

Final

**Site-Specific Safety and Health Plan Attachment
Range K, Former Agent Training Area,
Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
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Prepared by:

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**Task Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645**

March 2001

Revision 1

The following Safety and Health Plan (SHP) has been designed for the methods presently contemplated by IT Corporation (IT) 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 IT.

In addition, as the work is performed, conditions different from those anticipated may be encountered and the SHP may have to be modified. Therefore, IT only makes representations or warranties as to the adequacy of the SHP 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, 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 Range K, Parcel 203(7) at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

Steph G. Man
Jeanne Yacoub, PE
Project Manager

2/22/01
Date

William J. Hetrick
William J. Hetrick, CIH
Health & Safety Manager



2/22/01
Date

Steph G. Man
Jeff Tarr
Site Coordinator

2/22/01
Date

Acknowledgements

The approved version of this site-specific safety and health plan (SSHP) attachment for the Range K, Parcel 203(7) 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

2/22/01
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

2/22/01
Date

Fort McClellan Gate Hours

| | |
|---------------|---|
| Baltzell Gate | Baltzell Road. Open 24 hours daily, 7 days a week. |
|---------------|---|

Pelham Range Access Requirements

| | |
|--------------|---|
| Pelham Range | IT personnel will contact the Range Control Office each day access is required to receive an access permit and available areas of entry. See Attachment 1 for Range Control contact for Pelham Range. |
|--------------|---|

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 |
| Military Police (SSG Busch) | (256) 848-5680, 848-4824 |
| DOD Guard Force (Mr. Bolton) | (256) 848-5680, 848-4732 |
| Anniston Police Department..... | (256) 238-1800 |
| Chemical Agent Emergencies..... | (256) 895-1598 |
| (Ken Barnett, CEHNC)..... | cell phone (256) 310-0604 |
| UXO Emergencies | (256) 895-1598 |
| (Ken Barnett, CEHNC)..... | cell phone (256) 310-0604 |
| UXO Nonemergencies/Reporting Only (Ronald Levy) | (256) 848-3758 |
| Baltzell Gate Guard Shack..... | (256) 848-5693, 848-3821 |
| 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 |
| Ellis Pope, U.S. Army Corps of Engineers..... | (334) 690-3077 |
| Jeanne Yacoub, IT Project Manager..... | (770) 663-1429 |
| Bill Hetrick, IT H&S Manager | (865) 690-3211, pager (888) 655-9529 |
| Mike Moore, Fort McClellan Safety Office | (256) 848-5433 |
| Dr. Jerry H. Berke, Health Resources Occupational Physician..... | (800) 350-4511 |

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List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms, contained in the site-specific field sampling plan section of this document.

1.0 Site Work Plan Summary

Project Objective. The objective of this investigation at Range K, Parcel 203(7) Fort McClellan (FTMC), Calhoun County, Alabama is to install five additional ‘shallow’ or ‘residuum’ groundwater monitoring wells and four deeper wells to the top of the bedrock or, in the case of paired or ‘clustered’ wells, 50 feet below the screened interval of the paired shallow well- whichever comes first. IT has recommended these additional groundwater monitoring wells be installed based on review of analytical data from previous investigations. Monitoring wells in the area of Range K have indicated volatile and semivolatile organic compounds, metals and nitroaromatics in groundwater. Additional groundwater monitoring wells will aid in determining the presence or absence of contamination in the deeper aquifer at the site.

Project Tasks

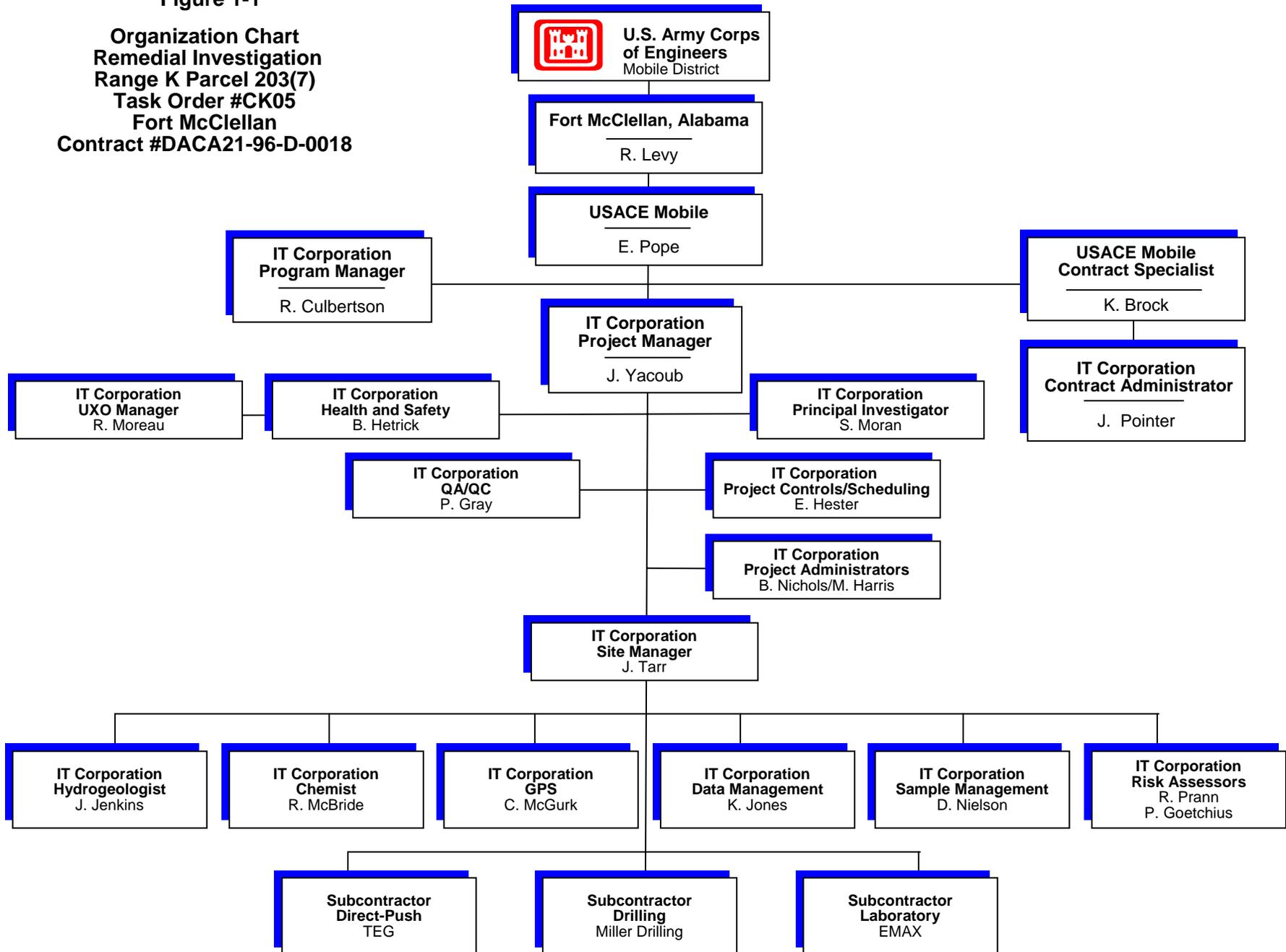
- X Install five (7) residuum groundwater monitoring wells
- X Install four (4) bedrock groundwater monitoring wells
- X Collect surface and subsurface soil samples from the additional wells
- X Collect groundwater samples from the nine newly installed wells and the four existing wells.

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 SHP, FTMC, Alabama.

Figure 1-1
Organization Chart
Remedial Investigation
Range K Parcel 203(7)
Task Order #CK05
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 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). Site control with the use of specific work zones (support zone, contamination reduction zone, and exclusion zone) is addressed in Chapter 7.0 of Appendix A of the IT Corporation (IT), March 2000, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*.

Range K is a 2-acre former chemical agent training area located at the Western Pelham Range. Reports indicate the area was used as a shell tapping area prior to 1961 and continued through the summer of 1963. During training exercises breaking open one 155-mm distilled mustard, one 105-mm sarin, and one 4.2-inch phosgene mortar rounds were standard practice.

Following are the types of chemical agents, decontaminates and the description of each chemical that was presumably used at Range K, Parcel 203(7) site.

- Distilled mustard (HD)
- Decontamination agent (non-corrosive) (DANC)
- Decontamination Solution Number 2 (DS2)
- Phosgene (CG)
- Sarin (GB).

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 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, (U.S. Department of Army and Air Force, 1963).

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, (U.S. Department of Army and Air Force, 1963).

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, (U.S. Department of the Air Force, 1963).

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

Table 2-1 contains the toxicological properties of chemicals anticipated or used at the Range K, Parcel 203(7) site, Fort McClellan, Alabama.

The presence of unexploded ordnance (UXO) is suspected at the Former Agent Training Area, Range K, Parcel 203(7). Procedures contained in the Site Specific UXO Safety Plan shall be followed for all site activities associated with this investigation.

2.2 General Site Information

Location of Site. Fort McClellan (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 (lease terminated in May 1998). The Pelham Range consists of approximately 22,245 acres to the west of U.S. Highway 431. Range K is a 2-acre area located at the Western Pelham Range.

Duration of Planned Employee Activity. Employee activity duration is anticipated to be less than one month.

Table 2-1
Toxicological Properties of Chemicals
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 3)

| 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 | 13B100 | Inh Ing Con | Irritated eyes, nose, and throat; headache, dizziness; dermatitis. | Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention | 750 ppm 750 ppm 250 ppm | 1,000 ppm 1,000 ppm | PEL TLV REL | 20,000 ppm |
| 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 300 ppm Ca, lowest feasible conc. (LOQ 15 ppm) | 500 ppm 500 ppm | PEL TLV REL | ? |
| n-Hexane [110-54-3] | 10.18 | 65B248 | Inh Ing Con | Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness. | Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention | 50 ppm 50 ppm 50 ppm | | PEL TLV REL | 5,000 ppm |

Table 2-1
Toxicological Properties of Chemicals
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama

(Page 2 of 3)

| 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 | 43B200 | 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 | 12,000 ppm |
| Motor Oil [NA] | ? | ? | Inh Ing | Irritated eyes, skin, respiratory system; 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 | 0.3B1 | 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 |
| 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 | |
| Sodium hydroxide [1310-73-2] | NA | NA | Inh Ing Con | Irritated nose; pneumonitis; burns eyes, and skin; temporary loss of hair. | Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention | | C 2 mg/m ³ C 2 mg/m ³ C 2 mg/m ³ | PEL TLV REL | 250 mg/m ³ |
| Sulfuric acid [7664-93-9] | ? | 0.15 | Inh Ing Con | Irritated eyes, nose, and throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatitis; dental erosion; tracheobronchitis; skin and eye burns; dermatitis. | Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention | 1 mg/m ³ 1 mg/m ³ 1 mg/m ³ | 3 mg/m ³ | PEL TLV REL | 80 mg/m ³ |

Table 2-1
Toxicological Properties of Chemicals
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama

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^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.

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. 1998).

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:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1998, 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, 6th ed., 1998.

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. 1998, 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.

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.

Site Topography and Size. The Range K site is located in a valley flanked by northeast-southwest topographic ridges and thrust faults. Surface topography ranges between 570 and 610 feet above mean sea level in the immediate site area. The Range K is a 2-acre area with surface drainage to the southeast and the shallow groundwater flow direction appears to be southwest.

Pathways for Hazardous Substance Dispersion. Possible pathways for hazardous substances in the area are soils and groundwater.

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.

| Task | Initial Level of PPE |
|---|----------------------|
| Initial UXO avoidance sweep and equipment staging | Level D |
| Surveying | Level D |
| Well installation | Modified Level D* |
| Subsurface soil and groundwater sampling | Modified Level D* |

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

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

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

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

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

- X Latex boot covers

- X Nitrile, heavy work, or latex gloves

- X Steel-toed safety boots

- X Safety glasses

- X Hard hat

- X Hearing protection (when working near/adjacent to operating equipment)
- X Escape/egress air supply pack (where chemical agents are suspected).

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

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

- X 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
- X Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- X Nitrile gloves (outer)
- X Latex or lightweight nitrile gloves (inner)
- X Neoprene steel-toed boots or polyvinyl chloride overbooties/steel-toed safety boots
- X Hard hat
- X Hearing protection (when working near/adjacent to operating equipment)
- X 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 legs and feet and a face shield.

4.0 Site Monitoring

The environmental contaminants of concern resulting from activities at the Range K, Parcel 203(7) include metals, nitroaromatics, semivolatile organic compounds and chemical warfare agents (CWA). Metals including aluminum, arsenic, barium, cadmium, vanadium, iron and manganese have been reported as exceeding background and site specific screening levels in low concentrations. VOC's identified in low concentrations include; cis-1,2-dichloroethene, trans-1,2-dichloroethene, vinyl chloride and 1,1,2,2-tetrachloroethane. Nitroaromatics identified include; 2-nitrotoluene, 4-nitrotoluene and nitrobenzene. Investigations from SAIC in 1995 RI/FS activities included (MINICAMS) analysis at selected Range K investigations. The samples did not detect HD or VX or CWA during the RI, however, provisions shall be implemented to protect the workers during intrusive operations. Table 4-1 contains action levels for site monitoring at the Range K, Parcel 203(7).

Chemical. Air monitoring shall be performed by the site safety and health officer during the performance of ground intrusive operations. A calibrated flame ionization detector (i.e., OVA 128 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 4-2 contains the air monitoring frequency and location for site monitoring at Range K, Parcel 203(7).

Unexploded Ordnance. UXO support for sampling activities are specified in the site-specific UXO safety plan developed for the Range K, Parcel 203(7). 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, downhole magnetometer surveys will be performed to detect metal objects in the path of the boring apparatus. The boring location will be moved to avoid subsurface metal objects.

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
Remedial Investigation
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level C PPE

| Analyte | Action Level | Required Action ^a |
|----------------------------------|--|--|
| VOCs (volatile organic compound) | ≥ 10 ppm above background in breathing zone (BZ) | Stop work, evacuate work area, upgrade to Level B. |
| Oxygen | ≥ 20%, ≤23% < 20%, >23% | Normal operations. Stop work, evacuate work area. |
| Flammable vapors | ≥ 10% LEL < 10% LEL | Stop work, evacuate work area. Continue operations, monitor for VOCs. |

When in Level D Modified/D PPE

| Analyte | Action Level | Required Action ^b |
|------------------|--------------------------------|---|
| VOCs | ≥ 1 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. |
| Oxygen | ≥ 20%, ≤23% < 20%, >23% | Normal operations. Stop work, evacuate work area. |
| Flammable vapors | ≥ 10% LEL < 10% LEL | Stop work, evacuate work area. Continue operations, monitor for VOCs. |

Table 4-1

**Action Levels
Remedial Investigation
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

When in Support Zone

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

^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. This may also trigger additional CWA monitoring by the Huntsville division prior to continuation of investigative operations.

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

Table 4-2
Air Monitoring Frequency and Location
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama

| Work Activity | Instrument | Frequency | Location |
|--|--|------------------------------|------------------------------------|
| Staging equipment | OV Monitor | Initially for area | Breathing zone (BZ) of employees |
| Sampling (groundwater and subsurface soil) | OV Monitor LEL/O ₂ Monitor | Continuously Continuously | BZ of employees Support zone |
| Installing monitoring wells | OV Monitor LEL/O ₂ Monitor | Continuously Continuously | BZ of employees BZ of employees |

OV = Organic vapor.
 LEL/O₂ = Lower explosive level/oxygen.

5.0 Activity Hazard Analysis

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

- X Initial UXO avoidance sweep and equipment staging.
- X Installation of monitoring wells.
- X Subsurface soil, groundwater, surface water and sediment sampling.

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 are provided in Figure 5-1.

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
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"> X Determine best access route before transporting equipment. X Practice good housekeeping; keep work area picked up and clean as feasible. X Continually inspect the work area for slip, trip, and fall hazards. X Look before you step; ensure safe and secure footing. |
| | Heavy lifting | X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment. |
| | Falling objects | X Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots. |
| | Flying debris, dirt, dust, etc. | X Wear safety glasses/goggles; ensure that eye wash is in proper working condition. |
| | Pinch points | <ul style="list-style-type: none"> X Keep hands, fingers, and feet clear of moving/suspended materials and equipment. X Beware of contact points. X Stay alert at all times! |
| | Cuts/bruises | X Use cotton or leather work gloves for material handling. |
| | Bees, spiders, and snakes | X Inspect work area carefully and avoid placing hands and feet into concealed areas. |
| | Ticks | <ul style="list-style-type: none"> X Wear light colored clothing (can see ticks better). X Mow vegetated and small brush areas. X Wear insect repellent. X Wear long sleeves and long pants. X Visually check oneself promptly and frequently after exiting the work area. |
| | Fire | X 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"> X Label all containers as to contents and dispose of properly. X Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site. |
| | Noise | X Sound levels above 85 decibels (dBA) mandates hearing protection. |
| Lighting | X Adequate lighting will be provided to ensure a safe working environment. | |
| Cold stress | X Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (EF). | |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 14)

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

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
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"> X Evaluate possibility of night work. X Perform physiological monitoring on workers during breaks. X Wear body cooling devices. |
| | Contact with moving equipment/vehicles | <ul style="list-style-type: none"> X Work area will be barricaded/demarcated. X Equipment will be laid out in an area free of traffic flow. X Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic. X Barriers shall be used to protect workers from vehicular traffic. X Barriers shall be used to guard excavations adjacent to streets or roadways. X Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided. X Heavy equipment shall have backup alarms. |
| | Forklift operations | <ul style="list-style-type: none"> X Use qualified and trained forklift operators. X The operator shall not exceed the load capacity rating for the forklift. X The load capacity shall be clearly visible on the forklift. X 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"> X 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. X Portable electric tools and all cord and plug connected equipment shall be protected by a ground-fault circuit interrupter (GFCI) device. X Electrical tools shall be inspected daily prior to use. |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
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"> X Extension cords that have faulty plugs, damaged insulation, or are unsafe in any way shall be removed from service. X Cords shall be protected from damage from sharp edges, projections, pinch points (doorways), and vehicular traffic. X Cords shall be suspended with a nonconductive support (rope, plastic ties, etc.). X Cords shall be designed for hard duty. X Cords shall be inspected daily. |
| | Lightning strikes | <ul style="list-style-type: none"> X Whenever possible, halt activities and take cover. X If outdoors, stay low to the ground. X 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). X Seek shelter in a building if possible. X Stay away from windows. X If available, crouch under a group of trees instead of one. X Keep all body parts in contact with the ground as close as possible. X Remain 6 feet away from tree trunk if seeking shelter beneath tree(s). X If in a group, keep 6 feet of distance between people. |
| | Thunderstorms, tornados | <ul style="list-style-type: none"> X Listen to radio or TV announcements for pending weather information. X Cease field activities during thunderstorm or tornado warnings. X Seek shelter. Do not try to outrun a tornado. |
| Surveying | Slip, trip, and fall hazards | <ul style="list-style-type: none"> X 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. X Provide adequate lighting in all work areas. X Whenever possible, avoid routing cords and hoses across walking pathways. X Flag or cover inconspicuous holes to protect against falls. X Work areas will be kept clean and orderly. X Garbage and trash will be disposed of daily in approved refuse containers. X Tools and accessories will be properly maintained and stored. X Work areas and floors will be kept free of dirt, grease, and slippery materials. |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 14)

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

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
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"> X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Avoid skin contact with water. X Handle samples with care. X Only essential personnel will be in the work area. X Real-time air monitoring will take place before and during sampling activities. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X 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"> X Use care when handling glassware. X Wear adequate hand protection. |
| | Hazard communication | <ul style="list-style-type: none"> X MSDSs shall be obtained for chemicals brought on site. X Label all containers as to contents. |
| | Strains/sprains | <ul style="list-style-type: none"> X Use the proper tool for the job being performed. X Get assistance if needed. X Avoid twisting/turning while pulling on tools, moving equipment, etc. |
| | Spills/residual materials | <ul style="list-style-type: none"> X Absorbent material and containers will be kept available where leaks or spills may occur. |
| | Lighting | <ul style="list-style-type: none"> X Adequate lighting will be provided to ensure a safe working environment. |
| | Unattended worker | <ul style="list-style-type: none"> X Use "buddy system" - visual contact will be maintained with the sampling technician during sampling activities. |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 14)

| Activity | Potential Hazards | Recommended Controls |
|---|---|--|
| Soil Boring and Surface/Subsurface Sampling | Cross-contamination and contact with potentially contaminated materials | <ul style="list-style-type: none"> X Stop immediately at any sign of obstruction. X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Only essential personnel will be in the work area. X Real-time air monitoring will take place before and during sampling activities. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X 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"> X Use care when handling glassware. X Wear adequate hand protection. |
| | Slip, trip, and fall hazards | <ul style="list-style-type: none"> X 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. X Whenever possible, avoid routing cords and hoses across walking pathways. X Flag or cover inconspicuous holes to protect against falls. |
| | Bees, spiders, and snakes | <ul style="list-style-type: none"> X Workers shall inspect the work area carefully and avoid placing hands and feet into concealed areas. X 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"> X Avoid plant areas if possible. X Wear long sleeves and long pants. X Promptly wash clothing that has contacted poisonous plants. X Wash affected areas immediately with soap and water. |
| | Cold stress | <ul style="list-style-type: none"> X Workers should wear insulated clothing when temperatures drop below 40°F. X Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. X Remove wet clothing promptly. X Take breaks in warm areas. X Reduce work periods as necessary. X Layer work clothing. |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 14)

| Activity | Potential Hazards | Recommended Controls |
|---|-----------------------|--|
| Soil Boring and Surface/Subsurface Sampling (continued) | Access/egress hazards | <ul style="list-style-type: none"> X Use qualified and trained bushhog operator. X Keep employees out of the bushhog work area. X Utilize good housekeeping practices. X Keep aisleways, pathways, and work areas free of obstruction. X Clean ice or snow off of walkways or work stations. X Use appropriate footwear for the task assigned. |
| | Heat rash | <ul style="list-style-type: none"> X Keep the skin clean and dry. X Change perspiration-soaked clothing, as necessary. X Bathe at end of work shift or day. X Apply powder to affected area. |
| | Heat cramps | <ul style="list-style-type: none"> X Drink plenty of cool fluids even when not thirsty. X Provide cool fluid for work crews. X Move victim to shaded, cool area. |
| | Heat exhaustion | <ul style="list-style-type: none"> X Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature). X Set up work/rest periods. X Use the buddy system. X Allow workers time to acclimate. X Have ice packs available for use. X Take frequent breaks. |
| | Heat stroke | <ul style="list-style-type: none"> X Evaluate possibility of night work. X Perform physiological monitoring on workers during breaks. X Wear body cooling devices. |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

(Page 9 of 14)

| Activity | Potential Hazards | Recommended Controls |
|---|--|---|
| Soil Boring and Surface/Subsurface Sampling (continued) | Lightning strikes | <ul style="list-style-type: none"> X Whenever possible, halt activities and take cover. X If outdoors, stay low to the ground. X 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). X Seek shelter in a building if possible. X Stay away from windows. X If available, crouch under a group of trees instead of one single tree. X Keep all body parts in contact with the ground as close as possible. X If in a group, keep 6 feet of distance between people. |
| | UXO | <ul style="list-style-type: none"> X UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities. X If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist. |
| | Accidental exposure to chemical agents | <ul style="list-style-type: none"> X Low-level real-time environmental monitoring will be performed by Quanterra Battelle Quicksilver Center. X Modified Level D personal protective equipment (PPE) will be required. During the first 15 feet depth of each monitoring well installation activity, downhole geophysics will be performed. X Engineering controls will be used as appropriate. X Personnel will be equipped with an emergency egress air supply pack. |
| Moving and Shipping Collected Samples | Heavy lifting | <ul style="list-style-type: none"> X 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"> X Keep hands, fingers, and feet clear of moving/suspended materials and equipment. X Beware of contact points. X Stay alert at all times! |
| | Cut hazards | <ul style="list-style-type: none"> X Wear adequate hand protection. Use care when handling glassware. |
| | Hazard communication | <ul style="list-style-type: none"> X Label all containers as to contents and associated hazards. |
| | Heavy lifting | <ul style="list-style-type: none"> X Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift. |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
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"> X Store in NO SMOKING AREA. X Fire extinguisher readily available. X 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"> X Use qualified and trained forklift operators. X The operator shall not exceed the load capacity rating for the forklift. X The load capacity shall be clearly visible on the forklift. X 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"> X Stop immediately at any sign of obstruction. X Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. X Only essential personnel will be in the work area. X Real-time air monitoring will take place before and during sampling activities. X All personnel will follow good hygiene practices. X Proper decontamination procedures will be followed. X 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"> X Use care when handling glassware. X Wear adequate hand protection. |
| High-Pressure Water Jetting Operations | Heavy lifting | <ul style="list-style-type: none"> X Use proper lifting techniques. X 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"> X Good housekeeping shall be implemented. X The work area shall be kept clean as feasible. X Inspect the work area for slip, trip, and fall hazards. |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
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"> X Only approved safety cans shall be used to store fuel. X Do not refuel equipment while it is operating. X 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"> X Equipment shall be inspected before being placed into service and at the beginning of each shift. X Preventive maintenance procedures recommended by the manufacturer shall be followed. X 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"> X 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). X One standby person shall be available within the vicinity of the pump during jetting operation. X 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"> X 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"> X No machinery or equipment is permitted to run unattended. X 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"> X Sound levels above 85 dBA mandates hearing protection by nearby site personnel. |
| | Activation during repairs | <ul style="list-style-type: none"> X 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"> X Keep feet and hands clear of moving/suspended materials and equipment. X Stay alert and clear of materials suspended . |
| | Falling objects | <ul style="list-style-type: none"> X Hard hats are required by site personnel. X Stay alert and clear of material suspended overhead. |
| | Flying debris | <ul style="list-style-type: none"> X Impact-resistant safety glasses with side shields are required. |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
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 | X All site personnel will wear the appropriate PPE. |
| Drilling and Installation of Monitoring Wells | Overhead hazards | X 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 | X All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition. X Equipment will be inspected before being put to use and at the beginning of each shift. X Faulty/unsafe equipment will be tagged and if possible locked out. X 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 | X 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. X All mobile equipment and areas in which they are operated shall be adequately illuminated. X Aboveground and belowground utilities will be located prior to staging equipment. X Whenever the equipment is parked, the parking brake shall be set. X Equipment parked on inclines will have the wheels chocked. X Inspect brakes and tire pressure on drill rig before staging for work. |
| | Inexperienced operator | X Machinery and mechanized equipment shall be operated only by designated personnel. X Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment. |
| | Jacks/outriggers | X Ensure proper footing and cribbing. |
| | Falling objects | X Remove unsecured tools and materials before raising or lowering the derrick. X Stay alert and clear of materials suspended overhead. |
| | Pinch points | X Keep feet and hands clear of moving/suspended materials and equipment. X Stay alert at all times! |

Table 5-1

**Activity Hazard Analysis
Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

(Page 13 of 14)

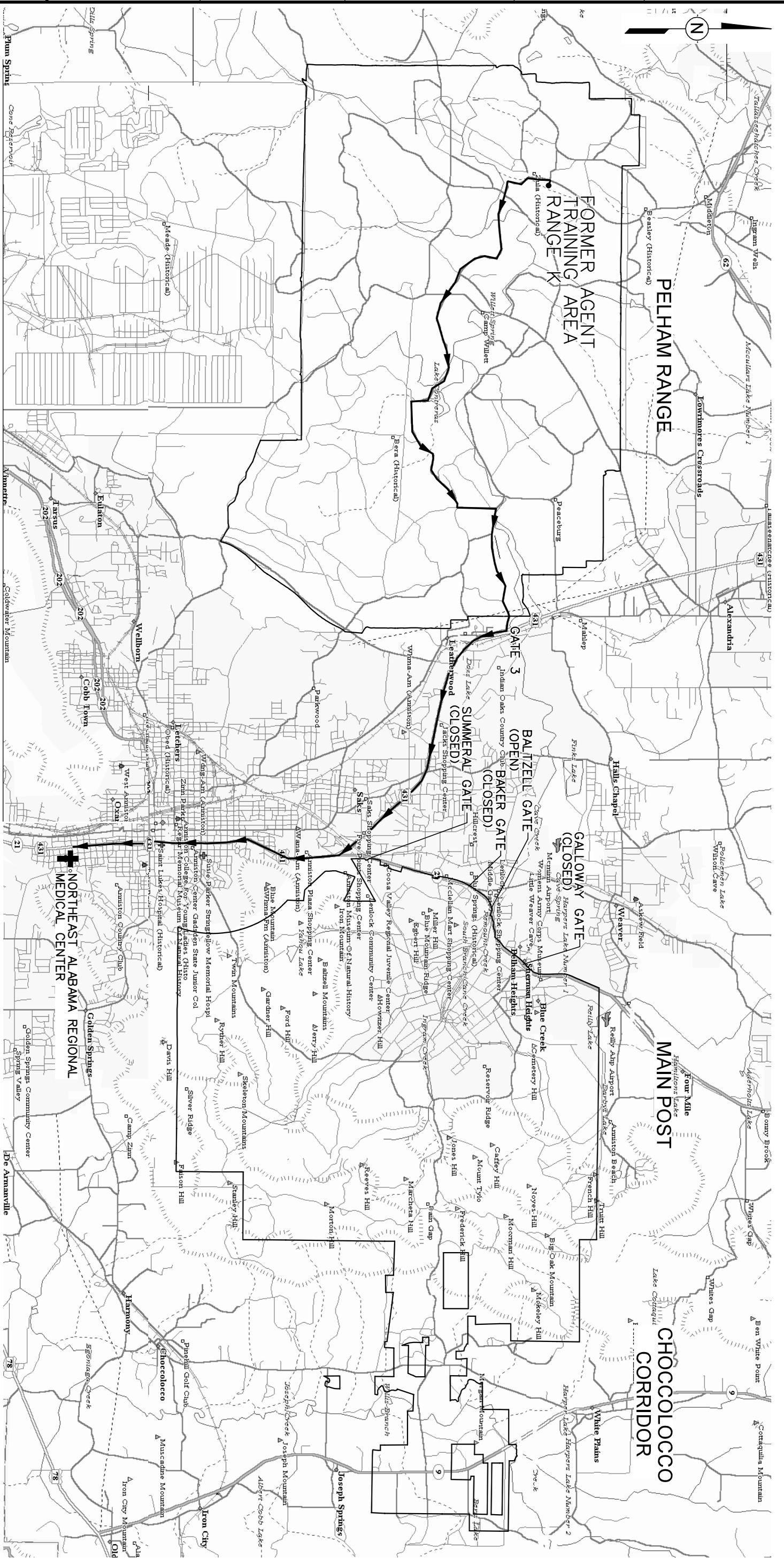
| Activity | Potential Hazards | Recommended Controls |
|---|--|---|
| Drilling and Installation of Monitoring Wells (continued) | Fire | <ul style="list-style-type: none"> X Mechanized equipment shall be shut down prior to and during fueling operations. X Have fire extinguishers inspected and readily available. |
| | Fall hazards | <ul style="list-style-type: none"> X Personnel are not allowed to work off of machinery or use them as ladders. X Use fall protection when working above 6 feet. |
| | Contact with rotating or reciprocating machine parts | <ul style="list-style-type: none"> X Use machine guards; use long-handled shovels to remove auger cuttings. X Safe lockout procedures for maintenance work. |
| | Heavy lifting | <ul style="list-style-type: none"> X 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"> X Practice good housekeeping, keep work area picked up and clean as feasible. X Continually inspect the work area for slip, trip, and fall hazards. |
| | Contact with potentially contaminated materials | <ul style="list-style-type: none"> X Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized. X Stop immediately at any sign of obstruction. X Do not breathe air surrounding boring unless necessary. X Upgrade to respirator if necessary. X Avoid skin contact with soil cuttings. Wear gloves. X Stay clear of moving parts of drill rig. |
| | Drum handling | <ul style="list-style-type: none"> X 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. X 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. X If moving a drum unassisted, be sure to leverage properly, use proper lifting techniques, and wear safety glasses and steel-toed boots. X 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
Range K, Parcel 203(7)
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">X UXO avoidance monitoring will be conducted by a UXO specialist prior to beginning activities.X If UXO is encountered, cease all activities, mark the location, and notify the site manager and UXO specialist immediately. |
| | Accidental exposure to chemical agents | <ul style="list-style-type: none">X Modified Level D personal protective equipment (PPE) will be required. During the first 15 feet depth of each monitoring well installation activity, downhole geophysics will be performed.X Engineering controls will be used as appropriate.X Personnel will be equipped with an emergency egress air supply pack. |

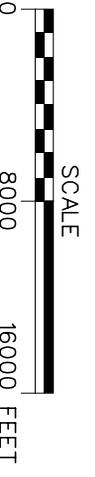


LEGEND:

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

DRIVING DIRECTIONS FROM PELHAM RANGE GATE 3 TO THE NORTHEAST ALABAMA MEDICAL CENTER

- EXIT PELHAM RANGE AT GATE NO. 3 AND TURN RIGHT ON U.S. HWY 431
- CONTINUE TO 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 MCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



ATTACHMENT 1

**PELHAM RANGE EMERGENCY ROUTE AND
RANGE CONTROL CONTACT**

FORT MCCLELLAN ALERT AND NOTIFICATION SYSTEM

An outdoor electronic alert and notification system is operational on Fort McClellan and Pelham Range. The purpose of this system is to provide warning(s) of an emergency situation that poses a threat to the safety and health of personnel on Fort McClellan and Pelham Range. The system has the capability of providing digital voice, electronic tone alerts and live voice loudspeaker warnings of emergency situations. The following is a list of the digital voice and associate tone alerts for the various hazards that could threaten personnel on both portions of the installation:

1. **THIS IS A TEST!** This is a test of the Fort McClellan emergency warning system. **THIS IS A TEST AND ONLY A TEST!** **WAIL TONE**

This message is used for the monthly test on the first Tuesday at 1600 hrs.

2. **WARNING! TORNADO WARNING!** A tornado warning has been issued for this area. Seek shelter immediately. Tune to a local radio station. Seek shelter immediately. **TORNADO WARNING!** **SOLID TONE**

3. **WARNING! SEVERE WEATHER WARNING!** A severe weather warning has been issued for this area. Standby for further instructions. Tune to a local radio station. **SEVERE WEATHER WARNING!** **SOLID TONE**

4. **WARNING! THUNDERSTORM WARNING!** A thunderstorm warning has been issued for this area. Standby for further instructions. Tune to a local radio station. **THUNDERSTORM WARNING!** **SOLID TONE**

5. **WARNING! HAZARDOUS MATERIALS ACCIDENT!** There has been a hazardous materials accident. Standby for further instructions. Tune to a local radio station. **HAZARDOUS MATERIALS ACCIDENT!** **HI-LO TONE**

6. **WARNING! Anniston Army Depot has announced a chemical agent release. Standby for further instructions. Tune to FM 100 radio station. CHEMICAL AGENT RELEASE!** **WHOO TONE**

7. **ALL CLEAR!** The emergency situation is over. **ALL CLEAR!** The emergency situation is over. **ALL CLEAR!** **NO TONE**

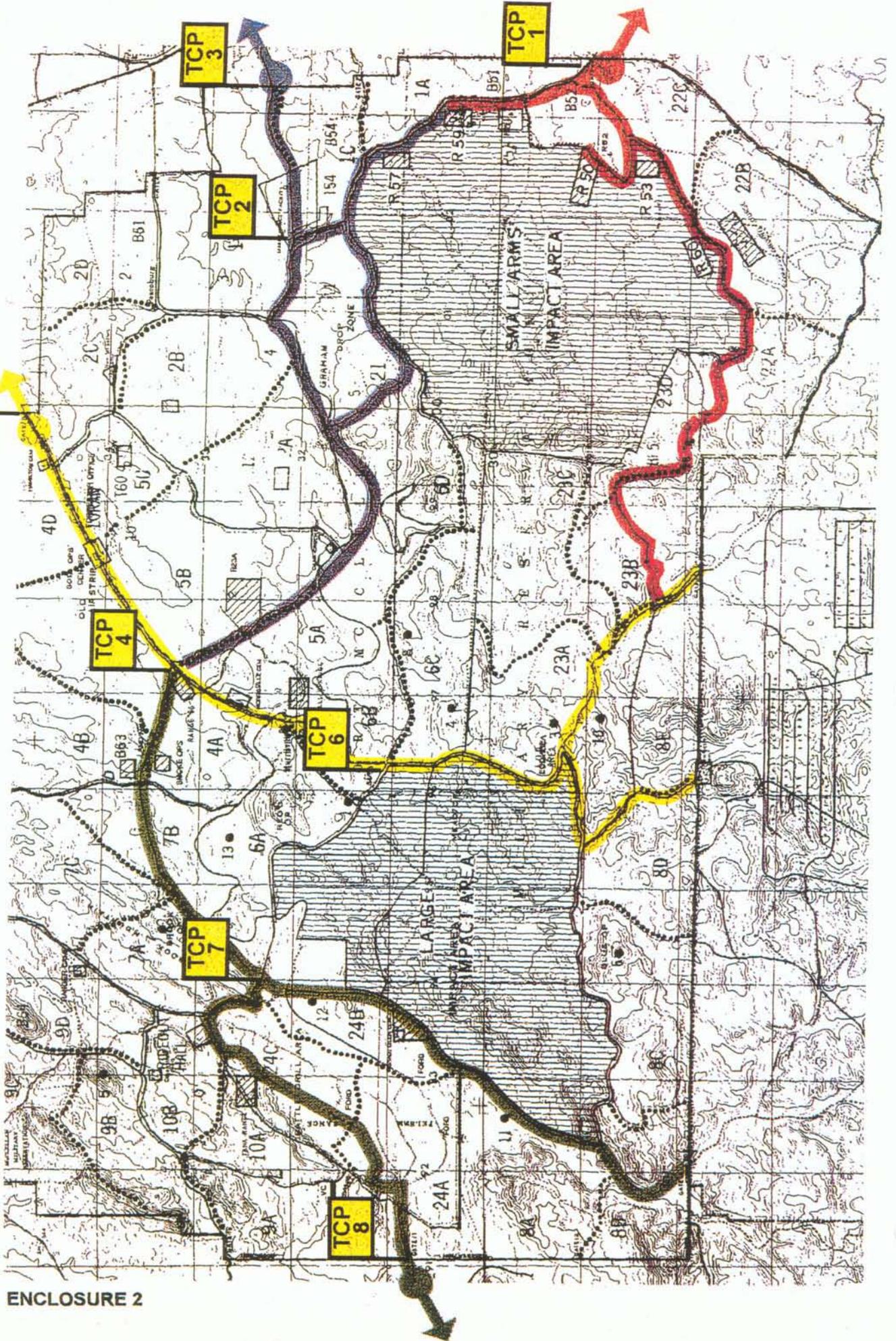
8. **CHEMICAL ALERT!** Initiate evacuation procedures immediately. A chemical agent release has occurred at Anniston Army Depot. **EVACUATE IMMEDIATELY! CHEMICAL ALERT!** **WHOO TONE**

This voice message was specifically designed for Pelham Range.

Sequence of initial alert and notification is:

VOICE MESSAGE--TONE--VOICE MESSAGE--TONE
repeated twice, again as the situation warrants.

PELHAM RANGE EVACUATION ROUTES



Pelham Range Emergency Routes

- Range Control will determine depending on the wind direction the best egress route.
- Range Control will advise over the radio which route to take.
- 4 routes have been indicated on the enclosed map.

Medical Emergency

- Exit gate Number 3 at Pelham Range,
- Turn right onto Route 431,
- Turn right onto Highway 21 (Quintard),
- Turn left onto 10th Street,
- Hospital is 1-1/2 blocks ahead,
 - Northeast Alabama Regional Medical Center
 - 400 East 10th Street
 - Anniston, Alabama

Range Control- Pelham Range

- Building 1120, Ft McClellan
Phone No. 848-6772
Fax No. 848-4412

All access permits are issued by range control, daily.

**Final
Remedial Investigation
Site-Specific Unexploded Ordnance Safety Plan Attachment
Former Agent Training Area, Range K, Parcel 203(7)
Fort McClellan, Calhoun County, Alabama**

Prepared for:

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

Prepared by:

**IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923**

**Task Order CK05
Contract No. DACA21-96-D-0018
IT Project No. 774645**

March 2001

Revision 1

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List of Acronyms

See Attachment 1, List of Abbreviations and Acronyms, of the site-specific field sampling plan attachment contained in this binder.

1.0 Introduction

This document defines anomaly avoidance procedures for activities to be performed by IT Corporation (IT) in conjunction with the site investigation activities at Range K, Former Agent Training Area, Parcel 203(7), at Fort McClellan (FTMC), Calhoun County, Alabama. IT will perform visual surveys and collect surface, subsurface, and groundwater samples for chemical analysis at Range K, Parcel 203(7). In performing these activities, IT will require unexploded ordnance (UXO) anomaly avoidance services to avoid any potential surface UXO or subsurface anomalies during sampling activities. Intrusive anomaly investigation is not authorized for this site investigation work.

The Former Agent Training Area, Range K, Parcel 203(7), is located in the northwest corner of Pelham Range, which is west of the Main Post. Range K is a 2-acre former chemical agent training area. The complete time of operation and the precise nature of the activities conducted at the site has not been completely documented. It is reported that shell tapping, where rounds were opened and decontaminated was operated at Range K prior to 1961 through 1963. During training exercises, breaking open one 155 millimeter (MM) distilled mustard (HD), one 105-mm Sarin (GB), and one 4.2-inch phosgene (CG) mortar round was standard practice. The site has been physically rearranged by bulldozing and records indicate that the area was cleared for surface usage in 1967. Spent rounds, decontamination agent (DANC) cans, and diethylenetriamine, sodium hydroxide, ethylene glycol monomethyl ether (DS-2) cans were observed by the U.S. Army Environmental Center (USAEC) during a site visit. Subsequent visits confirmed these observations. The site was located based on the 1997 U.S. Army Toxic and Hazardous Material Agency (USATHAMA) installation assessment and on the locations of a downed fence line.

The site is located in a valley flanked by northeast-southwest topographic ridges and thrust faults. The elevation of the site ranges from about 570 and 610 feet above mean seal level (National Geodetic Vertical Datum of 1929). Surface drainage is to the southeast.

2.0 UXO Team Composition

A UXO team will be on site during all sampling activities for anomaly avoidance on a site with known or suspected ordnance and explosives (OE).

- a) The UXO team will be composed of two UXO qualified personnel, depending on the tasks to be performed. One UXO team member will be a UXO Technician III and the other will be, as a minimum, a UXO Technician II. Qualifications of these personnel are published in Engineering Pamphlet 1110-1-18 and stated in Section 2.0 of the installation-wide OE management plan (IT, 2000).
- b) For the work to be performed in accordance with this work plan, IT will use a Schonstedt GA-72 magnetometer to assist in surface and subsurface sweeps. The Schonstedt GA-230 will be the instrument used for downhole anomaly avoidance.
 - (1) A geophysical prove-out test grid will be established and each geophysical instrument will be checked for operational reliability and calibration against this known response prior to field use each day. If calibration checks indicate that the instrument is not functioning within an acceptable range, and field adjustments do not resolve the performance discrepancy, the instrument will be tagged and removed from service.
 - (2) Preventive maintenance will be performed on a regularly scheduled basis. If an equipment problem is encountered, maintenance will be performed as soon as possible; records of the unscheduled maintenance and corrective action will be collected and retained for future reference.

3.0 Responsibilities

The UXO team member(s) will have the following responsibilities for anomaly avoidance procedures at the sites specified in this work plan.

- a) Provide the explosive ordnance recognition, location and safety functions for IT employees and any subcontractors during sampling activities. Sampling activities include surface and subsurface soil sampling, drilling and sampling of monitoring wells, survey of sample points, and safe access and egress to the site.
- b) Conduct UXO safety briefings for all site personnel and visitors.

4.0 Authority

For this investigation, the UXO team will not perform any disposal activities. If the team identifies an OE item, it will clearly mark the item, and direct operations to another location for safe execution of the investigation. The UXO team will not destroy the item. The UXO team will report the item to the IT site manager and the FTMC transition force at FTMC for disposition of the item.

5.0 Anomaly Avoidance Procedures for Sampling Activities_____

When conducting sampling activities in the areas described in this work plan, consideration must be given for possible OE contamination. Since these areas may contain OE contamination, the UXO team must conduct a surface access survey and a subsurface survey of UXO before any type of activities commence, including foot and vehicular traffic.

a) Access Surveys.

- (1) The UXO team will conduct access surveys of the footpaths and vehicular lanes approaching and leaving each of the investigation sites. If UXO is found during the access survey, the ordnance will be conspicuously marked and avoided. No personnel will be allowed outside of the surveyed areas.
- (2) The UXO team will locate an access route to and from the proposed investigation site that is free of surface and near-surface UXO using an appropriate geophysical detection instrument as required. The access route should be as wide as the minimum number of feet of the widest vehicle.
- (3) Geophysical instrumentation should be used to locate potential UXO just below the surface that may be encountered through erosion from rain, continual vehicular traffic, or subsurface sampling and drilling activities. If surface UXO or subsurface UXO-related anomalies are encountered, the access route must be diverted to avoid contact.
- (4) The boundary of each access route and investigation site should be marked using white survey flagging and pin flags. Non-UXO qualified personnel will not be allowed outside designated access areas without proper UXO escort. Near-surface anomaly locations will be prominently identified with yellow survey flagging or pin flags. Red flagging will be placed adjacent to any discovered UXO for subsequent visual reference.
- (5) At the actual investigation site, the UXO team must also complete an access survey of an area sufficient to support mechanical excavation equipment maneuverability, parking of support vehicles, and establishment of decontamination stations, as appropriate for site activities. As a minimum, the surveyed area should have a dimension in all directions equal to twice the length of the largest vehicle or piece of equipment to be bought on site. Intrusive activities will not proceed if an anomaly is detected that cannot be positively identified as inert material.

In this event, the sampling personnel must select an alternate investigation area or configuration.

- b) **Surface/Near Surface-Sampling.** Surface soil samples are normally collected at depths of zero to twelve inches below ground surface. The UXO team will visually survey the surface of the selected surface soil sampling sites for any indication of UXO or UXO-related contamination. In addition, the UXO team will utilize a magnetometer over the site before sampling begins. Any anomalies detected will be prominently marked with a yellow survey flag or pin flag for avoidance during sampling activities. If too many anomalies are found within an area of interest, the sampling personnel will select an alternate sampling location for collection of surface/near surface samples.

- c) **Subsurface Soil Sampling and Monitoring Well Installations.** Subsurface soil sampling is considered to be the collection of samples below a nominal depth of approximately 12 inches from a split-spoon, Shelby tube, or bucket auger soil sampler using drilling techniques. Drilling techniques are also used to install groundwater-monitoring wells for investigative sampling.
 - (1) The UXO team must conduct an access survey to locate an access route to the proposed sampling or drilling location as well as an access survey at the proposed drilling site that is large enough to support drill rig maneuverability, parking of support vehicles, and establishment of decontamination stations. As a minimum, the surveyed area should have a minimum dimension in all directions equal to twice the length of the largest vehicle or piece of equipment to be brought on site. The UXO team will clearly mark the boundaries of the cleared soil sampling or well site. Personnel will not go outside the cleared area. If a pre-selected area indicates magnetic anomalies, a new sampling/drilling site will be chosen.

 - (2) The UXO team must complete a subsurface geophysical survey of the proposed drill hole location(s). If the subsurface sampling depth is greater than the geophysical instrumentation detection capabilities below existing ground surface, then the UXO team must incrementally complete the geophysical survey as outlined below.
 - (a) **Underground Utilities.** Utility clearance and/or excavation permits are not required for the areas covered by this document. In the event subsurface utilities are suspected in an excavation area, the UXO team must attempt to verify their location using geophysical instrumentation. Note that only utilities with a ferrous content are detectable with a geophysical instrument. All located utilities should be marked with a series of pin flags to visually delineate their approximate subsurface routing.

 - (b) **Pilot Hole.** An incremental geophysical survey of the drill hole location(s) will be initially accomplished using a hand auger to install a pilot hole.

An access survey of the immediate vicinity of the pilot hole location will precede its installation. The UXO team using a manual or mechanical portable auger will install the pilot hole. The augured hole will be inspected for anomalies with a geophysical instrument (configured for down hole utilization) at 2-foot increments as the hole is advanced below ground surface. The pilot hole will also be inspected with the geophysical instrument upon reaching the final depth of the hand auger providing a total clearance depth equal to pilot hole depth plus 2 feet. If the proposed site is still free of magnetic anomalies, the drilling equipment may be brought on site and utilized. Hand augering of a hole will not proceed if an anomaly is detected that cannot be positively identified as inert material. If OE is encountered or an anomaly cannot be positively identified as inert material, the sampling personnel must select a new drill hole location.

- (c) Monitoring of Drilling by Others. Once a drilling site has been surface cleared and a pilot hole installed as described above, the drilling contractor will be notified that the site is available for subsurface sampling or monitoring well installation. The drilling contractor's actual drill hole must be located within a 2-foot radius of the pilot hole installed by the UXO team. The UXO team will continue to complete a subsurface inspection for anomalies with a geophysical instrument configured for down hole utilization at 2-foot increments as the drilling is advanced from the clearance depth of the pilot hole until achievement of one of the following indicators: the drilling activity is completed; the drilling is extended to depths greater than 30 feet below ground surface; or a qualified geologist determines that virgin soil is found.
- (d) Drilling equipment and/or metallic support materials (e.g., drill rig, augers, drill rods, casings, etc.) may create an interference affecting the operation of the geophysical survey instrumentation during the incremental depth inspection process. In such event, the item(s) creating the interference must be relocated outside the interference range of the geophysical instrument during each incremental depth inspection of the drill hole for the presence of anomalies. Drilling of a hole will not proceed if OE is encountered or if an anomaly is detected that cannot be positively identified as inert material. In this event, the sampling personnel must select a new drill hole location.

6.0 UXO/OE Disposition

Since the purpose of UXO support during activities is anomaly avoidance, the UXO team is not tasked to perform UXO/OE disposal. The UXO team will notify the site manager and the FTMC transition force if UXO is encountered that cannot be avoided or if the item presents an imminent hazard requiring immediate action based on the items fuzing or current condition. The UXO/OE item will be marked and recorded and all project personnel will evacuate the area.

7.0 Safety

In addition to the requirements of the site-specific safety and health plan prepared for this site, the UXO team will ensure the following:

- a) During the access and subsurface surveys conducted with a geophysical instrument, the UXO team members will not wear safety shoes or other footwear that would cause the instrument to present a false response.
- b) The UXO team will not be required to wear protective helmets unless a head threat is present.

8.0 Quality

A UXO quality control specialist is not required for this work. However, quality control instructions and procedures listed in Section 9.0 of the installation-wide OE management plan (IT, 2000) will be followed, as appropriate to this task.

9.0 Reference

IT Corporation (IT), 2000, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, March.

**Risk Assessment Report
Additional Remedial Investigation Activities at
Former Agent Training Area, Range K, Parcel 203(7) in the Vicinity of
Station No. 6, Parcel 211(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) (formerly IT Corporation [IT]) to perform a remedial investigation (RI) at the Former Agent Training Area, Range K, Parcel 203(7). In 2001, Shaw initiated RI field activities at Range K, including the installation of monitoring wells and the collection of soil and groundwater samples. In 2002/2003, Shaw installed and sampled six additional wells. Based on the fieldwork and analytical results to date, additional monitoring wells will be installed south of Range K, in and around the area of Station No. 6, Subsection of the Former Toxic Gas Area, Parcel 211(7).

In accordance with Army Regulation (AR) 385-10, *Applicability of Biological Warfare Materiel and Non-Stockpile Chemical Warfare Materiel Response Activity Interim Guidance*, this risk assessment report is provided to determine the probability of encountering chemical warfare material (CWM) at Station No. 6 during ongoing RI field activities at the Former Agent Training Area, Range K.

2.0 SITE BACKGROUND

Range K. Range K is a 2-acre former chemical agent training area located in the northwestern portion of Pelham Range (Environmental Science Engineering [ESE], 1998). The complete time of operation and the precise nature of the activities conducted at the site have not been documented. A reported shell tapping area where rounds were opened and decontaminated was operated at Range K prior to 1961 and continued through the summer of 1963 (ESE, 1998). During training exercises, standard training practice included breaking open a 155-millimeter (mm) distilled mustard (HD) mortar round, a 105-mm sarin (GB) round, and a 4.2-inch phosgene (CG) round. The site has been altered by bulldozing, and records indicate that the area was cleared for surface usage in 1967 (ESE, 1998). Spent rounds, decontamination agent (noncorrosive) (DANC) cans, and decontamination solution no. 2 (DS2) cans were observed by

the U.S. Army Environmental Center (USAEC) beyond a tree line to the south and west in November 1992 and have been confirmed during subsequent site trips. A tapped 155-mm round (HD) and a tapped 105-mm round (GB) were observed at the site (Science Applications International Corporation [SAIC], 1995; U.S. Army Center for Health Promotion and Preventive Medicine, 1999). The Alabama Army National Guard presently uses Range K and the surrounding areas for ongoing military training maneuvers and bivouac activities.

Station No. 6. Station No. 6 is an approximately 4.5-acre area located approximately 500 feet southwest of Range K. Station No. 6 was one of seven training stations that comprised the former Chemical Obstacle Course. The course was located in the northwest portion of Training Area 10B at Pelham Range, falling within the parcel boundary of the Former Toxic Gas Area, Parcel 211(7). The Chemical Obstacle Course was used from approximately 1955 until 1963. Range K is also located within the Former Toxic Gas Area.

According to the Chemical Corps School lesson plan, Station No. 6 was a training area for mines containing molasses residue, which simulated encountering live CWM. Other CWM contamination scenarios may have involved placing chemical agent (mustard) on the ground for trainees to detect.

3.0 PREVIOUS INVESTIGATIONS

Previous investigations have been conducted at Range K and Station No. 6, as discussed in the following sections.

3.1 RANGE K

SAIC (1993). Between June 1991 and July 1993, SAIC conducted a site investigation (SI) to determine the nature of potential contamination at the 17 sites identified by the USAEC (including Range K). In April 1992, a sediment sample was collected at Range K from a drainage area that contained water. The sediment sample was screened in the field for the presence of HD, GB, and VX, and was analyzed in the laboratory for HD degradation products, GB degradation products, and VX degradation products. CWM degradation products were not detected in the sample.

An electromagnetic (EM) survey was conducted to investigate the presence or absence of buried objects. An anomaly was reported approximately 20 to 50 feet from the origin along a transect where several partially buried drums were located. The remainder of the EM profiles appeared to be undisturbed. An independent site visit by USAEC in November 1992 identified DS2 cans,

HD and GB rounds, and other ordnance in the southern portion of the site. Based on this discovery, the SI report concluded that Range K should be further evaluated through surface reconnaissance, geophysical survey, and soil sampling (SAIC, 1993).

SAIC (1995). A remedial investigation/feasibility study (RI/FS) was conducted by SAIC at Range K (SAIC, 1995a; SAIC 1995b). Four shallow soil samples were collected at the site and analyzed for CWM breakdown products and explosive compounds. Nitroglycerin was detected at one sampling location at a concentration of 0.962 micrograms per kilogram. CWM breakdown products were not detected in the samples.

As part of the RI/FS, SAIC also conducted a geophysical survey. Time Domain EM (TDEM) and magnetometer measurements were obtained over a gridded area measuring 280 feet by 400 feet at Range K. Four anomalies were identified in the TDEM data that indicated the presence of buried metallic material (fence posts and sectioned steel drums) at Range K. Other surficial materials (empty DANC cans and ordnance) were observed at the site. The magnetometer data yielded results similar to the TDEM survey. Several anomalies were attributed to surficial or buried fencing material. Anomalies observed in total field contour data along the west side of the surveyed area correlated with a potential fence location and are probably buried material associated with a former barbed wire fence. Similar correlations could be made for anomalies along the south side of the plot. The magnetic anomalies correlate with two of the anomalies in the TDEM data.

The results of the tandem geophysical survey were not comprehensive because of poor satellite visibility above the wooded site. Although the site coverage was described as poor, 14 magnetic anomalies were detected across the site. The majority of the detected anomalies were comparatively small and ranged in depth between the surface and approximately 4 feet below land surface.

Forty-five miniature continuous air monitoring system (MINICAMS) samples were also collected during the RI. HD, nerve agent (VX), and CWM were not detected in the MINICAMS samples at concentrations above time-weighted averages.

Shaw (2000). In 2000, Shaw conducted fieldwork at Range K to provide data for a DOD relative risk site evaluation. Field activities included installation of four groundwater monitoring wells and collection and analysis of four surface soil samples, four subsurface soil samples, and

four groundwater samples. Quicksilver, Inc. provided MINICAMS screening for CWM during the field activities. CWM was not identified during the MINICAMS screening.

Shaw (2001 – Present). In 2001, Shaw initiated an RI at Range K (IT, 2001a). Field activities included installation of 17 groundwater monitoring wells and collection and analysis of nine surface soil samples, nine subsurface soil samples, and 35 groundwater samples (2 rounds). CWM breakdown products were not detected in surface and subsurface soil samples. Chlorinated VOCs were detected in several groundwater samples.

3.2 STATION NO. 6

In 2002, Shaw conducted an SI at Station No. 6 to determine the presence or absence of contamination at the site. SI field activities included monitoring well installation and collection of soil and groundwater samples for analysis. In addition, CWM screening was conducted following procedures outlined in the site-specific field sampling plan for Station No. 6 (IT, 2001b). The CWM screening program included real-time CWM analysis using MINICAMS, headspace analysis at an onsite laboratory, and sample analysis for chemical agent breakdown products at an offsite laboratory. CWM was not identified during field screening using MINICAMS. Furthermore, CWM breakdown products were not detected in any of the soil and groundwater samples collected at the site.

4.0 ADDITIONAL RI FIELD ACTIVITIES

The additional RI field activities for Range K in and around Station No. 6 include the installation and sampling of four bedrock groundwater monitoring wells. Because UXO may be present at the site, Shaw will also conduct UXO avoidance activities, including surface sweeps and downhole surveys of soil borings in addition to conducting utility clearances before installing soil borings. A UXO sweep will be conducted over areas that will be surveyed and sampled to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for easy avoidance.

Based on previous work conducted at Range K and Station No. 6, CWM screening with MINICAMS is not required at Station No. 6.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of previous investigations conducted at Range K and at Station No. 6 (including geophysical survey and CWM screening and analysis) and the UXO avoidance activities that will be conducted during the additional RI field activities, the probability of encountering CWM at Station No. 6 during Range K RI field activities is considered remote. Per AR 385-10, Category 4 (remote) sites are those at which it is unlikely but possible to encounter CWM during proposed site activities.

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.

IT Corporation (IT), 2001a, *Final Remedial Investigation Site-Specific Field Sampling Plan Attachment, Range K, Former Agent Training Area, Parcel 203(7), Fort McClellan, Calhoun County, Alabama*, March.

IT Corporation (IT), 2001b, *Final Site Investigation Site-Specific Field Sampling Plan, Site-Specific Safety and Health Plan, and Site-Specific Unexploded Ordnance Safety Plan Attachments, Station No. 6, Subsection of Former Toxic Gas Area, Parcel 211(7), Fort McClellan, Calhoun County, Alabama*, December.

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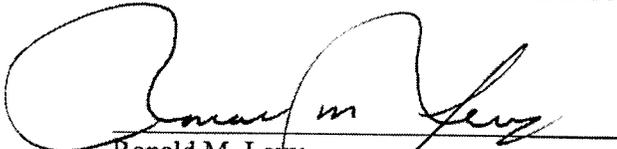
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Science Application International Corporation (SAIC), 1993, *Site Investigation Report, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Installation Restoration Division, Aberdeen Proving Ground, Maryland, August 31.

U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM), 1999, *Draft Preliminary Assessment No. 38-EH-1775-99, Fort McClellan Army National Guard Training Center, Fort McClellan, Alabama*, May 28-June 17.

Approved by:

This document has been prepared in accordance with AR 385-10, which requires that a risk assessment be conducted at potential CWM sites. I concur with the conclusions presented in this risk assessment document regarding the potential for encountering CWM at Station No. 6 during additional RI field activities at the Former Agent Training Area, Range K, Parcel 203(7).



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30 April 03
Date