Gate Hours

Baltzell Gate	Baltzell Road. Open 24 hours daily, 7 days a week.
Galloway Gate	Galloway Road. Open 6 am to 6 pm Monday through Friday.

Fort McClellan Project Emergency Contacts

Range Control Office (Main Post).....	(256) 848-6772
Fire Department (off post)	911
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
(Mike Smith, CEHNC)	cell phone (256) 759-3931
UXO Emergencies	(256) 895-1598
(Mike Smith, CEHNC)	cell phone (256) 759-3931
UXO Nonemergencies/Reporting Only (Ronald Levy)	(256) 848-6853
National Response Center & Terrorist Hotline.....	(800) 424-8802
Poison Control Center.....	(800) 222-1222
EPA Region IV	(404) 562-8725
Ronald Levy, BRAC Environmental Coordinator, FTMC Transition Force	(256) 848-6853
Lisa Holstein, FTMC Transition Force.....	(256) 848-7455
Lee Coker, U.S. Army Corps of Engineers, Mobile District.....	(251) 690-3099
Phillip Stroud, Alabama Department of Environmental Management	(334) 270-5646
Doyle Brittain, EPA Region IV	(404) 562-8259
Ross McCollum, U.S. Army Corps of Engineers, Mobile District.....	(251) 690-3113
Mike Moore, Fort McClellan Safety Office	(256) 848-5433
Darryl Stabile, U.S. Army Corps of Engineers.....	(251) 690-2784
Jeanne Yacoub, IT Project Manager.....	(770) 663-1429
Jeff Tarr, IT Site Manager.....	(256) 848-3482, -3499
Bill Hetrick, IT H&S Manager	(865) 692-3571
Dr. Jerry H. Berke, Health Resources Occupational Physician	(800) 350-4511

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List of Acronyms

See Attachment 1 of the Site-Specific Field Sampling Plan for the list of Abbreviations and Acronyms.

1.0 Site Work Plan Summary

Project Objective. The objective of this remedial investigation (RI) at Fort McClellan (FTMC), Calhoun County, Alabama, is to collect and analyze samples at the Former Large Caliber Weapons Range, Parcel 114Q-X. Specifically, IT Corporation (IT) will conduct an RI to further determine the extent of contamination resulting from training activities that occurred at the site and to determine the most appropriate remedial actions potentially necessary. The data collected will also be utilized to evaluate the level of risk to human health and the environment posed by release of chemicals. The sample media, locations, and analytical parameters are identified in the SFSP.

Project Tasks

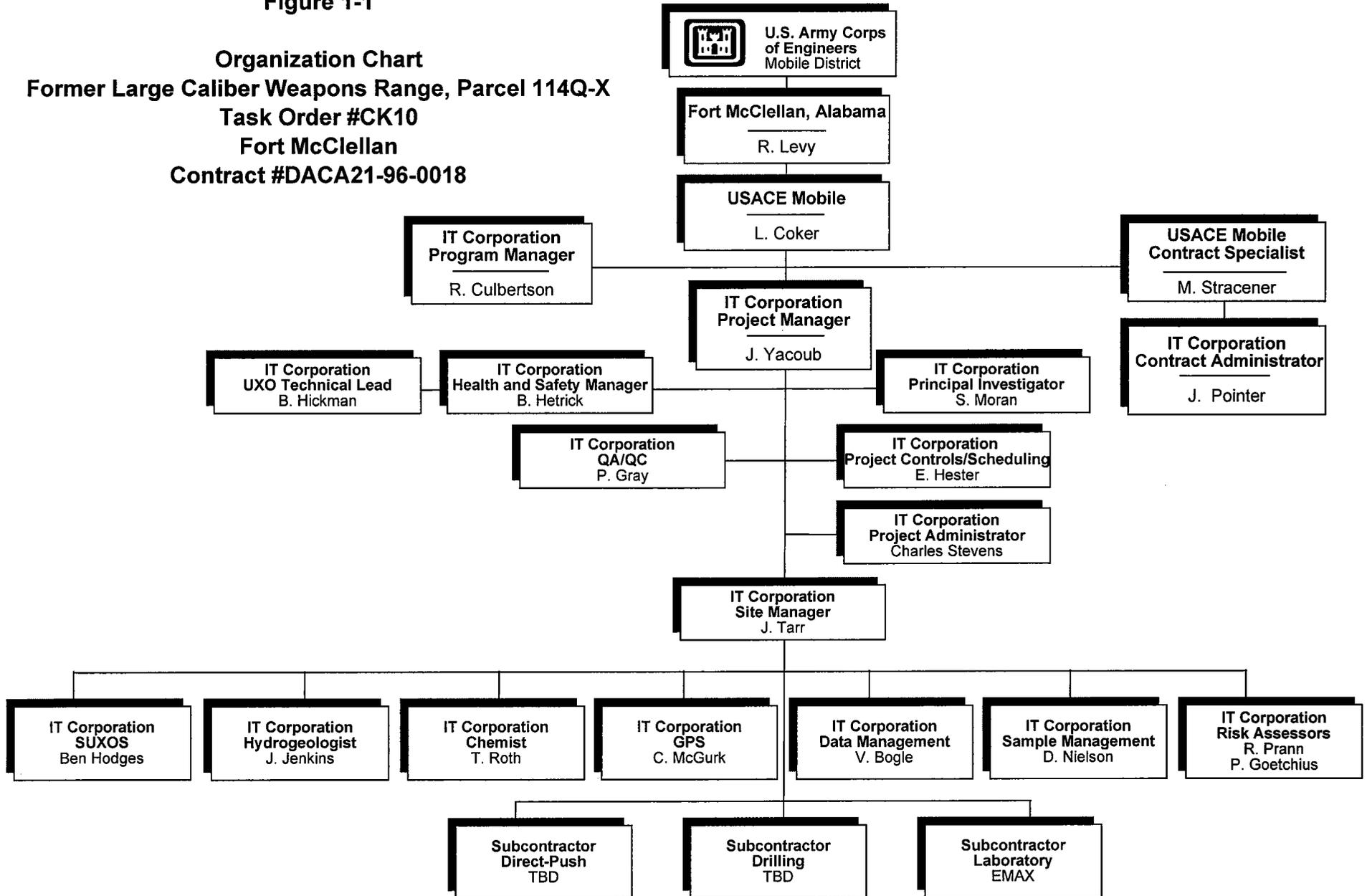
- Conduct a surface and near-surface unexploded ordnance (UXO) survey over all areas to be included in the sampling effort.
- Provide downhole UXO anomaly avoidance support for all intrusive drilling activity to determine the presence of potential downhole hazards.
- Install residuum groundwater monitoring wells
- Screening of surface soil samples using x-ray fluorescence (XRF) at approximately 80 locations within the area of Parcel 114Q-X and collection of XRF QA/QC samples from approximately eight of the 80 XRF locations to be analyzed for lead.
- Collect 11 groundwater samples (5 proposed and 6 pre-existing locations), 20 surface soil samples, 40 subsurface soil samples, 5 surface water samples, and 5 sediment samples.

Personnel Requirements. Up to 15 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 shall be familiar with the requirements of this site-specific safety and health plan (SSHP) and UXO safety plan attachment. This SSHP must be used in conjunction with the SHP and installation-wide ordnance and explosives management plan for FTMC, Alabama.

Figure 1-1

Organization Chart
Former Large Caliber Weapons Range, Parcel 114Q-X
Task Order #CK10
Fort McClellan
Contract #DACA21-96-0018



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 indicates specific chemical and physical hazards that may be present and encountered during each task from on-site operations. 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).

Attachment 1, Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities, has been prepared to identify additional ordnance and explosives (OE) site information. The evaluation has determined the potential for the presence and exposure to chemical warfare material (CWM) is low. Parcel 114Q-X is not a suspect CWM site based on archive searches and site walks. Therefore, emergency escape/egress supplied air respirators are not required for this RI during intrusive sampling activities.

Parcel 114Q-X falls within the "Possible Explosive Ordnance Impact Areas" shown on Plate 10 of the *September 2001 Archives Search Report, Maps, Revision 1, Fort McClellan, Anniston, Alabama*; therefore, UXO surface sweeps for XRF screening locations at the grid nodes and downhole surveys of soil borings will be required to support field activities on this site. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purposes of UXO avoidance. In cases where the XRF grid node sample location falls within an anomalous area, the XRF sampling point will be off set to a safe distance where hand tamping and compaction for XRF screening can be safely achieved.

Table 2-1 contains the toxicological and physiological properties of chemicals anticipated or to be used at the Former Large Caliber Weapons Range, Parcel 114Q-X. Contaminants of concern identified in previous site media investigations are primarily metals and volatile organic compounds.

Radiation hazards are not anticipated from previous site activities at the Former Large Caliber Weapons Range, Parcel 114Q-X. However, the field screening to determine the horizontal extent of the presence of lead and copper in surface soil using the NITON XRF instrument requires general radiation awareness training. The XRF contains a cadmium ¹⁰⁹, americium ²⁴¹, and iron ⁵⁵ sealed radioactive sources. Operators of the XRF shall be trained in the safe use of

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 4)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Acetone [67-64-1]	9.7	13-100	Inh Ing Con	Irritated eyes, nose, and throat; headache, dizziness; dermatitis, CNS depression	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	1,000 ppm 500 ppm 250 ppm	750 ppm	PEL TLV REL	2,500 ppm (10% LEL)
Fuel oil (diesel oil, medium)	?	?	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	
Gasoline [8006-61-9]	?	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	?
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

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 4)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43–200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsi- ness, 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	12,000 ppm
Lead {7439-92-1}	N/A	N/A	Inh Ing Con	Lightheadedness; nausea, headache; numbness of the extremities, muscular weak- ness; irritation of the eyes and nose; dermatitis; chemi- cal pneumonia; giddiness.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.050 mg/m ³ 0.050 mg/m ³ 0.100 mg/m ³		PEL TLV REL	100 mg/m ³
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	25,000 ppm
Motor oil [NA]	?	?	Inh Ing	See oil mist; usually only a problem if misted or ingested.	Eye: Irrigate immediately (15 min) Skin: Soap wash immediately Swallow: Immediate medical attention			PEL TLV REL	
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

Table 2-1

**Toxicological and Physical Properties of Chemicals
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 4)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Portland cement			Inh	Fine gray powder that can be irritating if inhaled or in eyes.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention		10 mg/m ³ 10 mg/m ³ / total dust 5 mg/m ³ respirable fraction	TLV PEL/REL	
Zinc oxide [1314-13-2]	NA	NA	Inh	Metal fume fever; chills, muscle ache, nausea, fever, dry throat, cough, weakness; metallic taste, headache, blurred vision, lower back pain, vomiting; fatigue	Breath: Respiratory support	5 mg/m ³ 5 mg/m ³ 5 mg/m ³	- 10 mg/m ³ 10 mg/m ³	PEL TLV REL	500 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.

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

^fIDLH (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).

Table 2-1

Toxicological and Physical Properties of Chemicals Former Large Caliber Weapons Range, Parcel 114Q-X Fort McClellan, Calhoun County, Alabama

(Page 4 of 4)

References:

- American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1991, compiled by the American Conference of Governmental Industrial Hygienists.
- Amoore, J. E. Hautula, "Odor as an Aid to Chemical Safety," *Journal of Applied Toxicology*, 1983.
- Clayton, George D., Clayton, F. E., *Patty's Industrial Hygiene and Toxicology*, 3rd ed., John Wiley & Sons, New York.
- Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 5th ed., 1986.
- Fazzuluri, F. A., *Compilation of Odor and Taste Threshold Values Data*, American Society for Testing and Materials, 1978.
- Gemet, L. J. Van, *Compilation of Odor Threshold Values in Air and Water*, CIVO, Netherlands, 1977.
- Gemet, L. J. Van, *Compilation of Odor Threshold Values in Air and Water, Supplement IV*, CIVO, Netherlands, 1977.
- Lewis, Richard J., Sr., 1992, *Sax's Dangerous Properties of Industrial Materials*, 8th ed., Van Nostrand Reinhold, New York.
- Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.
- National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. 1990, No. 90-117, National Institute for Occupational Safety and Health.
- Odor Threshold for Chemicals with Established Occupational Health Standards, American Industrial Hygiene Association, 1989.
- Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.
- Verschuseren, 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

1 the instrument and follow all required manufacturers instructions. Leak detection testing within
2 the last six months shall be performed on the XRF and certificates of analysis included in the
3 shipping container. Required licensing documentation and storage requirements shall be
4 enforced. Exposure to radiation is related to three factors: time, distance and shielding. Human
5 exposure to radiation is typically measured in rems, or in one-thousandths of a rem, called
6 millirems (mR). The allowable limit in the U.S. for occupational exposure is 5,000 mR/year for
7 a whole-body and 50,000 mR for shallow penetration of extremities. Exposure from a properly-
8 used NITON will be less than 50 mR per year, even if the instrument is used 2,000 hours per
9 year.

11 **2.2 General Site Information**

13 **Duration of Planned Employee Activity.** Employee activity duration is anticipated to be
14 one month.

16 **Site Description and History.** The former large caliber weapons range is located west of
17 Iron Mountain Road on the Main Post. Ordnance fired at this range included unspecified large
18 and small caliber weapons. Dates of use are unknown, but the site first shows use on 1940 and
19 1944 aerial photos and then appears on a 1959 map. This range is identified on the 1959 map as
20 a rifle range; however, the 1957 aerial photographs display what appear to be hard targets
21 arranged identically to those at one of the tank ranges at the northern Main Post boundary. A
22 review of aerial photographs by IT reveals a triangular disturbed area appearing in the 1944,
23 1949, and 1954 photographs. This area appeared to be centralized in the two thirds down range
24 (uphill) area of Parcel 114Q-X.

26 Observations during a site walk by IT personnel in July 2000 revealed indications of a small
27 arms range in the area of Parcel 114Q-X. The range was oriented to the east. The probable
28 firing line was not obvious (shown in the environmental baseline survey partly outside of the
29 western FTMC boundary). It appeared some trenching had occurred just east of the probable
30 firing line and the perimeter road along the western FTMC boundary fence. Small trenches and
31 firing points were observed to the east and uphill at approximately 400 to 500 feet from the
32 probable firing point. Wood-framed target pits (approximately 7 to 8 feet deep) and
33 perpendicular trenches were observed further east and uphill of the probable firing point. Small
34 arms fragments were observed throughout the central and southern area of Parcel 114Q-X.

1 **2.3 Pathways for Hazardous Substance Dispersion**

2 Possible pathways for hazardous substances in the area are groundwater and soils. The primary
3 exposure routes include inhalation, absorption, and ingestion.

4

5 **Site Topography.** The elevation at the Former Large Caliber Weapons Range, Parcel 114Q-
6 X, ranges from approximately 825 feet to 1050 feet above mean sea level and encompasses
7 approximately 15 acres.

3.0 Personal Protective Equipment

The work activities will begin in the following levels of protection. Also, a complete description of Level D, Modified Level D, and Level C PPE is provided.

Task	Initial Level of PPE
Staging equipment and UXO avoidance surface and shallow subsurface sweeps	Level D
Surveying	Level D
Collecting surface soil, surface water, sediment and depositional samples	Level D ⁽¹⁾
Installing residuum wells and collection of groundwater and subsurface soil samples (DPT)	Modified Level D*
XRF Screening	Level D ⁽¹⁾
Equipment decontamination	Modified Level D

* Initial level will be raised to Level C or higher if air monitoring results for volatile organic compounds in the worker's breathing zone (BZ) are greater than action levels.

Level D. The minimal level of protection that will be required of 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)
- Latex or nitrile gloves for field sampling and sample container handling
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

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

- Permeable Tyvek, Kleenguard, or its equivalent (polycoated Tyvek for pressure washing)
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots

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- Safety glasses
 - Hard hat
 - Hearing protection (when working near/adjacent to operating equipment).

8 Note: In addition to modified Level D PPE, the operator of high-pressure water jetting
9 equipment shall wear metatarsal guards for the feet, leg guards, and a face shield.

10
11 **Level C.** Level C protection will not be used unless air-monitoring data indicate the need for
12 upgrade; however, the equipment shall be readily available on site. The following equipment
13 will be used for Level C protection:

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- National Institute of Occupational Safety and Health-approved full-face, air-purifying respirator equipped with organic vapor/acid gas/P100 cartridge
 - 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).

30 Note: In addition to Level C PPE, the operator of high-pressure water jetting equipment shall
31 wear metatarsal guards for the feet, leg guards, and a face shield can be worn to minimize water
32 spray to the respirator cartridges and polycarbonate lens.

4.0 Site Monitoring

The environmental contaminants of concern at the area include metals and volatile organic compounds. Table 4-1 contains action levels for site monitoring at the sites.

Chemical. Air monitoring will be performed by the site safety and health officer or qualified task geologist during the performance of ground-intrusive operations. A calibrated photoionization detector (i.e., HNu DL 101 or equivalent) organic vapor analyzer with a 10.2 or higher electron volt lamp will be utilized to monitor the sampling locations and BZs to determine if any organic material may be present that would necessitate upgrading of protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the work areas and BZs during residuum well installation to determine if any combustible/flammable oxygen levels may be present that would necessitate evacuation of the work area. If site conditions become dusty from vehicle and equipment operation a Miniram aerosol monitor will be utilized to measure respirable dust concentrations since lead is a contaminant of concern at Parcel 114Q-X. Table 4-2 contains the air monitoring frequency and location for site monitoring at the work sites.

Unexploded Ordnance. UXO safety will be achieved by employing UXO specialists to ensure that field personnel do not come into contact with UXO. In areas where UXO is suspected, the UXO specialists will perform the following UXO avoidance operations.

- **Area UXO Surveys Using Magnetometers.** During this operation, UXO on the surface will be detected and marked for avoidance during field operations. Metal objects just below the surface will also be marked to indicate the potential hazard.
- **Downhole UXO Surveys.** UXO specialists will perform downhole magnetometer surveys to detect metal objects in the path of the boring apparatus until undisturbed soils are reached. The boring location will be moved if subsurface metal objects are detected.

If UXO is encountered, personnel will contact the site manager and UXO specialist immediately. Personnel will evacuate the immediate area and secure it.

Table 4-1

**Action Levels
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level C PPE

Analyte	Action Level ^a	Required Action
VOCs (volatile organic compound)	≥ 175 ppm above background in breathing zone (BZ)	Stop work, evacuate work area, upgrade to Level B; Notify CIH
Dust	> 2.5 mg/m ³ above background in BZ	Normal operations, initiate dust control to minimize migration.
LEL (lower explosive limit)	< 10 % LEL ≥ 10 % LEL	Normal operations Stop work, identify source

When in Level D Modified/D PPE

Analyte	Action Level	Required Action ^b
VOCs	≥ 10 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; Notify CIH
Dust	≥ 0.5 mg/m ³ above background in BZ	Stop work, Initiate dust control, upgrade to Level C PPE if dust control is not effective; Notify CIH
LEL (lower explosive limit)	< 10 % LEL ≥ 10 % LEL	Normal operations Stop work, identify source. Monitor for VOC's

Table 4-1

**Action Levels
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

Analyte	Action Level	Required Action
VOCs	≥ 1 ppm above background in BZ	Evacuate support zone and re-establish perimeter of exclusion zone.
Dust	> 0.5 mg/m ³ above background in BZ	Stop work, Initiate dust control

^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.

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

Table 4-2

**Air Monitoring Frequency and Location
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Staging equipment and UXO avoidance sweeps	OV Monitor Miniram	Initially for area As needed	Breathing zone (BZ) of employees
Sampling (surface water, surface soil, sediment, and depositional samples)	OV Monitor Miniram	Periodically As needed	BZ of employees BZ of employees
Monitoring well installation and subsurface soil sampling	OV Monitor Miniram LEL/ O ₂	Periodically As needed Periodically	BZ of employees BZ of employees Bore hole
XRF Sampling	Miniram	Periodically	BZ of employees

OV = Organic vapor.

Miniram = Aerosol (respirable dust) monitor.

LEL/O₂ = Lower explosive limit/oxygen concentration.

1 **5.0 Activity Hazard Analysis**

2
3 The attached activity hazard analysis (Table 5-1) is provided for the following activities:

- 4 • Staging equipment
- 5 • Land survey
- 6 • Surface/subsurface soil, groundwater, sediment and surface water sampling
- 7 • Installation of monitoring wells
- 8 • Moving and shipping collected samples
- 9 • Disposal of investigation-derived waste (IDW)
- 10 • High pressure water jetting.

11
12
13 All injuries and illnesses must be immediately reported to the site manager or the site safety and
14 health officer, who will then notify off-site personnel and organizations as necessary.

15
16 If hospital care must be provided, the victim shall be treated at Northeast Regional Medical
17 Center, 400 East 10th Street, Anniston, Alabama. The telephone number is (256) 235- 5121.

18 Directions to the hospital are provided in Figure 5-1.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 14)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Determine best access route before transporting equipment. • Practice good housekeeping; keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards. • Look before you step; ensure safe and secure footing.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.
	Falling objects	<ul style="list-style-type: none"> • Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> • Wear safety glasses/goggles; ensure that eye wash is in proper working condition.
	Pinch points	<ul style="list-style-type: none"> • Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cuts/bruises	<ul style="list-style-type: none"> • Use cotton or leather work gloves for material handling.
	Bees, spiders, and snakes	<ul style="list-style-type: none"> • Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Ticks	<ul style="list-style-type: none"> • Wear light colored clothing (can see ticks better). • Mow vegetated and small brush areas. • Wear insect repellent. • Wear long sleeves and long pants. • Visually check oneself promptly and frequently after exiting the work area.
	Fire	<ul style="list-style-type: none"> • Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Hazard communication	<ul style="list-style-type: none"> • Label all containers as to contents and dispose of properly. • Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.
	Noise	<ul style="list-style-type: none"> • Sound levels above 85 decibels (dBA) mandates hearing protection.
Lighting	<ul style="list-style-type: none"> • Adequate lighting will be provided to ensure a safe working environment. 	

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 14)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Cold stress	<ul style="list-style-type: none"> • Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F). • Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. • Remove wet clothing promptly. • Take breaks in warm areas. • Reduce work periods as necessary. • Layer work clothing.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> • Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	Heat rash	<ul style="list-style-type: none"> • Keep the skin clean and dry. • Change perspiration-soaked clothing, as necessary. • Bathe at end of work shift or day. • Apply powder to affected area.
	Heat cramps	<ul style="list-style-type: none"> • Drink plenty of cool fluids even when not thirsty. • Provide cool fluid for work crews. • Move victim to shaded, cool area.
	Heat exhaustion	<ul style="list-style-type: none"> • Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). • Set up work/rest periods. • Use the "buddy system." • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 14)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Heat stroke	<ul style="list-style-type: none"> • Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> • Work area will be barricaded/demarcated. • Equipment will be laid out in an area free of traffic flow. • Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic. • Barriers shall be used to protect workers from vehicular traffic. • Barriers shall be used to guard excavations adjacent to streets or roadways. • Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided. • Heavy equipment shall have backup alarms.
	Forklift operations	<ul style="list-style-type: none"> • Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Portable electric tools	<ul style="list-style-type: none"> • Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service. • Portable electric tools and all cord and plug connected equipment shall be protected by a ground-fault circuit interrupter (GFCI) device. • Electrical tools shall be inspected daily prior to use.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 14)

Activity	Potential Hazards	Recommended Controls
Initial UXO avoidance sweep and equipment staging (continued)	Extension cords	<ul style="list-style-type: none"> • Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service. • Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic. • Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.). • Cords shall be designed for hard duty. • Cords shall be inspected daily.
	Lightning strikes	<ul style="list-style-type: none"> • Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one. • Keep all body parts in contact with the ground as close as possible. • Remain 6 feet away from tree trunk if seeking shelter beneath tree(s). • If in a group, keep 6 feet of distance between people.
	Thunderstorms, tornados	<ul style="list-style-type: none"> • Listen to radio or TV announcements for pending weather information. • Cease field activities during thunderstorm or tornado warnings. • Seek shelter. Do not try to outrun a tornado.
Surveying	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe boots when working in the field. • Provide adequate lighting in all work areas. • Whenever possible, avoid routing cords and hoses across walking pathways. • Flag or cover inconspicuous holes to protect against falls. • Work areas will be kept clean and orderly. • Garbage and trash will be disposed of daily in approved refuse containers. • Tools and accessories will be properly maintained and stored. • Work areas and floors will be kept free of dirt, grease, and slippery materials.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 14)

Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Traffic accidents	<ul style="list-style-type: none"> • Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians. • If working adjacent to roadways, have workers wear fluorescent orange vests. • Use warning signs or lights to alert oncoming traffic. • Assign flag person(s) if necessary to direct local traffic. • Set up temporary parking locations outside the immediate work area. • Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits. • Pedestrians have the right-of-way. • Wear seat belts when vehicles are in motion.
	Wildlife hazards	<ul style="list-style-type: none"> • Workers should be cautious when driving through the site in order to avoid encounters with passing animals.
	Biological hazards	<ul style="list-style-type: none"> • Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, copperheads).
	Ticks	<ul style="list-style-type: none"> • Wear light colored clothing (can see ticks better). • Mow vegetated and small brush areas. • Wear insect repellent. • Wear long sleeves and long pants. • Visually check oneself promptly and frequently after exiting the work area.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> • Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	UXO	<ul style="list-style-type: none"> • UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. • If UXO is encountered, cease all activities, mark the location, and notify the site manager.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 14)

Activity	Potential Hazards	Recommended Controls
Groundwater Sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Avoid skin contact with water. • Handle samples with care. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
	Hazard communication	<ul style="list-style-type: none"> • MSDSs shall be obtained for chemicals brought on site. • Label all containers as to contents.
	Strains/sprains	<ul style="list-style-type: none"> • Use the proper tool for the job being performed. • Get assistance if needed. • Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Spills/residual materials	<ul style="list-style-type: none"> • Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	<ul style="list-style-type: none"> • Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	<ul style="list-style-type: none"> • Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 14)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (XRF)	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> • Stop immediately at any sign of obstruction. • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Site workers will be required to wear hard hat, safety glasses with side shields, work gloves, and steel-toe/shank boots when working in the field. • Whenever possible, avoid routing cords and hoses across walking pathways. • Flag or cover inconspicuous holes to protect against falls.
	Bees, spiders, and snakes	<ul style="list-style-type: none"> • Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas. • Evaluate need for sensitive workers to have prescribed antibiotic or medicine to combat onset of symptoms.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> • Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	Cold stress	<ul style="list-style-type: none"> • Workers should wear insulated clothing when temperatures drop below 40°F. • Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. • Remove wet clothing promptly. • Take breaks in warm areas. • Reduce work periods as necessary. • Layer work clothing.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 14)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (XRF) (continued)	Access/egress hazards	<ul style="list-style-type: none"> • Use qualified and trained bushhog operator. • Keep employees out of the bushhog work area. • Utilize good housekeeping practices. • Keep aisleways, pathways, and work areas free of obstruction. • Clean ice or snow off of walkways or work stations. • Use appropriate footwear for the task assigned.
	Heat rash	<ul style="list-style-type: none"> • Keep the skin clean and dry. • Change perspiration-soaked clothing, as necessary. • Bathe at end of work shift or day. • Apply powder to affected area.
	Heat cramps	<ul style="list-style-type: none"> • Drink plenty of cool fluids even when not thirsty. • Provide cool fluid for work crews. • Move victim to shaded, cool area.
	Heat exhaustion	<ul style="list-style-type: none"> • Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). • Set up work/rest periods. • Use the buddy system. • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks.
	Heat stroke	<ul style="list-style-type: none"> • Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices.
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> • Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. • All mobile equipment and areas in which they are operated shall be adequately illuminated. • Aboveground and belowground utilities will be located prior to staging equipment. • Whenever the equipment is parked, the parking brake shall be set. • Equipment parked on inclines will have the wheels chocked. • Inspect brakes and tire pressure on drill rig before staging for work.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 9 of 14)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (XRF) (continued)	Lightning strikes	<ul style="list-style-type: none"> • Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than laying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • If in a group, keep 6 feet of distance between people.
	UXO	<ul style="list-style-type: none"> • UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. • If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist.
Moving and Shipping Collected Samples	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Pinch points	<ul style="list-style-type: none"> • Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cut hazards	<ul style="list-style-type: none"> • Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	<ul style="list-style-type: none"> • Label all containers as to contents and associated hazards.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60pounds require assistance or mechanical equipment; size up the lift.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 10 of 14)

Activity	Potential Hazards	Recommended Controls
Material Storage	Flammable and combustible liquids	<ul style="list-style-type: none"> • Store in NO SMOKING AREA. • Fire extinguisher readily available. • Transfer only when properly grounded and bonded.
Disposal of Investigation-Derived Waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none"> • Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> • Stop immediately at any sign of obstruction. • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
High-Pressure Water Jetting Operations	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. • Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Good housekeeping shall be implemented. • The work area shall be kept clean as feasible. • Inspect the work area for slip, trip, and fall hazards.

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 11 of 14)

Activity	Potential Hazards	Recommended Controls
High-Pressure Water Jetting Operations (continued)	Fueling	<ul style="list-style-type: none"> • Only approved safety cans shall be used to store fuel. • Do not refuel equipment while it is operating. • Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Faulty or damaged equipment	<ul style="list-style-type: none"> • Equipment shall be inspected before being placed into service and at the beginning of each shift. • Preventive 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.
	High-pressure water	<ul style="list-style-type: none"> • Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate). • One standby person shall be available within the vicinity of the pump during jetting operation. • The work area shall be isolated and adequate barriers will be used to warn other site personnel.
	Unqualified operators	<ul style="list-style-type: none"> • Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.
	Out of control equipment	<ul style="list-style-type: none"> • No machinery or equipment is 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.
	Noise	<ul style="list-style-type: none"> • Sound levels above 85 dBA mandates hearing protection by nearby site personnel.
	Activation during repairs	<ul style="list-style-type: none"> • All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	<ul style="list-style-type: none"> • Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert and clear of materials suspended .
	Falling objects	<ul style="list-style-type: none"> • Hard hats are required by site personnel. • Stay alert and clear of material suspended overhead.
Flying debris	<ul style="list-style-type: none"> • Impact-resistant safety glasses with side shields are required. 	

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 12 of 14)

Activity	Potential Hazards	Recommended Controls
High-Pressure Water Jetting Operations (continued)	Contact with potentially contaminated materials	<ul style="list-style-type: none"> • All site personnel will wear the appropriate PPE.
Drilling and Installation of Monitoring Wells	Overhead hazards	<ul style="list-style-type: none"> • Make sure no obstacles are within radius of boom. Always stay a safe distance from power lines.
	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> • All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. • Equipment will be inspected before being put to use and at the beginning of each shift. • Faulty/unsafe equipment will be tagged and if possible locked out. • Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> • Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. • All mobile equipment and areas in which they are operated shall be adequately illuminated. • Aboveground and belowground utilities will be located prior to staging equipment. • Whenever the equipment is parked, the parking brake shall be set. • Equipment parked on inclines will have the wheels chocked. • Inspect brakes and tire pressure on drill rig before staging for work.
	Inexperienced operator	<ul style="list-style-type: none"> • Machinery and mechanized equipment shall be operated only by designated personnel. • Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.
	Jacks/outriggers	<ul style="list-style-type: none"> • Ensure proper footing and cribbing.
	Falling objects	<ul style="list-style-type: none"> • Remove unsecured tools and materials before raising or lowering the derrick. • Stay alert and clear of materials suspended overhead.
	Pinch points	<ul style="list-style-type: none"> • Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert at all times!

Table 5-1

**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 13 of 14)

Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells (continued)	Fire	<ul style="list-style-type: none"> • Mechanized equipment shall be shut down prior to and during fueling operations. • Have fire extinguishers inspected and readily available.
	Fall hazards	<ul style="list-style-type: none"> • Personnel are not allowed to work off of machinery or use them as ladders. • Use fall protection when working above 6 feet.
	Contact with rotating or reciprocating machine parts	<ul style="list-style-type: none"> • Use machine guards; use long-handled shovels to remove auger cuttings. • Safe lockout procedures for maintenance work.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Practice good housekeeping, keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards.
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> • Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized. • Stop immediately at any sign of obstruction. • Do not breathe air surrounding the boring unless necessary. • Upgrade to respirator if necessary. • Avoid skin contact with soil cuttings. Wear gloves. • Stay clear of moving parts of drill rig.
	Drum handling	<ul style="list-style-type: none"> • Be careful not to breathe air from around open drum any more than necessary. Monitor with photoionization detector/flame ionization detector (PID/FID) equipment and upgrade to respirator if necessary. • When filling a drum (with either soil or water), be careful not to make contact with the contained waste. Wear appropriate gloves. Make sure lid or bung of drum is secure. • If moving a drum unassisted, be sure to leverage properly, use proper lifting techniques, and wear safety glasses and steel-toed boots. • When using a drum dolly, make sure straps and lid catch are securely attached. Leverage properly when tilting drum. Be sure toes stay away from drum.

Table 5-1

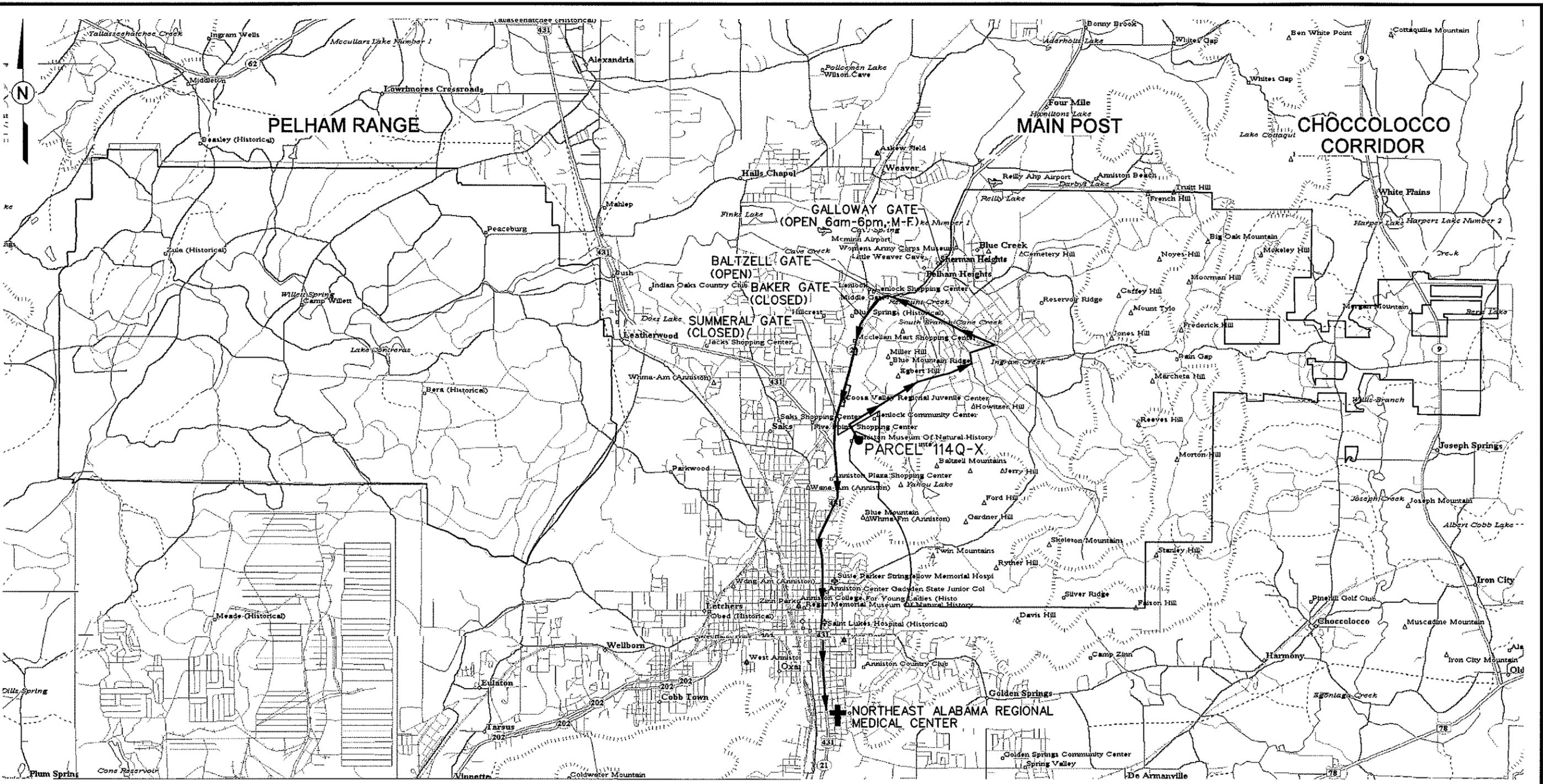
**Activity Hazard Analysis
Former Large Caliber Weapons Range, Parcel 114Q-X
Fort McClellan, Calhoun County, Alabama**

(Page 14 of 14)

Activity	Potential Hazards	Recommended Controls
Drilling and Installation of Monitoring Wells (continued)	UXO	<ul style="list-style-type: none">• UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities.• UXO avoidance monitoring shall apply to all intrusive activities associated with well construction completion.• If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist immediately.

12/10/02 STARTING DATE: 12/11/02 DATE LAST REV: DRAFT, CHCK. BY: ENGR. CHCK. BY: S. MORAN
 05:31:08 PM DRAWN BY: A.W. SMITH

INITIATOR: J. RAGSDALE DWG. NO.: 1796887es.635
 PROJ. MGR.: J. YACOUB PROJ. NO.: 796887

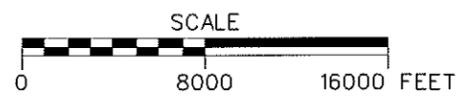


LEGEND:

- ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
- U.S. HIGHWAY
- HOSPITALS
- INVESTIGATION SITE

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 10th 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 1

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

Date: 5-Dec-02

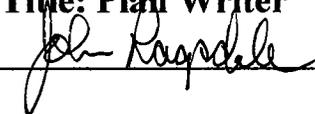
Name of person completing form: John Ragsdale

Site Name: Former Large Caliber Weapons Range, Parcel 114Q-X

Title: Plan Writer

Job Number: 796887

Signature: _____



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 checked="" type="checkbox"/>	<input type="checkbox"/>
Conventional or CWM OE training:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Storage of conventional or CWM OE:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disposal or demilitarization of conventional or CWM OE:	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>
Storage of chemical agent:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disposal or demilitarization of chemical agent:	<input type="checkbox"/>	<input checked="" 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 –

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities
Site Name: Former Large Caliber Weapons Range, Parcel 114Q-X

Job Number: 796887

Date: 5-Dec-02

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 type="checkbox"/>	<input type="checkbox"/>
Is there evidence that the CWM is/was containerized in nonexplosive containers:	<input 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 type="checkbox"/>
Is there evidence that the CWM hazard has been removed from the site or that the site has been decontaminated:	<input type="checkbox"/>	<input type="checkbox"/>
Has the site been previously monitored or sampled for chemical agent or agent breakdown products:	<input 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"):

List agent breakdown products identified:

4. Defining the Potential for the Presence of CWM:	Agent Monitoring Requirements for Site Activities:
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.	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).
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.	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).
4c. Low Presence Potential – Definition: No indications that CWM will be present in quantity or reactivity (in munitions, projectiles, drums, etc.).	No specific personal or area monitoring for chemical agents required beyond what is specified in the SHP.

Continue to page 3 of 4 -

Site Name: Former Large Caliber Weapons Range, Parcel 114Q-X

Job Number: 796887

Date: 12/05/02

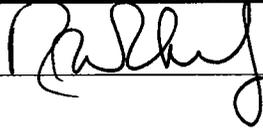
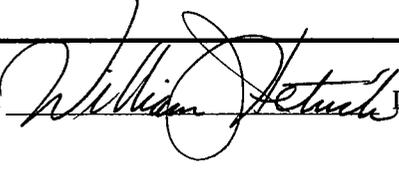
Based on the information available for this site, including information gathered during completion of this form, the potential for CWM to be present at this site, as defined above, is expected to be: **LOW**

Exceptions/Explanations: (additional space for notes and explanations on page 4)

<p>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>	
<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 IT 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 IT 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 IT 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: **Low**

Exceptions/Explanations:

Review Signatures: IT UXO Technical Manager  Date: 10 Dec 02 IT H&S Specialist  Date: 1/30/03

Date: 12/05/02

Additional Notes and Explanations:

The former weapons range is located west of Iron Mountain Road on the Main Post. Ordnance fired at this range included unspecified large and small caliber weapons. Dates of use are unknown, but the site first shows use on 1940 and 1944 aerial photos and then appears on a 1959 map. This range is identified on the 1959 map as a rifle range; however, the 1957 aerial photographs display what appear to be hard targets arranged identically to those at one of the tank ranges at the northern Main Post boundary. A review of aerial photographs by IT reveals a triangular disturbed area appearing in the 1944, 1949, and 1954 photographs. This area appeared to be centralized in the two thirds down range (uphill) area of Parcel 114Q-X.

Observations during a site walk by IT personnel in July 2000 revealed indications of a small arms range in the area of Parcel 114Q-X. The range was oriented to the east. The probable firing line was not obvious (shown in the EBS partly outside of the western FTMC boundary). It appeared some trenching had occurred just east of the probable firing line and the perimeter road along the western FTMC boundary fence. Small trenches and firing points were observed to the east and uphill at approximately 400 to 500 feet from the probable firing point. Wood-framed target pits (approximately 7 to 8 feet deep) and perpendicular trenches were observed further east and uphill of the probable firing point. Small arms fragments were observed throughout the central and southern area of Parcel 114Q-X.