

July 6, 2001

IT-MC-CK10-0119  
Project No. 796887

Mr. Ellis Pope  
U.S. Army Corps of Engineers  
Mobile District  
Attn: CESAM-EN-GE (Pope)  
109 St. Joseph Street  
Mobile, AL 36602

Contract: **Contract No. DACA21-96-D-0018/CK10  
Fort McClellan, Alabama**

Subject: **Final Site-Specific Work Plan for the Groundwater Investigation at the Burial  
Mound at Rideout Field, Parcel 202Q-RD-Pelham Range**

Dear Mr. Pope:

This letter serves to document our proposed field activities at the Burial Mound at Rideout Field (Parcel 202Q-RD). The proposed field activities and rationale were discussed at a meeting on April 11 and 12, 2000 with representatives of Fort McClellan, Nuclear Regulatory Commission (NRC), United States Environmental Protection Agency (EPA), Alabama Department of Health, and IT Corporation. Additional discussions on the proposed field activities and rationale were held during the May 24, 2001 meeting with representatives of Fort McClellan, U.S. Army Corps of Engineers, EPA, and IT Corporation. During the May 24, 2001 meeting, EPA requested a fourth monitoring well to be installed approximately 650 feet south of the Burial Mound.

## **Background**

The Burial Mound at Rideout Field is located in the western part of Pelham Range in Training Area 24C (Figure 1). Rideout Field was used as part of the Chemical School's Radiological Survey Training Facility from 1965-1972 and as a burial site for radioactive material. The burial site has since been excavated, and the soils have been piled in an area that is known as the Burial Mound.

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The site where the Burial Mound is located was part of the Rideout Field Survey Training Area at the north end of Rideout Field. The Rideout Field Survey Training Area has been cleared and leveled and was designated as a burial ground in 1957. Radioactive waste from the waste burial ground on Main Post (Iron Mountain site) was transferred to Pelham Range and buried at the site during the same year. Burial of waste, mostly laboratory waste (Cs-137, Co-60 and possibly Sr-90) continued through the 1960s. In 1972-73, the site was cleared, and the mound was created during the excavation of the burial site (Response by John May, U.S. Army Chemical School).

Radioactive waste from Rattlesnake Gulch (now known as Iron Mountain) was also reportedly buried at the Burial Mound. Radioactive materials used in training included Co-60, Co-137 and Sr-90 (Roy F. Weston, Inc., *Enhanced Preliminary Assessment*, December 1990).

Items disposed at the Burial Mound include leaking Co-60 sources that were routinely buried in cut-down 55-gallon drums and soils contaminated from leaking Co-60 sources (U.S. Army Center for Health Promotion and Preventative Medicine, [CHPPM], *Draft Preliminary Assessment No. 38-EH-1775-99, Fort McClellan Army National Guard Training Center, Fort McClellan, Alabama*, June, 1999).

The current footprint of the Burial Mound is approximately 50 feet wide by 80 feet long. The burial mound is surrounded by a strand of rope that supports "Do Not Enter" signs. Radioactive wastes are recorded as being buried at a depth of 6 to 8 feet (CHPPM, 1999).

In 1996, CHPPM conducted an Industrial Radiation Study to assess radiation health hazards associated with potential contamination and to determine if residual radioactivity at the Burial Mound site was in compliance with U.S. Nuclear Regulatory Commission guidance for release to unrestricted use. Results of the study indicated residual contamination above both the Co-60 and Cs-137 activity in soil release criteria, and subsurface measurements indicative of buried radioactive sources or substantial contamination pockets in the subsurface environment. CHPPM recommended the excavation, removal, and proper disposal of the surface and subsurface contamination identified and the performance of final status survey of the Burial Mound to support release of this area for unrestricted use.

The future land use of the property is projected as a training area for the Alabama National Guard. The NRC has requested that an evaluation of groundwater at the site be conducted to determine whether or not Cr-60, Cs-137, and Sr-90 are present in the groundwater downgradient of the Burial Mound.

### **Field Activities**

IT originally proposed to install three groundwater monitoring wells at the Burial Mound at Rideout Field as discussed at the April 11 and 12, 2000 meeting. As a result of further discussion at the May 24, 2001 BCT meeting, EPA requested a fourth groundwater monitoring well at the Burial Mound at Rideout Field. One of the four proposed groundwater monitoring wells will be installed upgradient,

and the remaining three groundwater monitoring wells will be installed downgradient of the Burial Mound at Rideout Field, in order to determine the presence or absence of gamma-emitting radionuclides. The proposed groundwater monitoring well locations are shown on Figure 2. The monitoring wells will be drilled, installed, and developed as specified in Section 4.8 and Appendix C of IT's *Final Installation-Wide Sampling and Analysis Plan (SAP)*, March 2000.

The rationale for the monitoring well locations are presented in Table 1. The monitoring well casing will consist of new 2-inch inside-diameter, Schedule 40, threaded, flush-joint, polyvinyl chloride pipe. Attached to the bottom of the well casing will be a section of new threaded, flush-joint, 0.010-inch continuous wrap polyvinyl chloride well screen, approximately 10 to 20 feet long. The well will be installed so the well screen straddles the water table.

Soil samples for lithology will be collected continuously every 5 feet to the total depth of the hole during hollow-stem auger drilling to provide a detailed lithologic log. The samples will be collected for lithology using a 24-inch-long, 2-inch-or-larger-diameter, split-spoon sampler. The soil borings will be logged in accordance with American Standard for Testing and Materials Method D 2488 using the Unified Soil Classification System. The soil samples will be screened in the field using a photoionization detector. The monitoring wells will be drilled, installed, and developed as specified in Section 4.8 and Appendix C of the SAP (IT, 2000). The exact monitoring well locations will be determined in the field by the on-site geologist, based on actual field conditions.

A health physicist technician (HP Tech) will be on site during the drilling operations. The HP Tech will perform radiological surveys of the general work area during intrusive operations and of the drilling equipment after it is retrieved from the borehole. If readings measure more than 1.5 times the background radiation level, the HP Tech will stop work and notify the senior health physicist and project health and safety officer as specified in the site-specific safety and health plan attachment.

The monitoring well locations and elevations will be surveyed following the methodology outlined in Section 4.17 of the SAP.

At the completion of well installation and development activities, four groundwater samples will be collected. The groundwater sampling rationale are provided in Table 1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 2.

Groundwater samples will be collected as outlined in Section 4.9.1.4 of the SAP and analyzed for gamma-emitting radionuclides (Table 3). Low-flow groundwater sampling methodology will be used to collect the samples. Equipment decontamination procedures will follow the methodology presented in Section 4.10.1.2 of the SAP.

Investigative-derived waste generated during well installation and sampling will be managed in

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accordance with the procedures outlined in Appendix D of the SAP.

The presence of unexploded ordnance (UXO) is possible at the Burial Mound at Rideout Field. Therefore, IT will conduct UXO avoidance activities as outlined in Appendix E of the SAP and the attached Site-Specific UXO Safety Plan prior to initiating intrusive field activities at the Burial Mound at Rideout Field. In addition, IT has attached a Site-Specific Health and Safety Plan for use during field activities at the Burial Mound. The SSHP has been written to take into account radiological hazards and precautions against exposure to possible radiation.

### **Data Evaluation and Reporting**

At completion of the field activities, draft and final letter summary reports will be prepared to evaluate the absence or presence of any gamma-emitting radionuclides in the groundwater at the site and to recommend further actions, if appropriate. The data will also be used to determine the depth to water and construct a groundwater contour map. The data generated from the installation and sampling of the four monitoring wells will be reviewed against the applicable federal drinking water guidelines.

### **Schedule**

The project schedule for the field activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team.

I have distributed copies of this document according to the distribution list indicated below. If you have any questions, or need further information, please contact me at (770) 663-1429 or Steve Moran at (865) 694-7361.

Sincerely,

Jeanne A. Yacoub, P.E.  
Project Manager

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**Table 1**

**Sampling Locations and Rationale  
Groundwater Investigation at the Burial Mound at Rideout Field - Pelham Range  
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
RF-MW01	Groundwater	Groundwater monitoring well to be placed on the upgradient, north side of the burial mound. Sample data will indicate if contaminant releases into the environment have occurred from the radioactive waste buried. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
RF-MW02	Groundwater	Groundwater monitoring well to be placed on the downgradient, southwest side of the burial mound. Sample data will indicate if contaminant releases into the environment have occurred from the potential radioactive waste in the Burial Mound. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
RF-MW03	Groundwater	Groundwater monitoring well to be placed on downgradient, southeast side of the burial mound. Sample data will indicate if contaminant releases into the environment have occurred from the radioactive waste buried. The monitoring well location will be used to establish a local groundwater flow direction and site-specific geology, and provide information on groundwater quality in the residuum aquifer.
RF-MW04	Groundwater	Groundwater monitoring well to be placed downgradient approximately 650 feet south of the burial mound in a topographic low at the direction of EPA. Sample data will indicate if radioactive contaminant releases into the environment have occurred.

**Table 2**

**Groundwater Sample Designations and QA/QC Sample Quantities  
Groundwater Investigation at the Burial Mound at Rideout Field - Pelham Range  
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Matrix	Sample Depth (ft)	QA/QC Samples			Analytical Suite
				Field Duplicates	Field Splits	MS/MSD	
RF-MW01	RF-MW01-GW-HV3001-REG	Groundwater	a				Full gamma Scan including Co-60 (DL @ 20 pCi/L) and Cs-137 (DL @ 10 pCi/L) and Sr-90 (DL @ 1 pCi/L)
RF-MW02	RF-MW02-GW-HV3002-REG	Groundwater	a				Full gamma Scan including Co-60 (DL @ 20 pCi/L) and Cs-137 (DL @ 10 pCi/L) and Sr-90 (DL @ 1 pCi/L)
RF-MW03	RF-MW03-GW-HV3003-REG	Groundwater	a	RF-MW03-GW-HV3004-FD			Full gamma Scan including Co-60 (DL @ 20 pCi/L) and Cs-137 (DL @ 10 pCi/L) and Sr-90 (DL @ 1 pCi/L)
RF-MW04	RF-MW04-GW-HV3005-REG	Groundwater	a				Full gamma Scan including Co-60 (DL @ 20 pCi/L) and Cs-137 (DL @ 10 pCi/L) and Sr-90 (DL @ 1 pCi/L)

\* Sample depth will depend on where sufficient first water is encountered to collect a water sample.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Field sample.

DL - Detection Limit

Co-60 - Cobalt-60

Cs-137 - Cesium-137

Sr-90 - Strontium-90

pCi/L - Pico curies per liter

Table 3

**Analytical Samples  
Groundwater Investigation at the Burial Mound at Rideout Field - Pelham Range  
Fort McClellan, Calhoun County, Alabama**

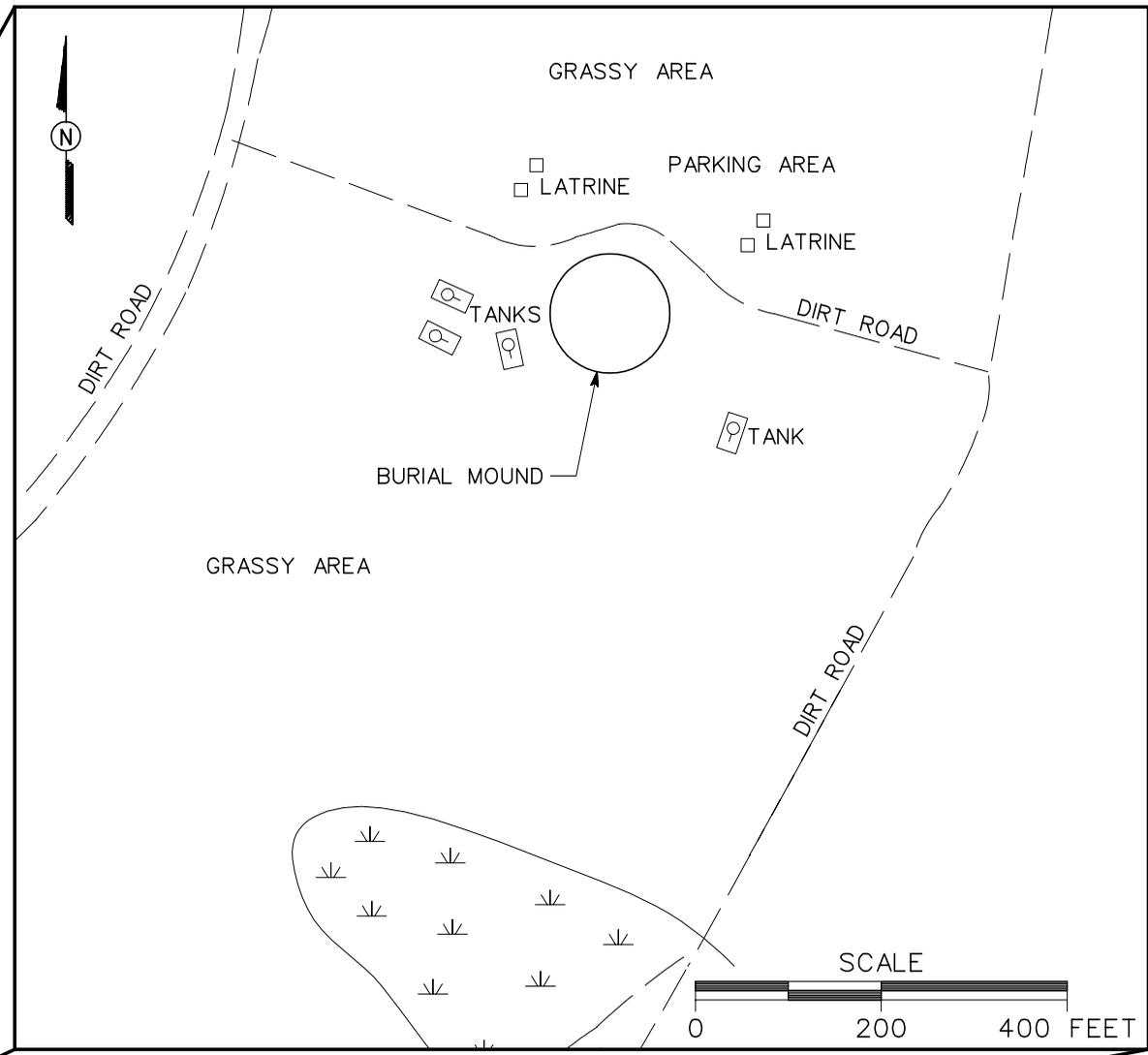
Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples <sup>a</sup>					EMAX	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (0%)	MS/MSS (0%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
<b>Burial Mound at Readout Field: 4 groundwater matrix samples</b>													
Sr-90 (DL @ 1 pCi/L)	EPA 905.0	water	normal	4	1	4	1	0	0	0	0	5	1
Full Gamma Scan including Co-60 (DL @ 20 pCi/L) and Cs-137 (DL @ 10 pCi/L)	EPA 901.1	water	normal	4	1	4	1	0	0	0	0	5	1
<b>Subtotal:</b>						<b>8</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>2</b>

<sup>a</sup>Field duplicate samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number.

Ship samples to: EMAX Laboratories, Inc.  
1835 205th Street  
Torrance, California 90501  
Attn: Sampling Receiving/Elizabeth McIntyre  
Tel: 310-618-8889  
Fax: 310-618-0818

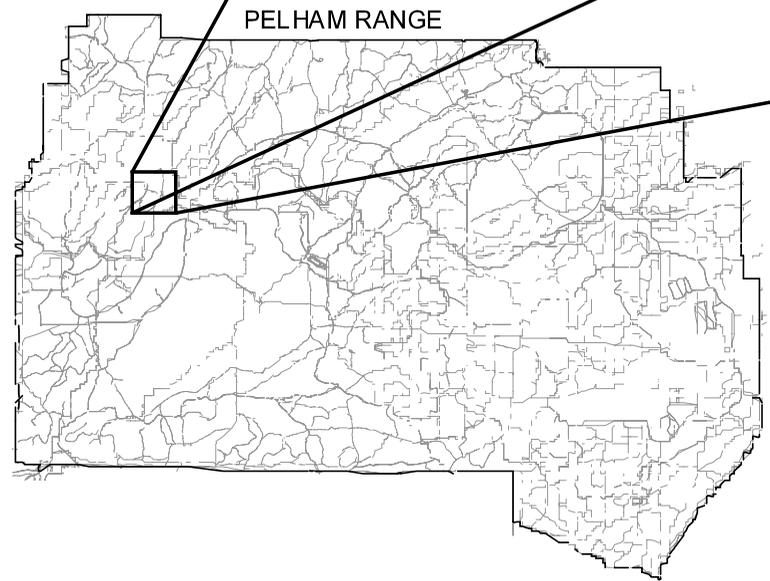
DL - Detection Limit  
Co-60 - Cobalt-60  
Cs-137 - Cesium-137  
Sr-90 - Strontium-90  
pCi/L - Picocuries per liter

DWG. NO.: ... \774645es.686  
 PROJ. NO.: 774645  
 INITIATOR: J. BROWN  
 PROJ. MGR.: J. YACOUB  
 DRAFT. CHCK. BY:  
 ENGR. CHCK. BY: S. MORAN  
 DATE LAST REV.:  
 DRAWN BY:  
 STARTING DATE: 12/07/00  
 DRAWN BY: D. BILLINGSLEY  
 06/18/01  
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**LEGEND**

- UNIMPROVED ROADS AND PARKING
- ▾ MARSH / WETLANDS
- . . . SURFACE DRAINAGE / CREEK

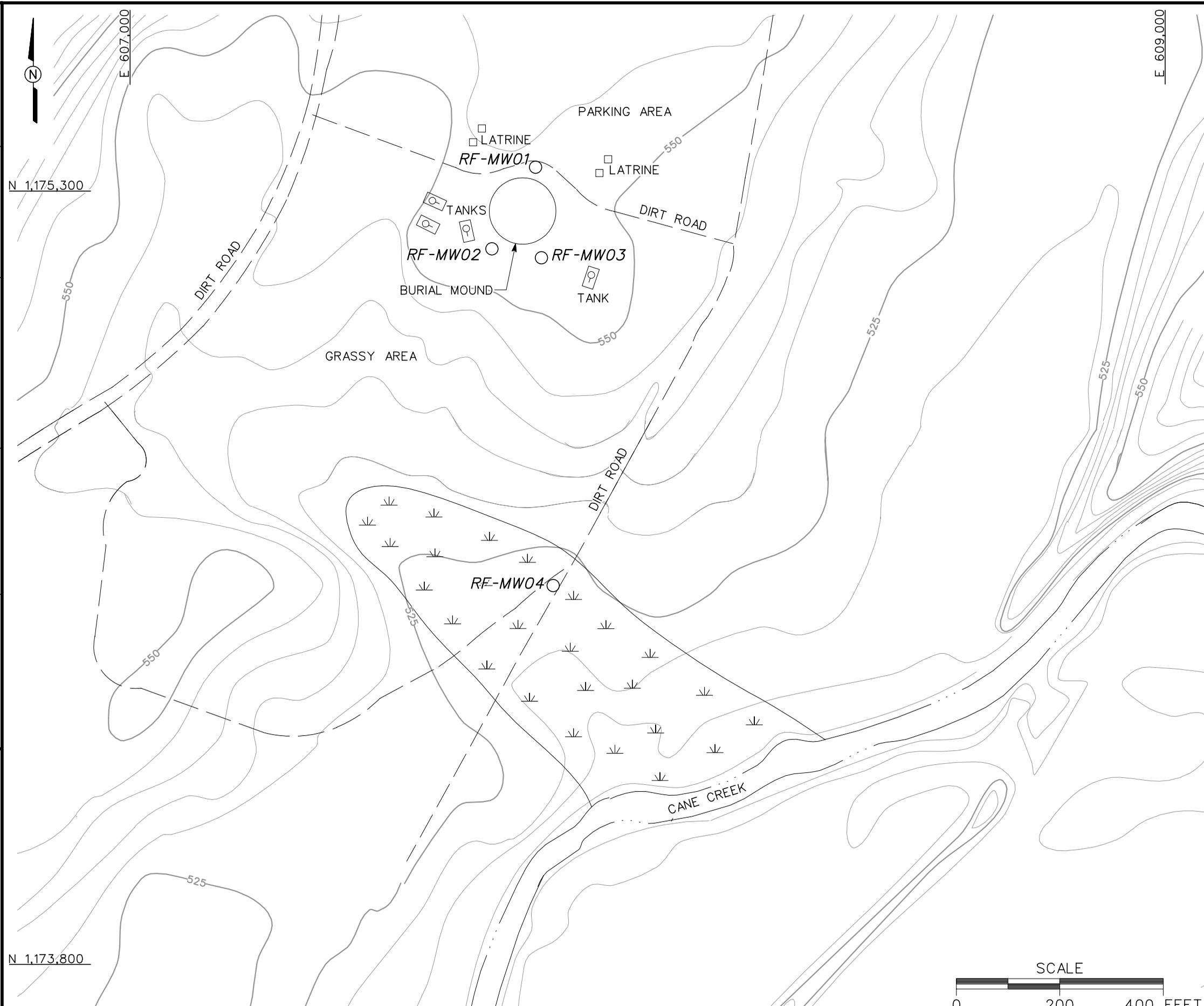


**FIGURE 1**  
**SITE LOCATION MAP**  
**BURIAL MOUND AT RIDEOUT FIELD**

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 MOBILE DISTRICT  
 FORT McCLELLAN  
 CALHOUN COUNTY, ALABAMA  
 Contract No. DACA21-96-D-0018



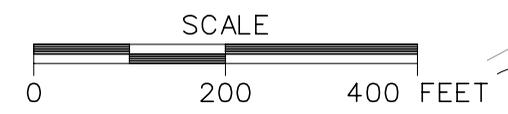
DWG. NO.: ...774645es.687  
 PROJ. NO.: 774645  
 INITIATOR: J. BROWN  
 PROJ. MGR.: J. YACOB  
 DRAFT. CHCK. BY:  
 ENGR. CHCK. BY: S. MORAN  
 STARTING DATE: 12/04/00  
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
  - 550 TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
  - WETLANDS MARSH / WETLANDS
  - ... SURFACE DRAINAGE / CREEK
  - PROPOSED MONITORING WELL LOCATION

**FIGURE 2**  
**PROPOSED MONITORING WELL**  
**LOCATION MAP**  
**BURIAL MOUND AT RIDEOUT FIELD**

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



**ATTACHMENT 1  
ABBREVIATIONS AND ACRONYMS**

## List of Abbreviations and Acronyms

2,4-D	2,4-dichlorophenoxyacetic acid	CERFA	Community Environmental Response Facilitation Act	DRO	diesel range organics
2,4,5-T	2,4,5-trichlorophenoxyacetic acid	CESAS	Corps of Engineers South Atlantic Savannah	DS	deep (subsurface) soil
2,4,5-TP	silvex	CG	carbonyl chloride (phosgene)	DS2	Decontamination Solution Number 2
3D	3D International Environmental Group	CFC	chlorofluorocarbon	DWEL	drinking water equivalent level
Abs	skin absorption	ch	inorganic clays of high plasticity	E&E	Ecology and Environment, Inc.
AC	hydrogen cyanide	CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine	EBS	environmental baseline survey
AcB2	Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded	CK	cyanogen chloride	EE/CA	engineering evaluation and cost analysis
AcC2	Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded	cl	inorganic clays of low to medium plasticity	Elev.	elevation
AcD2	Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded	Cl.	chlorinated	EM	electromagnetic
AcE2	Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded	CLP	Contract Laboratory Program	EM31	Geonics Limited EM31 Terrain Conductivity Meter
ACGIH	American Conference of Governmental Industrial Hygienists	CN	chloroacetophenone	EM61	Geonics Limited EM61 High-Resolution Metal Detector
ADEM	Alabama Department of Environmental Management	CNB	chloroacetophenone, benzene, and carbon tetrachloride	EOD	explosive ordnance disposal
AEL	airborne exposure limit	CNS	chloroacetophenone, chloropicrin, and chloroform	EODT	explosive ordnance disposal team
AHA	ammunition holding area	Co-60	cobalt-60	EPA	U.S. Environmental Protection Agency
AL	Alabama	COC	chain of custody; contaminant of concern	EPC	exposure point concentration
amb.	amber	COE	Corps of Engineers	EPIC	Environmental Photographic Interpretation Center
ANAD	Anniston Army Depot	Con	skin or eye contact	ER	equipment rinsate
APT	armor-piercing tracer	COPC	contaminant of potential concern	ESE	Environmental Science and Engineering, Inc.
ARAR	applicable or relevant and appropriate requirement	COPEC	contaminant of potential environmental concern	ESV	ecological screening value
ASP	ammunition supply point	CRL	certified reporting limit	Exp.	explosives
ASR	Archives Search Report	CRZ	contamination reduction zone	E-W	east to west
AST	aboveground storage tank	Cs-137	cesium-137	EZ	exclusion zone
ASTM	American Society for Testing and Materials	CS	ortho-chlorobenzylidene-malononitrile	FAR	Federal Acquisition Regulations
AWWSB	Anniston Water Works and Sewer Board	CSEM	conceptual site exposure model	FB	field blank
'B'	Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero)	ctr.	container	FD	field duplicate
BCT	BRAC Cleanup Team	CWA	chemical warfare agent	FedEx	Federal Express, Inc.
BEHP	bis(2-ethylhexyl)phthalate	CWM	chemical warfare material; clear, wide mouth	FFE	field flame expedient
BFB	bromofluorobenzene	CX	dichloroformoxime	Fil	filtered
BG	Bacillus globigii	D	duplicate; dilution	Flt	filtered
bgs	below ground surface	DANC	decontamination agent, non-corrosive	FMP 1300	Former Motor Pool 1300
BHC	betahexachlorocyclohexane	°C	degrees Celsius	Foster Wheeler	Foster Wheeler Environmental Corporation
bkg	background	°F	degrees Fahrenheit	Frtn	fraction
bls	below land surface	DCE	dichloroethene	FS	field split; feasibility study
BOD	biological oxygen demand	DDD	dichlorodiphenyldichloroethane	ft	feet
BRAC	Base Realignment and Closure	DDE	dichlorodiphenyldichloroethene	ft/ft	feet per foot
Braun	Braun Intertec Corporation	DDT	dichlorodiphenyltrichloroethane	FTA	Fire Training Area
BTAG	Biological Technical Assistance Group	DEH	Directorate of Engineering and Housing	FTMC	Fort McClellan
BTEX	benzene, toluene, ethyl benzene, and xylenes	DEP	depositional soil	g	gram
BTOC	below top of casing	DI	deionized	G-856	Geometrics, Inc. G-856 magnetometer
BW	biological warfare	DIMP	di-isopropylmethylphosphonate	G-858G	Geometrics, Inc. G-858G magnetic gradiometer
BZ	breathing zone; 3-quinuclidinyl benzilate	DMMP	dimethylmethylphosphonate	gal	gallon
C	ceiling limit value	DOD	U.S. Department of Defense	gal/min	gallons per minute
Ca	carcinogen	DOT	Department of Transportation	GB	sarin
CCAL	continuing calibration	DP	direct-push	gc	clay gravels; gravel-sand-clay mixtures
CCB	continuing calibration blank	DPDO	Defense Property Disposal Office	GC	gas chromatograph
CD	compact disc	DPT	direct-push technology	GC/MS	gas chromatograph/mass spectrometer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	DQO	data quality objective	GFAA	graphite furnace atomic absorption
		DRMO	Defense Reutilization and Marketing Office	GIS	Geographic Information System

## List of Abbreviations and Acronyms (Continued)

gm	silty gravels; gravel-sand-silt mixtures	L	lewisite; liter	NIOSH	National Institute for Occupational Safety and Health
gp	poorly graded gravels; gravel-sand mixtures	LC <sub>50</sub>	lethal concentration for 50 percent of population tested	No.	number
gpm	gallons per minute	LD <sub>50</sub>	lethal dose for 50 percent of population tested	NOAA	National Oceanic and Atmospheric Administration
GPR	ground-penetrating radar	l	liter	NOAEL	no-observed-adverse-effects-level
GPS	global positioning system	LCS	laboratory control sample	NR	not requested; not recorded
GS	ground scar	LEL	lower explosive limit	ns	nanosecond
GSA	General Services Administration	LOAEL	lowest-observed-adverse-effects-level	N-S	north to south
GSBP	Ground Scar Boiler Plant	LT	less than the certified reporting limit	NS	not surveyed
GSSI	Geophysical Survey Systems, Inc.	max	maximum	nT	nanotesla
GST	ground stain	MCL	maximum contaminant level	NTU	nephelometric turbidity unit
GW	groundwater	MDL	method detection limit	O&G	oil and grease
gw	well-graded gravels; gravel-sand mixtures	mg/kg	milligrams per kilogram	OD	outside diameter
HA	hand auger	mg/L	milligrams per liter	OE	ordnance and explosives
HCl	hydrochloric acid	mg/m <sup>3</sup>	milligrams per cubic meter	oh	organic clays of medium to high plasticity
HD	distilled mustard	mh	inorganic silts, micaceous or diatomaceous fine, sandy or silt soils	ol	organic silts and organic silty clays of low plasticity
HDPE	high-density polyethylene	MHz	megahertz	OP	organophosphorus
Herb.	herbicides	µg/g	micrograms per gram	ORP	oxidation-reduction potential
HNO <sub>3</sub>	nitric acid	µg/kg	micrograms per kilogram	OSHA	Occupational Safety and Health Administration
hr	hour	µg/L	micrograms per liter	OWS	oil/water separator
H&S	health and safety	µmhos/cm	micromhos per centimeter	oz	ounce
HSA	hollow-stem auger	min	minimum	PAH	polynuclear aromatic hydrocarbon
HTRW	hazardous, toxic, and radioactive waste	MINICAMS	miniature continuous air sampling system	Parsons	Parsons Engineering Science, Inc.
'I'	out of control, data rejected due to low recovery	ml	inorganic silts and very fine sands	Pb	lead
ICAL	initial calibration	mL	milliliter	PCB	polychlorinated biphenyl
ICB	initial calibration blank	mm	millimeter	PCE	perchloroethene
ICP	inductively-coupled plasma	MM	mounded material	PCP	pentachlorophenol
ICS	interference check sample	MOGAS	motor vehicle gasoline	PDS	Personnel Decontamination Station
ID	inside diameter	MPA	methyl phosphonic acid	PEL	permissible exposure limit
IDL	instrument detection limit	MR	molasses residue	Pest.	pesticide
IDLH	immediately dangerous to life or health	MS	matrix spike	PG	professional geologist
IDM	investigative derived media	mS/cm	millisiemens per centimeter	PID	photoionization detector
IDW	investigation-derived waste	MSD	matrix spike duplicate	PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes
IMPA	isopropylmethyl phosphonic acid	MTBE	methyl tertiary butyl ether	POL	petroleum, oils, and lubricants
IMR	Iron Mountain Road	msl	mean sea level	PP	peristaltic pump
in.	inch	MtD3	Montevallo shaly, silty clay loam, 10 to 40 percent slopes, severely eroded	ppb	parts per billion
Ing	ingestion	mV	millivolts	PPE	personal protective equipment
Inh	inhalation	MW	monitoring well	ppm	parts per million
IP	ionization potential	N/A	not applicable; not available	PPMP	Print Plant Motor Pool
IPS	International Pipe Standard	NAD	North American Datum	ppt	parts per thousand
IRDMIS	Installation Restoration Data Management Information System	NAD83	North American Datum of 1983	PRG	preliminary remediation goals
ISCP	Installation Spill Contingency Plan	NAVD88	North American Vertical Datum of 1988	PSSC	potential site-specific chemical
IT	IT Corporation	NCP	National Contingency Plan	pt	peat or other highly organic silts
ITEMS	IT Environmental Management System™	ND	not detected	PVC	polyvinyl chloride
'J'	estimated concentration	NE	no evidence; northeast	QA	quality assurance
JeB2	Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded	NFA	No Further Action	QA/QC	quality assurance/quality control
JeC2	Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded	ng/L	nanograms per liter	QAP	installation-wide quality assurance plan
JfB	Jefferson stony fine sandy loam, 0 to 10 percent slopes have strong slopes	NGVD	National Geodetic Vertical Datum	QC	quality control
K	conductivity	NIC	notice of intended change	QST	QST Environmental Inc.

## List of Abbreviations and Acronyms (Continued)

qty	quantity	SU	standard unit	WP	installation-wide work plan
Qual	qualifier	SVOC	semivolatile organic compound	WS	watershed
'R'	rejected; resample	SW	surface water	WSA	Watershed Screening Assessment
RAO	removal action objective	SW-846	U.S. EPA <i>Test Methods for Evaluating Solid Waste: Physical/Chemical Methods</i>	WWI	World War I
RBC	EPA Region III Risk Based Concentration	SZ	support zone	WWII	World War II
RCRA	Resource Conservation and Recovery Act	TAL	target analyte list	XRF	x-ray fluorescence
RDX	cyclonite	TAT	turn around time	yd <sup>3</sup>	cubic yards
ReB3	Rarden silty clay loams	TB	trip blank		
REG	field sample	TCA	trichloroethane		
REL	recommended exposure limit	TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin		
RFA	request for analysis	TCDF	tetrachlorodibenzofurans		
RI	remedial investigation	TCE	trichloroethene		
RL	reporting limit	TCL	target compound list		
RPD	relative percent difference	TCLP	toxicity characteristic leaching procedure		
RRF	relative response factor	TDGCL	thiodiglycol		
RSD	relative standard deviation	TDGCLA	thiodiglycol chloroacetic acid		
RTK	real-time kinematic	TERC	Total Environmental Restoration Contract		
SAD	South Atlantic Division	TIC	tentatively identified compound		
SAE	Society of Automotive Engineers	TLV	threshold limit value		
SAIC	Science Applications International Corporation	TN	Tennessee		
SAP	installation-wide sampling and analysis plan	TOC	top of casing; total organic carbon		
sc	clayey sands; sand-clay mixtures	TPH	total petroleum hydrocarbons		
Sch.	schedule	TRADOC	U.S. Army Training and Doctrine Command		
SD	sediment	TRPH	total recoverable petroleum hydrocarbons		
SDG	sample delivery group	TWA	time weighted average		
SDZ	safe distance zone; surface danger zone	UCL	upper confidence limit		
SEMS	Southern Environmental Management & Specialties, Inc.	UCR	upper certified range		
SFSP	site-specific field sampling plan	'U'	not detected above reporting limit		
SGF	standard grade fuels	USACE	U.S. Army Corps of Engineers		
SHP	installation-wide safety and health plan	USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine		
SI	site investigation	USAEC	U.S. Army Environmental Center		
SL	standing liquid	USAEHA	U.S. Army Environmental Hygiene Agency		
sm	silty sands; sand-silt mixtures	USACMLS	U.S. Army Chemical School		
SM	<i>Serratia marcescens</i>	USAMPS	U.S. Army Military Police School		
SOP	standard operating procedure	USATEU	U.S. Army Technical Escort Unit		
sp	poorly graded sands; gravelly sands	USATHAMA	U.S. Army Toxic and Hazardous Material Agency		
SP	sump pump	USCS	Unified Soil Classification System		
Sr-90	strontium-90	USDA	U.S. Department of Agriculture		
Ss	stony rough land, sandstone series	USEPA	U.S. Environmental Protection Agency		
SS	surface soil	UST	underground storage tank		
SSC	site-specific chemical	UXO	unexploded ordnance		
SSHO	site safety and health officer	VOA	volatile organic analyte		
SSHP	site-specific safety and health plan	VOC	volatile organic compound		
SSSL	site-specific screening level	VOH	volatile organic hydrocarbon		
STB	supertropical bleach	VQlfr	validation qualifier		
STEL	short-term exposure limit	VQual	validation qualifier		
STOLS	Surface Towed Ordnance Locator System®	VX	nerve agent (O-ethyl-S-[diisopropylaminoethyl]-methylphosphonothiolate)		
Std. units	standard units	Weston	Roy F. Weston, Inc.		

### SAIC – Data Qualifiers, Codes and Footnotes, 1995 Remedial Investigation

N/A – Not analyzed

ND – Not detected

Boolean Codes

LT – Less than the certified reporting limit

Flagging Codes

9 – Non-demonstrated/validated method performed for USAEC

B – Analyte found in the method blank or QC blank

C – Analysis was confirmed

D – Duplicate analysis

I – Interfaces in sample make quantitation and/or identification to be suspicious

J – Value is estimated

K – Reported results are affected by interfaces or high background

N – Tentatively identified compound (match greater than 70%)

Q – Sample interference obscured peak of interest

R – Non-target compound analyzed for but not detected (GC/MS methods)

S – Non-target compound analyzed for and detected (GC/MS methods)

T – Non-target compound analyzed for but not detected (non GC/MS methods)

U – Analysis in unconfirmed

Z – Non-target compound analyzed for and detected (non-GC/MS methods)

Qualifiers

J – The low-spike recovery is low

N – The high-spike recovery is low

R – Data is rejected

**Final  
Site-Specific Unexploded Ordnance Safety Plan Attachment  
Site Investigation for the Groundwater Investigation at the  
Burial Mound at Rideout Field-Pelham Range, Parcel 202Q,  
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**

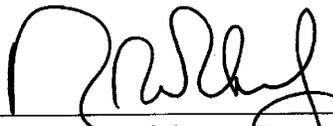
**Task Order CK10  
Contract No. DACA21-96-D-0018  
IT Project No. 796887**

**June 2001**

**Revision 0**

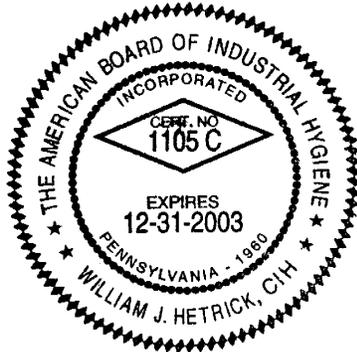
**Final**  
**Site-Specific Unexploded Ordnance Safety Plan Attachment**  
**Site Investigation at the Burial Mound at Rideout Field-Pelham**  
**Range, Parcel 202Q,**  
**Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific unexploded ordnance (UXO) safety plan attachment at the Burial Mound at Rideout Field-Pelham Range, Parcel 202Q, at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation UXO procedures.

  
\_\_\_\_\_  
Robert W. Hickman, Jr.  
UXO Technical Manager

8/8/01  
Date

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



6/14/01  
Date

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## ***List of Acronyms***

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See Attachment 1, List of Abbreviations and Acronyms, of the Site-Specific Field Sampling Plan Attachment contained in this binder.

## **1.0 Introduction**

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This document defines anomaly avoidance procedures for activities to be performed by IT Corporation (IT) unexploded ordnance (UXO) personnel in conjunction with the site investigation at the Burial Mound at Rideout Field-Pelham Range, Parcel 202Q, at Fort McClellan (FTMC), Calhoun County, Alabama. This document is not a stand-alone document; it must be used in conjunction with the *Fort McClellan Unexploded Ordnance Supplementary Procedures* (IT, 2001), attached as Attachment 1.

IT UXO personnel will perform visual surveys, assisted by hand-held magnetometers and metal detectors, to support the collection of samples at the Burial Mound at Rideout Field-Pelham Range, Parcel 202Q. The purpose is to avoid any ordnance or explosives (OE) during hazardous, toxic, and radioactive waste (HTRW) sampling activities. Intrusive anomaly investigation is not authorized for this site work.

The Burial Mound at Rideout Field is located in the western part of Pelham Range in Training Area 24C. Rideout Field was used as part of the Chemical School's Radiological Survey Training Facility from 1965-1972 and as a burial site for radioactive materials. There is a possibility that unexploded ordnance is present at this site. Items disposed at the site included radioactive sources and soils contaminated with radioactive materials buried in cut-down 55-gallon drums.

## **2.0 UXO Team Composition**

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UXO team and personnel requirements will be in accordance with EP 75-1-2 (U.S. Army Corps of Engineers [USACE], 2000) and the installation-wide sampling and analysis plan (SAP) (IT, 2000) for FTMC. A UXO team will be on site during all sampling or intrusive activities where OE is suspected.

### **3.0 Responsibilities**

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The UXO Team Leader is responsible for ensuring that personnel performing UXO tasks at FTMC have the required qualifications. The UXO Team Leader supervises and coordinates UXO work activities.

The UXO team member(s) will provide UXO avoidance, explosive ordnance recognition, location, and safety functions for IT employees and any subcontractors during sampling activities. Sampling activities at this site include drilling and installation of monitoring wells, sampling of monitoring wells, survey of sample points, and safe access and egress to and from the site in support of HTRW operations.

### **4.0 Authority**

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UXO personnel are authorized to perform UXO avoidance activities only. UXO personnel are not permitted to initiate OE investigative or disposal activities.

### **5.0 UXO Avoidance Procedures to Support HTRW Sampling Activities at FTMC**

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The scope of work for site investigation activities at the Burial Mound at Rideout Field-Pelham Range, Parcel 202Q, includes the following UXO tasks:

- Provide UXO avoidance support during the installation of four groundwater monitoring wells, one upgradient and three downgradient. Sample locations are defined in Section 4.0 of the Site-Specific Field Sampling Plan attachment contained in this binder.
- Provide downhole UXO support for all intrusive drilling to determine buried downhole hazards.
- Provide UXO surveys for all intrusive field activities (e.g., digging, fence-post driving, grading, or other excavation).

Since these areas may contain OE contamination, the UXO team must conduct a surface access survey for UXO before any type of activities commence. This includes foot and vehicular traffic.

UXO avoidance activities at the Burial Mound at Rideout Field-Pelham Range, Parcel 202Q include:

a) Access Corridors and Sampling Sites

- (1) The UXO team will conduct access surveys of the footpaths and vehicular lanes approaching and leaving each of the investigation sites. Access surveys will begin in a known clear area and proceed by the most direct route to the sampling site. The boundaries of the access route and sampling site will be marked with white tape or white pin flags.
- (2) If an OE item is found during the survey, the location will be conspicuously marked with a red pin flag and avoided by altering the route. Additionally, UXO personnel will complete the IT FTMC “Unexploded Ordnance Report Form.” Subsurface anomalies will be marked with a yellow flag.
- (3) The boundaries of the access route and sampling site will be recorded in the IT FTMC “UXO Sketch Log” by the UXO technician. Additionally, anomaly locations will be recorded on this form.
- (4) Instrumentation used at this site will include the Schonstedt GA 72, the CST Corporation Magna-Trak 102, or Whites Spectrum XLT Metal Detector. Additionally, the Schonstedt MG-220 or MG-230 will be set up for downhole monitoring. All equipment will be operated as specified in the appropriate operator’s manual. All equipment will be function tested prior to use following the procedure in paragraph 3.2, “FTMC UXO Supplementary Procedures” (IT, 2001) and the operator’s instructions. The Whites Metal Detector will be used in conjunction with hand-held magnetometers in areas of high concentrations of rocks with a magnetic signature to assist in eliminating anomalies created by “hot rocks.”
- (5) The access route will be twice as wide as the widest vehicle that will use the route. Footpath lanes will be a minimum of three feet wide.
- (6) If surface OE or subsurface anomalies are encountered that cannot be avoided, the access route must be diverted to avoid contact. No personnel will be allowed outside of the surveyed areas without a UXO escort. No unescorted access is permitted inside the corridor area until a survey has been completed and boundaries established.
- (7) At the actual investigation site, the UXO team must also complete a survey of an area sufficient to support mechanical excavation equipment maneuverability, parking of support vehicles, and establishment of

decontamination stations. 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 brought on site. White pin flags or tape will be used to mark the boundaries of the surveyed site.

- (8) Tracked or other vehicles whose movement would disturb the soil are authorized for use only in areas that have been surveyed and in which no anomalies have been detected.
- (9) If grading or soil movement is required to support access corridor development or a sampling location, UXO personnel will perform a survey. After an area has been surveyed and no anomalies have been detected, soil can be removed at a rate of no more than one foot per lift. If additional grading is required, another survey will be performed after each one-foot of soil has been removed.
- (10) Erosion and weathering will typically cause some OE items to migrate to the surface or otherwise be uncovered. In cases where access corridors or sampling sites have not been surveyed or traversed for a period of time, additional surveys may be required. The decision regarding the performance of follow-on surveys will be made by the site superintendent with input provided by the FTMC UXO Safety Officer and FTMC UXO Team Leader. The decision will be based on such factors as: the amount of time since the last survey was performed, the weather during this period, the terrain in the area of concern; the former use of the area, and, the type or quantity of OE found during initial surveys.
- (11) Incremental geophysical surveys at drill hole locations 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 the installation of the pilot hole. The UXO team will use a manual or mechanical portable auger to install the pilot hole. The augered hole will be inspected for anomalies with a geophysical instrument (configured for downhole utilization) in two-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 augered hole, providing a total clearance depth equal to pilot hole depth plus two 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 a suspect OE item is encountered, the sampling personnel must select a new drill hole location. The UXO team will continue to inspect the drill hole for anomalies at two-foot increments as the drilling is advanced from the clearance depth of the pilot hole until a depth of 12 feet is reached.

b) **Vegetation Removal**

In cases where large trees or other vegetation removal is required to support access or sampling operations, the procedures in paragraph 4.2, "FTMC UXO Supplementary Procedures," will be followed (IT, 2001).

c) **Magnetometer/Metal Detector Checkout and Field Procedures**

The procedures in paragraph 3.0, "FTMC UXO Supplementary Procedures" will be followed (IT, 2001).

d) **UXO Logbooks and Documentation**

All UXO personnel identified in paragraph 5.0, "FTMC UXO Supplementary Procedures," (IT, 2001) will maintain a logbook in accordance with that procedure.

## **6.0 Safety**

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In addition to the requirements of the site-specific safety and health plan prepared for this site, the UXO personnel 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 an overhead hazard is present.
- c) The FTMC UXO Safety Officer will monitor UXO activities to ensure compliance with applicable safety requirements.
- d) The FTMC UXO Safety Officer will certify that all FTMC UXO workers are capable of performing UXO activities at FTMC based on observation of work performance.
- e) The FTMC UXO Safety Officer is responsible for all site-specific UXO training.
- f) The UXO technician on site will advise project personnel regarding all evacuation and/or exclusion zones as appropriate. The UXO technician will

monitor all sampling site activities to ensure that only the minimum number of personnel are present on site.

## **7.0 Quality**

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The IT FTMC UXO Quality Control Officer will follow quality control instructions and procedures listed in Section 9.0 of the installation-wide OE management plan contained in the SAP (IT, 2000) appropriate to this task and the FTMC UXO Supplementary Procedures (IT, 2001). The IT FTMC UXO Quality Control Officer will also utilize the “UXO Avoidance Quality Control Report” to document his activities. Copies of this form will be provided to the IT quality assurance representative upon request.

## **8.0 References**

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IT Corporation (IT), 2001, *Fort McClellan Unexploded Ordnance Supplementary Procedures*, May.

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

U.S. Army Corps of Engineers, Engineering Publication, EP 75-1-2, 2000, *Unexploded Ordnance (UXO) Support During Hazardous, Toxic, and Radiological (HTRW) and Construction Activities*, 20 November.

U.S. Army Corps of Engineers (USACE), 1999 *Archives Search Report, Maps, Fort McClellan, Anniston Alabama*, July.

**ATTACHMENT 1**

**FORT MCCLELLAN UNEXPLODED ORDNANCE SUPPLEMENTARY  
PROCEDURES**



Procedure No.	OE001
Revision No.	0
Date of Revision	6/6/01
Last Review Date	6/6/01
Page	1 of 15

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## **FTMC UXO SUPPLEMENTARY PROCEDURES**

**Subject: Ordnance and Explosives**

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### **1.0 INTRODUCTION**

IT Corporation (IT) has been retained by the U.S. Army Corps of Engineers-Mobile District, under Contract Number DACA21-96-D-0018, to provide environmental services related to Base realignment and closure (BRAC) of Fort McClellan, Alabama. The Installation-Wide Ordnance and Explosives (OE) Management Plan for Fort McClellan (FTMC) was prepared by IT Corporation and submitted as a final document in March 2000. The Installation-Wide OE Management Plan was prepared to provide general guidance for conducting unexploded ordnance (UXO) work associated with hazardous, toxic, and radiological waste (HTRW) investigations and remedial activities currently in progress at FTMC. IT Corporation prepares site-specific field sampling, health and safety, and UXO safety plans for sites where fieldwork will occur that may potentially contain OE. A UXO Safety Plan is not prepared for sites that are not reported to be in areas containing OE.

#### **1.1 Purpose**

This document is intended to provide procedures to the field staff that outline UXO operations and clarify activities currently permitted under "anomaly avoidance." The document is not intended to replace any of the project documents currently approved; rather, it is intended to complement those documents with additional information that allows successful completion of the job.

### **2.0 FTMC EMPLOYEE ORIENTATION/TRAINING AND CERTIFICATION**

The IT FTMC orientation program is designed to:

- Indoctrinate new employees to FTMC-unique procedures
- Verify compliance with regulatory certification requirements
- Provide continuing instruction and updating in UXO fundamentals to sustain readiness to safely perform UXO tasks

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These standard policies and procedures are applicable to all members of The IT Group, Inc. except where superceded or modified by the member Company.

## 2.1 Responsibilities

The IT OE Service Center Operations Manager will oversee the training programs and maintain a master record of UXO employee training and certification status.

The UXO person designated as the senior IT UXO individual at FTMC will schedule the orientation listed below.

The FTMC UXO Safety Officer will:

- Conduct all UXO-specific orientation and training at FTMC
- Certify that each new UXO employee is capable of performing UXO work activities at FTMC
- Maintain FTMC training files and records on each UXO technician on site reflecting his or her current training status.

## 2.2 UXO Employee Orientation

Every UXO employee assigned to FTMC will receive a site-specific UXO orientation in addition to training required by the Occupational Health and Safety Administration (OSHA). This orientation will include, as a minimum, the following topics:

- Local emergency response drills and procedures
- Personal protective equipment (PPE) and personnel decontamination procedures
- Ordnance recognition/UXO expected to be encountered at FTMC
- Equipment safety
- FTMC site orientation
- Chemical warfare material (CWM) awareness and procedures
- Communications procedures
- FTMC Logbook/data recording procedures
- IT administrative policies and procedures
- Magnetometer checkout procedures.

Upon completion of the UXO employee orientation, the FTMC UXO Safety Officer will monitor the performance of the new hire for at least three workdays while conducting typical UXO activities. The FTMC UXO Safety Officer will

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then certify that the individual is capable of performing UXO activities at FTMC based upon satisfactory performance of the three-day period. A copy of this certification will be maintained in the individual's site FTMC training file (see example at Attachment 1).

### **2.3 UXO Sustainment Training**

All UXO technicians have had the OSHA 40-hour hazardous waste operations and emergency response (HAZWOPER) course in order to be initially certified at FTMC. They are also required to maintain the certification with an 8-hour OSHA refresher course on an annual basis. Additionally, all IT FTMC UXO personnel will have 8 hours of site-specific annual UXO sustainment training. This training can be performed incrementally (2 hours every quarter) at the discretion of the site superintendent in coordination with the FTMC IT UXO Safety Officer. Topics will include, but are not limited to, the following subjects:

- Site-specific environmental hazards
- Site-specific UXO hazards, ordnance fuzing, functioning and precautions
- Topics which the IT UXO Team Leader or IT Safety UXO Officer determines necessary to support FTMC UXO activities

Sustainment training will be conducted for a period of no less than 8 hours. Daily safety briefings, tailgate safety meetings, and other required site-specific training are not a substitute for this training. The purpose of this training is to provide each UXO employee with site-specific UXO training over and above OSHA requirements. The site-specific UXO training will be recorded in the project file and the UXO employee's personnel file.

### **3.0 FTMC MAGNETOMETER/METAL DETECTOR FUNCTION TEST AND FIELD PROCEDURES**

This section provides FTMC magnetometer/metal detector function tests and operating procedures to be employed at all work sites that have been identified as requiring avoidance support.

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### 3.1 Geophysical Test Plot

The purpose of a test plot is to provide a consistent environment where the equipment can be evaluated. The location of the geophysical test plot will be inside the IT compound. It will be established as follows

- The test plot will consist of an area approximately 20 x 20 feet and clear of vegetation and magnetic anomalies, located in the IT compound next to the southeast end of the office trailers.
- Five metal test objects will be buried at depths varying from 6 inches to 24 inches. The objects will approximate the weight, diameter, and length of an MK 2 grenade, a 60mm mortar, a 2.36-inch rocket warhead, a 75mm projectile, and a 37mm projectile. Additionally, three non-ferrous test objects will be buried at a depth of 2 inches to 8 inches. A 6-inch length of 1/2-inch reinforcing rod will be placed on the surface for use as a surface check source. Items with greater mass will be buried at greater depths. Each burial location will be marked with a wooden stake located about 6 inches to the north of the object. Each stake will be assigned a reference number and will be tagged or marked to denote the depth, type of item and orientation of the item. The site will utilize native soils; no fill material will be brought in from another area. Sand will be used to cover the area to mitigate the effects of wet weather.
- For downhole magnetometer testing, a length of 2-inch PVC pipe will be buried to a depth of 36 inches. The pipe should be of sufficient length to allow at least another 24 inches to extend above the surface of the ground. A metal object will be buried at a depth of 24 inches and 24 inches from the side of the pipe. The location of the item, similar in size and mass to a 75mm projectile, will be marked with a wooden stake tagged to denote the depth, type of item, orientation, and reference number assigned.

### 3.2 Magnetometer/Metal Detector Check-Out Procedures

- Prior to field use, all magnetometers and metal detectors will be set up following the guidelines in the manufacturer's operating manual for the specific instrument used. Instrumentation used at this site will include the Schonstedt GA 72, the CST Corporation Magna-Trak 102, or White's Spectrum XLT Metal Detector. Additionally, the Schonstedt MG-220 or

MG-230 will be set up for downhole monitoring. All equipment will be operated in a manner consistent with instructions contained in the appropriate operator's manual. All equipment will be function-tested prior to use. The White's Metal Detector will be used in conjunction with hand-held magnetometers in areas of high concentrations of rocks with a magnetic signature, to assist in eliminating anomalies created by "hot rocks." The operating manual for each of the instruments used at FTMC will be available for use with the equipment.

- Once the instrument has been determined to be working according to the manufacturer's operating manual, the operator will perform a function test on the FTMC geophysical test plot using the detection methods described in the manual. A function test will consist of using the instrument over a minimum of three test sources. The same sources will be used during each function test to ensure consistency. The instrument detection indicator, as described in the operator's manual, will be noted in the instrument logbook. For site checks, a 6-inch length of 1/2-inch steel reinforcing rod will be available to each operator at the work site.
- Instruments that fail to reproduce a detection indication consistent with previous tests will be checked to ensure that the power supply or batteries are sufficient. If the power supply is determined to be sufficient and the operator cannot find a fault in accordance with the operator's manual, the instrument will be tagged and removed from service.
- Function tests will be performed each morning before the equipment is put into service.
- If an instrument is determined to be working improperly, the FTMC UXO Team Leader and the site superintendent will be immediately notified. Any activities performed using that instrument since its last positive test procedure will be considered invalid and will require reevaluation.
- Upon completion of the function test, the "Magnetometer/Metal Detector Functions Test Data Sheet" (Attachment 2) and the equipment logbook will be filled out.

- After an instrument has been function-tested at the beginning of each day, the instrument will be checked at least once during every hour of use or each time the instrument is turned on after having been turned off. This check will consist of dropping the 6-inch length of 1/2-inch reinforcing rod in a clear area and passing the detector over the rod in a manner consistent with the operator's instructions. The instrument indication will be compared to the indication produced during the morning function test. Instruments that fail to produce a consistent indication will be checked and removed from service as required.

### **3.3 Equipment Documentation**

Each piece of equipment will be assigned a logbook noting the make, model, manufacturer, and serial number of the equipment. The logbook and manufacturer's operating manual will be present when the equipment is tested. The following information will be recorded:

- Date and time
- The test plot object used (assigned stake number)
- The reading or indication at each test site
- Whether or not the reading or indication was satisfactory
- The name of the individual performing the test.

The IT FTMC Quality Control (QC) Officer will observe the daily testing of all equipment and will record the results of each test in his field logbook.

### **3.4 Magnetometer/Metal Detector Field Procedures**

All intrusive field activities in potential OE areas (e.g., digging, fence post driving, grading, well installation or excavation) will be preceded by a UXO sweep. Each hole made in areas where OE may potentially be found will have a check immediately over the spot of the intrusion. Magnetometer operations at FTMC will assume a detection depth of one foot when surveying an area for excavation.

All magnetometers and metal detectors will be operated in accordance with the manufacturers specifications and procedures.

When surveying a potential area for a sampling well, an area of sufficient size will be surveyed to allow for installation of required pads and bollards. After the well

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is installed, the location of bollards will be adjusted as required if an anomaly is detected during the bollard installation process.

The White's Metal Detector will be used to augment the magnetometers on sites where "hot rocks" are suspected. The purpose of using the metal detector in addition to the magnetometers is to eliminate the probability of "hot rocks."

#### **4.0 FTMC ACCESS CLEARANCES, VEGETATION REMOVAL, AND ROAD MAINTENANCE**

This section is designed to provide specific procedures regarding activities associated with the building of access corridors, vegetation removal, and road maintenance in support of FTMC operations.

##### **4.1 Access Corridors**

The purpose of access corridors is to enable IT personnel access to well and/or other types of sampling sites within FTMC. Access corridors will be created by marking the route, both length and width, in which a UXO survey has been performed. The marking method will be defined in each site-specific UXO safety plan. No unescorted access is permitted until a corridor has been established. If an anomaly is detected during the survey or during a subsequent excavation, it must be avoided, since investigation is not authorized. The route will be altered to avoid the anomaly for FTMC activities. A magnetometer is considered to reliably detect anomalies to a depth of one foot.

The size of each area to be surveyed is dependent on the type and quantity of equipment expected to be used on that site. The UXO survey crew will follow the procedures outlined in the site-specific UXO safety plan to determine the dimensions of the area to be surveyed. Normally, the width of the access route will be at least twice as wide as the widest vehicle that will use the route; footpaths will be a minimum of 3 feet wide.

Tracked or other vehicles, that disturb the soil are authorized for use only in areas that have been surveyed and no anomalies have been detected.

Erosion and weathering will typically cause some UXO items to leach to the surface or otherwise be uncovered. In cases where access corridors or sampling sites have not been surveyed or traversed for a period of time, additional UXO surveys may be required. The decision regarding the performance of additional

surveys will be made by the FTMC UXO team leader and the IT FTMC UXO Safety Officer. The site superintendent will be notified of this decision. This decision will be based on, but not limited to, such factors as: the amount of time since the last survey was performed; the weather during this period; the terrain in the area of concern; and the type and quantity of UXO found during initial surveys.

#### **4.2 Vegetation Removal**

In cases where removal of large trees or other types of vegetation is required, the following procedures will be followed:

- The UXO technician will survey around the base of the tree or vegetation, and, if no anomaly is detected, direct the bulldozer or other equipment to proceed. If an anomaly is detected, the location will be recorded and marked and another route will be selected. The size of the area to be surveyed will depend on the size of the suspected root system of the tree to be removed.
- Once the tree has been pushed over, the UXO technician will survey around the root ball and the area in and around the hole. If an anomaly is detected, the anomaly will be recorded and marked and an alternate route will be selected. If no anomaly is detected, the UXO technician will direct the equipment operator to proceed with the excavation.

#### **4.3 Road Maintenance**

Remote range roads and trails frequently require a certain amount of repair to remain passable. This section describes authorized actions regarding the maintenance of dirt or gravel range roads by IT UXO personnel.

- Bulldozers or grader-type equipment is authorized to repair roads and trails as long as a UXO survey has been performed and no anomalies have been detected.
- The UXO technician will observe the blade of the equipment as the earth is moved. If a potential UXO is uncovered, the UXO technician will signal the equipment operator to immediately stop the equipment. The UXO technician will then attempt to visually identify the object. If the object cannot be positively identified as a non-hazardous item, the

equipment will be moved, the location of the object marked and recorded on the IT FTMC Unexploded Ordnance Report Form (Attachment 3), and the route changed to avoid the object. If no suspicious objects are detected, the equipment will continue to move earth at a rate of no more than one foot of depth at a time. If, more grading is required after the first pass is complete the UXO technician will perform another survey. If no anomalies are detected, the equipment can repeat the grading process. If an anomaly is detected, the operation will be halted and the route changed.

- After an area has been surveyed and no anomalies have been detected, soil can be removed at a rate of no more than one foot per lift. If additional grading is required, a survey will be performed after each one-foot increment the soil has been removed.
- Earth may not, at any time, be moved at a rate of more than one foot in each lift.

## **5.0 FTMC UXO LOG BOOKS**

All UXO team leaders or UXO technicians supporting HTRW operations will maintain a logbook. The purpose of the logbook is to record UXO actions and activities taken at each work site.

### **5.1 Responsibilities**

UXO personnel will maintain an individual daily logbook of work activities.

The logbooks will be routinely inspected weekly by the UXO QC Officer and will be made available to the FTMC site superintendent upon request. Copies will be made daily and filed in the IT Field Project office.

Logbooks will contain bound and numbered pages. Entries will be on successive pages as work is performed. The individual using the logbook will sign the page after the last entry for that page has been made. Logbooks are part of the project legal file and will be filed with the project files upon completion of each investigation.



Procedure No.	OE001
Revision No.	0
Date of Revision	6/6/01
Last Review Date	6/6/01
Page	10 of 15

---

## 5.2 Data Requirements

As a minimum, individual logbooks will contain the following information:

- Date, time and location of UXO activities
- Personnel involved in the activities
- UXO activities performed, including UXO/anomalies found
- A description of areas swept
- A record of the magnetometer or other equipment used, including instrument serial number
- Weather conditions.

The IT FTMC QC Officer will utilize the IT FTMC “UXO Avoidance Quality Control Report” (Attachment 4) to document checks of field activities.

Additionally, UXO personnel will complete IT FTMC Form “UXO Sketch Log” (Attachment 5) and IT FTMC Unexploded Ordnance Report Form. The “UXO Sketch Log” will contain a description of activities, including the dimensions of the area surveyed. A description of the length and width will be recorded, as well as the manner in which the survey was performed. These forms will be completed as required and presented to the site superintendent.

## ATTACHMENT 1

### FTMC Employee Certification (Example)

I certify that (name of individual) has fulfilled all UXO orientation requirements and has been observed by me for a period of 3 work days and is therefore eligible to perform UXO activities at FTMC.

---

Jim Kerr  
FTMC UXO Safety Officer



## ATTACHMENT 3

### Unexploded Ordnance Report Form

Report Tracking Number:															
<b>Discovery and Reporting Time</b>															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Time of Discovery</th></tr> <tr><th>Date</th><th>Time</th></tr> <tr><td> </td><td> </td></tr> </table>		Time of Discovery		Date	Time			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Time Reported to Base Transition Force</th></tr> <tr><th>Date</th><th>Time</th></tr> <tr><td> </td><td> </td></tr> </table>		Time Reported to Base Transition Force		Date	Time		
Time of Discovery															
Date	Time														
Time Reported to Base Transition Force															
Date	Time														
Employee Name: _____		Reported to FTMC Transitional Force Personnel Name: _____													
<b>Location of Ordnance</b>															
Location, Description, and Parcel Number:															
Coordinates of Ordnance:		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">State Plane Coordinates</th></tr> <tr><th>Northing</th><th>Easting</th></tr> <tr><td> </td><td> </td></tr> </table>		State Plane Coordinates		Northing	Easting								
State Plane Coordinates															
Northing	Easting														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="4">Picture Taken of Ordnance</th></tr> <tr><th>Yes</th><th>No</th><th>Date</th><th>Time</th></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>				Picture Taken of Ordnance				Yes	No	Date	Time				
Picture Taken of Ordnance															
Yes	No	Date	Time												
Written Description and/or Sketch of Ordnance:															
<b>Corrective Action Taken by Fort McClellan Transition Force</b>															
Date															

These standard policies and procedures are applicable to all members of The IT Group, Inc. except where superceded or modified by the member Company.



## ATTACHMENT 4

### UXO Quality Control Report

**Project Location:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Work Site Location:** \_\_\_\_\_

**Day:** \_\_\_\_\_

**1. Personnel Involved:**

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

**2. Description of Work Being Performed:**

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

**3. Equipment Utilized:**

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

**4. Comments:**

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

\_\_\_\_\_  
**Completed By**

\_\_\_\_\_  
**Printed Name & Title**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

These standard policies and procedures are applicable to all members of The IT Group, Inc. except where superceded or modified by the member Company.



## ATTACHMENT 5

### UXO Sketch Location Log

**District:** \_\_\_\_\_ **Hole Number:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Company Name:** IT Corporation **Subcontractor:** \_\_\_\_\_

**Parcel Location:** \_\_\_\_\_ **Well Location:** \_\_\_\_\_ **Date Started:** \_\_\_\_\_ **Date Completed:** \_\_\_\_\_

<b>Type of UXO Work Being Performed:</b>

<b>Most Probable Munition:</b>	_____
<b>Down-Hole Depth Achieved for UXO Avoidance:</b>	_____
<b>Total Number of Surface UXO Marked:</b>	_____
<b>Total Number of Anomalies Marked:</b>	_____

<b>Location Sketch/Comments:</b>	<b>Not to Scale</b>
Signature of UXO Technician:	Date:

These standard policies and procedures are applicable to all members of The IT Group, Inc. except where superceded or modified by the member Company.

**Final  
Site-Specific Safety and Health Plan Attachment  
for the  
Groundwater Investigation at the Burial Mound  
at Rideout Field-Pelham Range  
Fort McClellan  
Calhoun County, Alabama  
EPA ID No. AL7 210 020 562**

**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**

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

**June 2001**

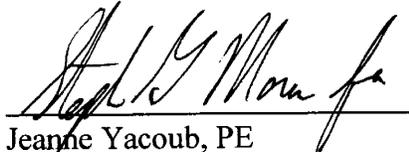
**Revision 1**

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.

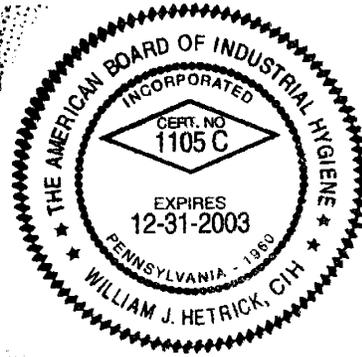
**Site-Specific Safety and Health Plan Attachment Approval  
Fort McClellan, Calhoun County, Alabama**

I have read and approve this site-specific safety and health plan for the groundwater investigation of the Burial Mound located on Rideout Field-Pelham Range, at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

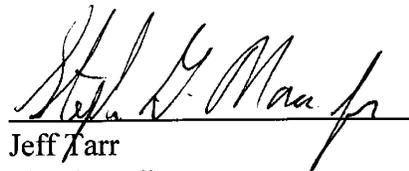
  
Jeanne Yacoub, PE  
Project Manager

Date 6/19/01

  
William J. Hetrick, CIH  
Health & Safety Manager



5/24/01  
Date

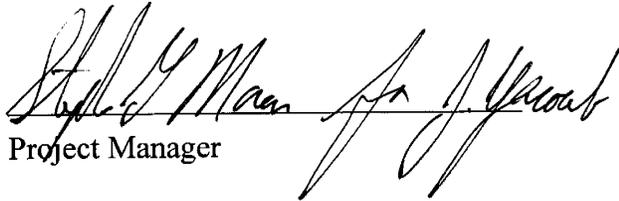
  
Jeff Tarr  
Site Coordinator

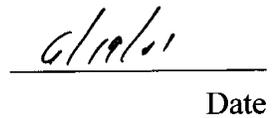
Date 6/19/01

## Acknowledgments

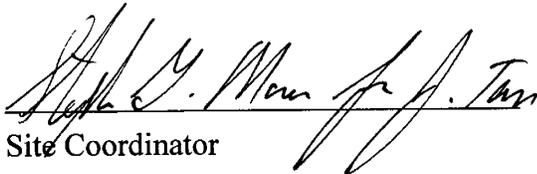
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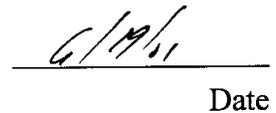
The final approved version of this site-specific safety and health plan (SSHP) attachment for the groundwater investigation of the Burial Mound located on Rideout Field (Parcel 202Q-RD)-Pelham Range, Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to 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

  
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

  
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
(Jimmy Walker, CEHNC).....	cell phone (256) 759-3931
UXO Emergencies.....	(256) 895-1598
(Jimmy Walker, CEHNC).....	cell phone (256) 759-3931
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 Officer.....	(256) 848-5433
Sargeant Tim Lane, National Guard Security Operations.....	(256) 848-6176
Dr. Jerry Burke, IT Occupational Physician.....	(800) 350-4511

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Attachment 1 – Pelham Range Emergency Route and Range Control Contact

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**List of Acronyms**

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See Attachment 1, List of Abbreviations and Acronyms, Site-Specific UXO Safety Plan contained in this binder.

## ***1.0 Site Work Plan Summary***

---

***Project Objective.*** The objective of this investigation at Fort McClellan (FTMC), Calhoun County, Alabama, is to install four groundwater monitoring wells at the Burial Mound at Rideout Field (Parcel 202Q-RD)-Pelham Range. One well will be upgradient, and three wells will be downgradient of the Burial Mound. At the completion of well installation, four groundwater samples will be collected and analyzed for gamma-emitting radionuclides.

### ***Project Tasks***

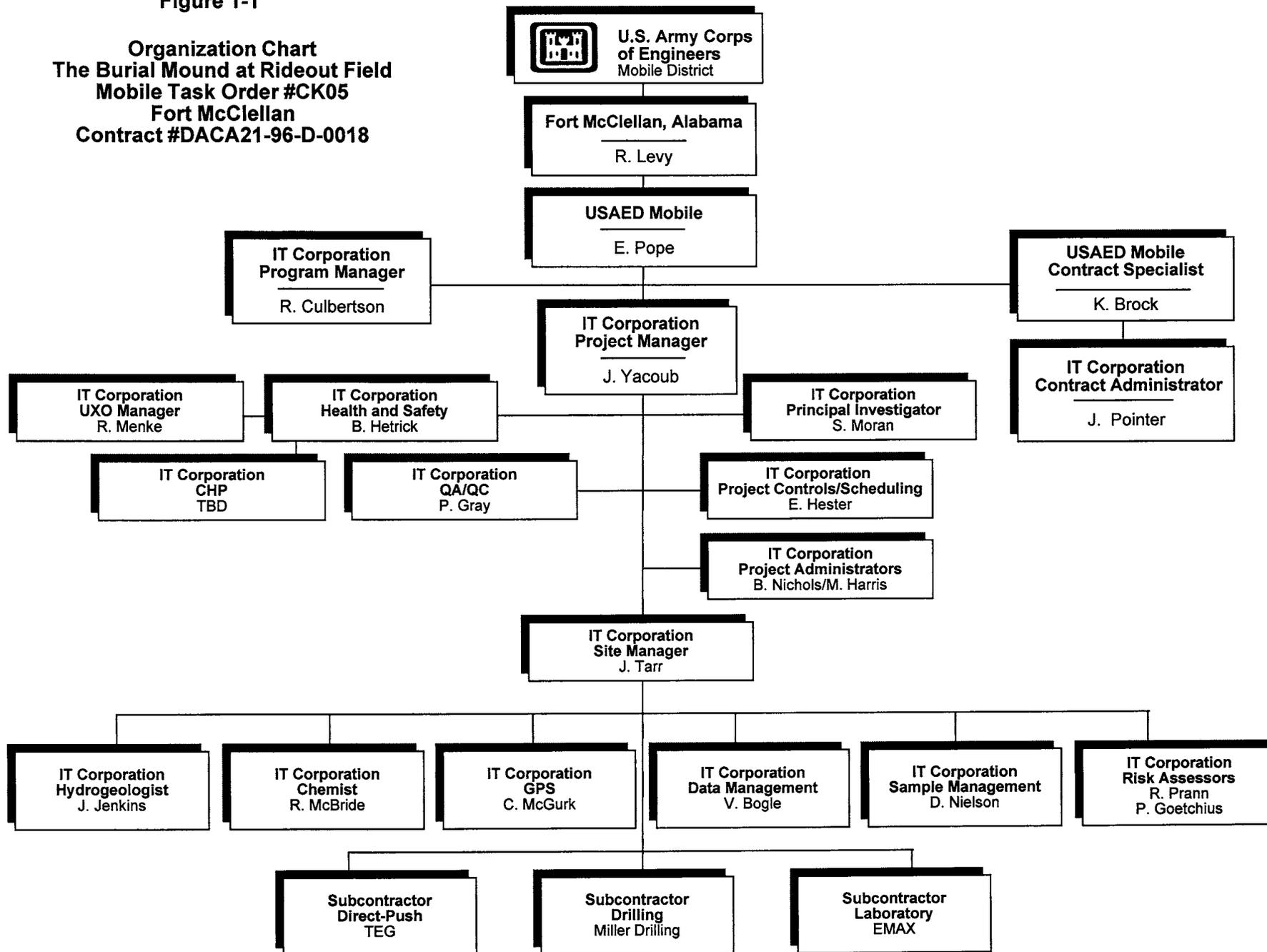
- Conduct a surface and near-surface unexploded ordnance (UXO) survey over all areas to be included in the sampling effort.
- Provide downhole UXO support for all intrusive drilling activity to determine the presence of potential downhole hazards.
- Install groundwater monitoring wells.
- Collect groundwater 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 be familiar with the requirements of this site-specific SHP (SSHP). This SSHP must be used in conjunction with the SHP, FTMC, Alabama, and the site-specific unexploded ordnance plan attachment for the Burial Mound at Rideout Field-Pelham Range.

Figure 1-1

**Organization Chart**  
**The Burial Mound at Rideout Field**  
**Mobile 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*.

#### **2.1.1 Radiological Hazards**

Rideout Field was used, in part, as a radioactive material burial site for radioactive sources used in training exercises from 1965 to 1972. After 1972, the burial site was cleared, and the excavation of the site created what is known as the Burial Mound. Disposal at the Burial Mound site included mostly radioactive laboratory wastes buried at a depth of 6 to 8 feet. The radioisotopes expected to be present in the waste are Cesium-137, Cobalt-60 (Co-60), and Strontium-90, both gamma- and beta-emitting radioisotopes. Table 2-1 lists the radioisotopes and their respective decay energies. It is also reported that leaking Co-60 sources were routinely buried in cut-down 55-gallon drums with soil contaminated from leaking Co-60 sources.

Beta particles are the equivalent of an electron, except they originate in the nucleus of the atom. Energy of beta particles varies widely, with initial beta maximum energies ranging from 2.3 mega electron volts to tens of thousands of electron volts. On an atomic scale, beta particles are small, so they can travel in air and matter. A rule of thumb for beta particles is that a 1-mega-electron-volt beta will travel about 11 feet in air.

Beta particles are considered an external and internal radiation hazard. The energy of the beta particles can be deposited externally in the skin, or internally if the radioactive material gets inside the body. When large amounts of beta particles interact with the skin, they can cause reddening of the skin, much like a sunburn. Internally, the beta particle energy will be deposited in living tissue. However, there is less energy deposited per cell than with an alpha particle, so

**Table 2-1**

**Radioactive Sources Potentially Present  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

<b>Radioisotope</b>	<b>Half-Life (years)</b>	<b>Decay Products</b>	<b>Energy</b>	
Cobalt 60	5.27	Beta	318	KeV
		Gamma	1.173	MeV
		Gamma	1.332	MeV
Cesium 137	30.17	Beta	512	KeV
		Gamma	662	KeV
Strontium 90	29	Beta	.546	MeV
Yttrium 90	64 (hours)	Beta	2.28	MeV

KeV = Kilo electron volt  
MeV = Mega electron volt

there is less risk the energy may result in changes to the cell. For energy deposited by a beta particle, the fate of the cells remains the same as with alpha particles.

Gamma rays are high-energy, short-wavelength rays. With the exception of the higher energy, they are similar to light rays. These high-energy rays can travel long distances in air and in matter. Unlike beta particles, they have no well-defined range in matter. They can travel through material without depositing any energy, or they may be completely absorbed. However, since they can travel large distances in air and matter, there is little energy deposited per unit path length or in any one cell. For this reason, gamma rays are considered to cause whole body irradiation and are not considered an internal hazard, as gamma rays emitted inside the body may not deposit any energy traveling through the body.

Given this information, the radioactive contaminants represent an external dose concern. External radioactive contaminants that give off gamma rays and beta particles represent external exposure to the body, but the ray and particle energy can be deposited in the skin and body of workers. This energy deposition represents the worker dose.

The beta particles also represent an internal dose concern when these materials enter the body through inhalation, ingestion, or injection. Once in the body, there are few methods available for removal, so the energy of the particles is deposited in the internal tissue, thus giving dose to the organ in which the material is deposited. The body is normally shielded from beta radiation by use of clothing (PPE) and safety glasses for eye protection.

The rules that govern worker exposure to radioactive materials found in 10 Code of Federal Regulations 20 will be followed throughout this project. This will include a program as low as reasonably achievable.

### **2.1.2 UXO Avoidance**

In addition to the radioisotopes noted, the presence of UXO is possible at the Burial Mound site. It will be necessary to conduct UXO avoidance activities as outlined in the site-specific ordnance and explosives avoidance work plan (See site-specific unexploded ordnance safety plan attached to this work plan). Surface sweeps and downhole surveys of soil brings will be required to support field activities, and will be conducted to identify anomalies for the purpose of UXO avoidance.

## **2.2 General Site Information**

**Site Location.** The Burial Mound is located in the western part of Pelham Range Training Area, 24C.

The Burial Mound is approximately 50 by 80 feet and is clearly identified and roped off with “DO NOT ENTER” signs.

**Duration of Planned Employee Activity.** Employee activity duration is less than 1 month.

**Pathways for Hazardous Substance Dispersion.** Possible pathways for hazardous substances in the area are groundwater, surface water, sediment, and soils.

### 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	Level D
Collecting samples	Modified Level D*
Install monitoring wells	Modified Level D*

\* Initial level will be raised to Level C or higher if air monitoring results for volatile organic hydrocarbons in the worker's breathing zone (BZ) are greater than action levels. If radiation monitoring indicates levels greater than 1.5 times background, operations will cease and the health physics technician will contact the project manager and the senior health physicist for further guidance.

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

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

Note: UXO personnel should not wear hard hats and steel-toed shoes when engaged in ordnance operations unless a significant overhead hazard exists. Where overhead hazards exist, a chin strap will be worn with hard hats to prevent accidental falling of hard hat.

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

- Permeable Tyvek, Kleenguard, or its equivalent
- Latex boot covers
- Nitrile or latex inner gloves; leather work gloves (outer) when necessary
- Steel-toed safety boots
- Safety glasses
- Hard hat

- Hearing protection (when working near operating equipment).

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

Note: UXO personnel should not wear hard hats and steel-toed shoes when engaged in ordnance operations unless a significant overhead hazard exists. Where overhead hazards exist, a chin strap will be worn with hard hats to prevent accidental falling of hard hat.

**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:

- National Institute of Occupational Safety and Health-approved full-face, air-purifying respirators 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 steel-toed safety boots with polyvinyl chloride over booties
- Hard hat
- Hearing protection (when working near operating equipment).

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

---

Potential environmental contaminants of concern resulting from the well installation at the Burial Mound site are Co-60, Cesium-137, and Strontium-90. A health physics technician will monitor for any increase above background radiation during site operations.

While there are no anticipated chemical hazards that will be encountered, a calibrated photoionization detector/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 protection level. A calibrated combustible gas/oxygen indicator will be utilized to monitor the work areas and BZs to determine if any combustible/flammable oxygen levels may be present that would necessitate evacuation of the work area. Table 4-1 contains action levels for site monitoring. 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 to exist, 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 (within 2 feet) 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, UXO specialist, and the site safety and health officer immediately. Personnel will evacuate the immediate area and secure it. The UXO hazard will be dealt with by appropriate personnel according to the procedures addressed in the site-specific UXO safety plan attachment.

**Table 4-1**

**Action Levels  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level C Personal Protective Equipment (PPE)

Analyte	Action Level	Required Action <sup>a</sup>
Volatile Organic Compounds (VOC)	$\geq 10$ ppm above background in breathing zone (BZ)	Stop work, evacuate work area, upgrade to Level B.
Oxygen	$\geq 20\%$ , $\leq 23\%$ $< 20\%$ , $> 23\%$	Normal operations. Stop work, evacuate work area.
Flammable vapors	$\geq 10\%$ LEL $< 10\%$ LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.
Gamma emitting radionuclides	1.5 times background	Stop work, notify senior health physicist and certified industrial hygienist (CIH).

When in Level D Modified/D PPE

Analyte	Action Level	Required Action <sup>b</sup>
VOCs	$\geq 5$ ppm above background in BZ	Stop activities, suspend work activities for 15 to 30 minutes, if readings are sustained then upgrade to Level C PPE.
Oxygen	$\geq 20\%$ , $\leq 23\%$ $< 20\%$ , $> 23\%$	Normal operations. Stop work, evacuate work area.
Flammable vapors	$\geq 10\%$ LEL $< 10\%$ LEL	Stop work, evacuate work area. Continue operations, monitor for VOCs.
Gamma emitting radionuclides	1.5 times background	Stop work, notify senior health physicist and CIH.

**Table 4-1**  
**Action Levels**  
**Burial Mound at Rideout Field**  
**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.
Gamma emitting radionuclides	Determine background	None.

<sup>a</sup> 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.

<sup>b</sup> 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  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Staging equipment	Micro R meter	Initially to determine background	BZ of employees
	OV Monitor	Initially for area	BZ of employees
Land Survey	OV Monitor	Initially for area	BZ of employees
Sampling (water, sediment, and soil)	OV Monitor	Continuously	BZ of employees and/or work area
	LEL/O <sub>2</sub> Monitor	Continuously	BZ of employees and/or work area
	Micro R meter	Continuously	BZ and samples
Installing monitoring wells	OV Monitor	Continuously	BZ of employees and/or work area
	LEL/O <sub>2</sub> Monitor	Continuously	BZ of employees and/or work area
	Micro R meter	Continuously	BZ and work area

OV = Organic vapor.

LEL/O<sub>2</sub> = Lower explosive level/oxygen.

Micro R meter = meter to determine radiation levels measured as micro REM.

BZ = Breathing zone.

## **5.0 Activity Hazard Analysis**

---

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

- Setup of equipment and general field activities
- Land survey
- Installation of monitoring wells
- Water 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  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 11)

Activity	Potential Hazards	Recommended Controls
Staging equipment	Unexploded ordnance (UXO)	<ul style="list-style-type: none"> <li>• UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance. See site-specific safety and health plans (SSHP) to determine if required.</li> </ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>• Determine best access route before transporting equipment.</li> <li>• Practice good housekeeping; keep work area picked up and clean as feasible.</li> <li>• Continually inspect the work area for slip, trip, and fall hazards.</li> <li>• Look before you step ensure safe and secure footing.</li> </ul>
	Heavy lifting	<ul style="list-style-type: none"> <li>• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment.</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>• Stay alert and clear of materials suspended overhead; wear hard hat and steel-toed boots.</li> </ul>
	Flying debris, dirt, dust, etc.	<ul style="list-style-type: none"> <li>• Wear safety glasses/goggles; ensure that eyewash is in proper working condition.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>• Keep hands, fingers, and feet clear of moving/suspended materials and equipment.</li> <li>• Beware of contact points.</li> <li>• Stay alert at all times!</li> </ul>
	Cuts/bruises	<ul style="list-style-type: none"> <li>• Use cotton or leather work gloves for material handling.</li> </ul>
	Bees, spiders, and snakes	<ul style="list-style-type: none"> <li>• Inspect work area carefully and avoid placing hands and feet into concealed areas.</li> </ul>
	Ticks	<ul style="list-style-type: none"> <li>• Wear light colored clothing (can see ticks better).</li> <li>• Mow vegetated and small brush areas.</li> <li>• Wear insect repellent.</li> <li>• Wear long sleeves and long pants.</li> <li>• Visually check oneself promptly and frequently after exiting the work area.</li> </ul>
	Fire	<ul style="list-style-type: none"> <li>• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 11)

Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>• Work area will be barricaded/demarcated.</li> <li>• Equipment will be laid out in an area free of traffic flow.</li> </ul>
	Hazard communication	<ul style="list-style-type: none"> <li>• Label all containers as to contents and dispose of properly.</li> <li>• Ensure Material Safety Data Sheets (MSDS) are available for hazardous chemicals used on site.</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>• Sound levels above 85 decibels (dBA) mandate hearing protection.</li> </ul>
	Lighting	<ul style="list-style-type: none"> <li>• Adequate lighting will be provided to ensure a safe working environment.</li> </ul>
	Cold stress	<ul style="list-style-type: none"> <li>• Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F).</li> <li>• Drink warm beverages on breaks. Refrain from drinking caffeinated beverages.</li> <li>• Remove wet clothing promptly.</li> <li>• Take breaks in warm areas.</li> <li>• Reduce work periods as necessary.</li> <li>• Layer work clothing.</li> </ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> <li>• Avoid plant areas if possible.</li> <li>• Wear long sleeves and long pants.</li> <li>• Promptly wash clothing that has contacted poisonous plants.</li> <li>• Wash affected areas immediately with soap and water.</li> </ul>
	Heat rash	<ul style="list-style-type: none"> <li>• Keep the skin clean and dry.</li> <li>• Change perspiration-soaked clothing, as necessary.</li> <li>• Bathe at end of work shift or day.</li> <li>• Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>• Drink plenty of cool fluids even when not thirsty.</li> <li>• Provide cool fluid for work crews.</li> <li>• Move victim to shaded, cool area.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 11)

Activity	Potential Hazards	Recommended Controls
Staging equipment (continued)	Heat exhaustion	<ul style="list-style-type: none"> <li>• Conduct physiological worker monitoring as needed (i.e., heart rate, oral temperature).</li> <li>• Set up work/rest periods.</li> <li>• Use the buddy system.</li> <li>• Allow workers time to acclimate.</li> <li>• Have ice packs available for use.</li> <li>• Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>• Evaluate possibility of night work.</li> <li>• Perform physiological monitoring on workers during breaks.</li> <li>• Wear body cooling devices.</li> </ul>
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> <li>• Work area will be barricaded/demarcated.</li> <li>• Equipment will be laid out in an area free of traffic flow.</li> <li>• Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic.</li> <li>• Barriers shall be used to protect workers from vehicular traffic.</li> <li>• Barriers shall be used to guard excavations adjacent to streets or roadways.</li> <li>• Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided.</li> <li>• Heavy equipment shall have backup alarms.</li> </ul>
	Forklift operations	<ul style="list-style-type: none"> <li>• Use qualified and trained forklift operators.</li> <li>• The operator shall not exceed the load capacity rating for the forklift.</li> <li>• The load capacity shall be clearly visible on the forklift.</li> <li>• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li> </ul>
	Portable electric tools	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Portable electric tools and all cord and plug connected equipment shall be protected by a ground fault circuit interrupter (GFCI) device.</li> <li>• Electrical tools shall be inspected daily prior to use.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 11)

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

**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 11)

Activity	Potential Hazards	Recommended Controls
Surveying (continued)	Traffic accidents	<ul style="list-style-type: none"> <li>• Place physical barrier (i.e., barricades, fencing) around work areas regularly occupied by pedestrians.</li> <li>• If working adjacent to roadways, have workers wear fluorescent orange vests.</li> <li>• Use warning signs or lights to alert oncoming traffic.</li> <li>• Assign flag person(s) if necessary to direct local traffic.</li> <li>• Set up temporary parking locations outside the immediate work area.</li> <li>• Motor vehicle operators shall obey all posted traffic signs, signals, and speed limits.</li> <li>• Pedestrians have the right-of-way.</li> <li>• Wear seat belts when vehicles are in motion.</li> </ul>
	Wildlife hazards	<ul style="list-style-type: none"> <li>• Workers should be cautious when driving through the site in order to avoid encounters with passing animals.</li> </ul>
	Biological hazards	<ul style="list-style-type: none"> <li>• Walking through overgrown grass areas, watch for snakes (rattlesnakes, moccasins, and copperheads).</li> </ul>
	Ticks	<ul style="list-style-type: none"> <li>• Wear light colored clothing (can see ticks better).</li> <li>• Mow vegetated and small brush areas.</li> <li>• Wear insect repellent.</li> <li>• Wear long sleeves and long pants.</li> <li>• Visually check oneself promptly and frequently after exiting the work area.</li> </ul>
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> <li>• Avoid plant areas if possible.</li> <li>• Wear long sleeves and long pants.</li> <li>• Promptly wash clothing that has contacted poisonous plants.</li> <li>• Wash affected areas immediately with soap and water.</li> </ul>
Groundwater sampling	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Avoid skin contact with water.</li> <li>• Handle samples with care.</li> <li>• Only essential personnel will be in the work area.</li> <li>• Real-time air monitoring will take place before and during sampling activities.</li> <li>• All personnel will follow good hygiene practices.</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 11)

Activity	Potential Hazards	Recommended Controls
Groundwater sampling (continued)	UXO	<ul style="list-style-type: none"> <li>• UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.</li> </ul>
	Cut hazards	<ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>
	Hazard communication	<ul style="list-style-type: none"> <li>• MSDSs shall be obtained for chemicals brought on site.</li> <li>• Label all containers as to contents.</li> </ul>
	Strains/sprains	<ul style="list-style-type: none"> <li>• Use the proper tool for the job being performed.</li> <li>• Get assistance if needed.</li> <li>• Avoid twisting/turning while pulling on tools, moving equipment, etc.</li> </ul>
	Drowning	<ul style="list-style-type: none"> <li>• Personal flotation devices will be worn when sampling on or adjacent to the water.</li> </ul>
	Spills/residual materials	<ul style="list-style-type: none"> <li>• Absorbent material and containers will be kept available where leaks or spills may occur.</li> </ul>
	Lighting	<ul style="list-style-type: none"> <li>• Adequate lighting will be provided to ensure a safe working environment.</li> </ul>
	Installation of monitoring wells	Unattended worker
Overhead hazards		<ul style="list-style-type: none"> <li>• Make sure no obstacles are within radius of boom. Always stay a safe distance from power lines.</li> </ul>
	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> <li>• All machinery or mechanized equipment will be inspected by a competent mechanic and be certified to be in safe operating condition.</li> <li>• Equipment will be inspected before being put to use and at the beginning of each shift.</li> <li>• Faulty/unsafe equipment will be tagged and if possible locked out.</li> <li>• Drill rigs and geoprobes 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.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 11)

Activity	Potential Hazards	Recommended Controls
Installation of monitoring wells (continued)	Heat rash	<ul style="list-style-type: none"> <li>• Keep the skin clean and dry.</li> <li>• Change perspiration-soaked clothing, as necessary.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Bathe at end of work shift or day.</li> <li>• Apply powder to affected area.</li> </ul>
	Heat cramps	<ul style="list-style-type: none"> <li>• Drink plenty of cool fluids even when not thirsty.</li> <li>• Provide cool fluid for work crews.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Move victim to shaded, cool area.</li> </ul>
	Heat exhaustion	<ul style="list-style-type: none"> <li>• Conduct physiological worker monitoring as needed (i.e., heart rate, and oral temperature).</li> <li>• Set up work/rest periods.</li> <li>• Use the "buddy system."</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> <li>• Allow workers time to acclimate.</li> <li>• Have ice packs available for use.</li> <li>• Take frequent breaks.</li> </ul>
	Heat stroke	<ul style="list-style-type: none"> <li>• Evaluate possibility of night work.</li> <li>• Perform physiological monitoring on workers during breaks.</li> <li>• Wear body cooling devices.</li> <li>• Comply with IT Procedure HS 400 (May 13, 1999).</li> </ul>
	UXO	<ul style="list-style-type: none"> <li>• UXO specialists will perform UXO surface clearance and/or UXO downhole clearance for UXO avoidance.</li> </ul>
	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> <li>• 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.</li> <li>• All mobile equipment and areas in which they are operated shall be adequately illuminated.</li> <li>• Aboveground and belowground utilities will be located prior to staging equipment.</li> <li>• Whenever the equipment is parked, the parking brake shall be set.</li> <li>• Equipment parked on inclines will have the wheels chocked.</li> <li>• Inspect brakes and tire pressure on drill rig before staging for work.</li> </ul>

**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 11)

Activity	Potential Hazards	Recommended Controls
Installation of monitoring wells (continued)	Inexperienced operator	<ul style="list-style-type: none"> <li>• Machinery and mechanized equipment shall be operated only by designated personnel.</li> <li>• Operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgment.</li> </ul>
	Jacks/outriggers	<ul style="list-style-type: none"> <li>• Ensure proper footing and cribbing.</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>• Remove unsecured tools and materials before raising or lowering the derrick.</li> <li>• Stay alert and clear of materials suspended overhead.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>• Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>• Stay alert at all times!</li> </ul>
	Fire	<ul style="list-style-type: none"> <li>• Mechanized equipment shall be shut down prior to and during fueling operations.</li> <li>• Have fire extinguishers inspected and readily available.</li> <li>• Obtain a Hot Work Permit, per IT Procedure HS 314 (May 19, 1999) for any operation which could act as an ignition source.</li> </ul>
	Fall hazards	<ul style="list-style-type: none"> <li>• Personnel are not allowed to work off of machinery or use them as ladders.</li> <li>• Use fall protection when working above 6 feet.</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>• Hearing protection is mandatory above 85 dBA.</li> </ul>
	Contact with rotating or reciprocating machine parts	<ul style="list-style-type: none"> <li>• Use machine guards; use long-handled shovels to remove auger cuttings.</li> <li>• Safe lockout procedures for maintenance work.</li> </ul>
	Heavy lifting	<ul style="list-style-type: none"> <li>• Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.</li> </ul>
Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>• Practice good housekeeping, keep work area picked up and clean as feasible.</li> <li>• Continually inspect the work area for slip, trip, and fall hazards.</li> </ul>	



**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 10 of 11)

Activity	Potential Hazards	Recommended Controls
Disposal of investigation-derived waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none"> <li>• Use qualified and trained forklift operators.</li> <li>• The operator shall not exceed the load capacity rating for the forklift.</li> <li>• The load capacity shall be clearly visible on the forklift.</li> <li>• Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.</li> </ul>
	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>• Stop immediately at any sign of obstruction.</li> <li>• Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination.</li> <li>• Only essential personnel will be in the work area.</li> <li>• Real-time air monitoring will take place before and during sampling activities.</li> <li>• All personnel will follow good hygiene practices.</li> <li>• Proper decontamination procedures will be followed.</li> <li>• All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.</li> </ul>
	Cut hazards	<ul style="list-style-type: none"> <li>• Use care when handling glassware.</li> <li>• Wear adequate hand protection.</li> </ul>
High-pressure water jetting operations	Heavy lifting	<ul style="list-style-type: none"> <li>• Use proper lifting techniques.</li> <li>• Lifts greater than 60 pounds require assistance or mechanical equipment; size-up the lift.</li> </ul>
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> <li>• Good housekeeping shall be implemented.</li> <li>• The work area shall be kept clean as feasible.</li> <li>• Inspect the work area for slip, trip, and fall hazards.</li> </ul>
	Fueling	<ul style="list-style-type: none"> <li>• Only approved safety cans shall be used to store fuel.</li> <li>• Do not refuel equipment while it is operating.</li> <li>• Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.</li> </ul>

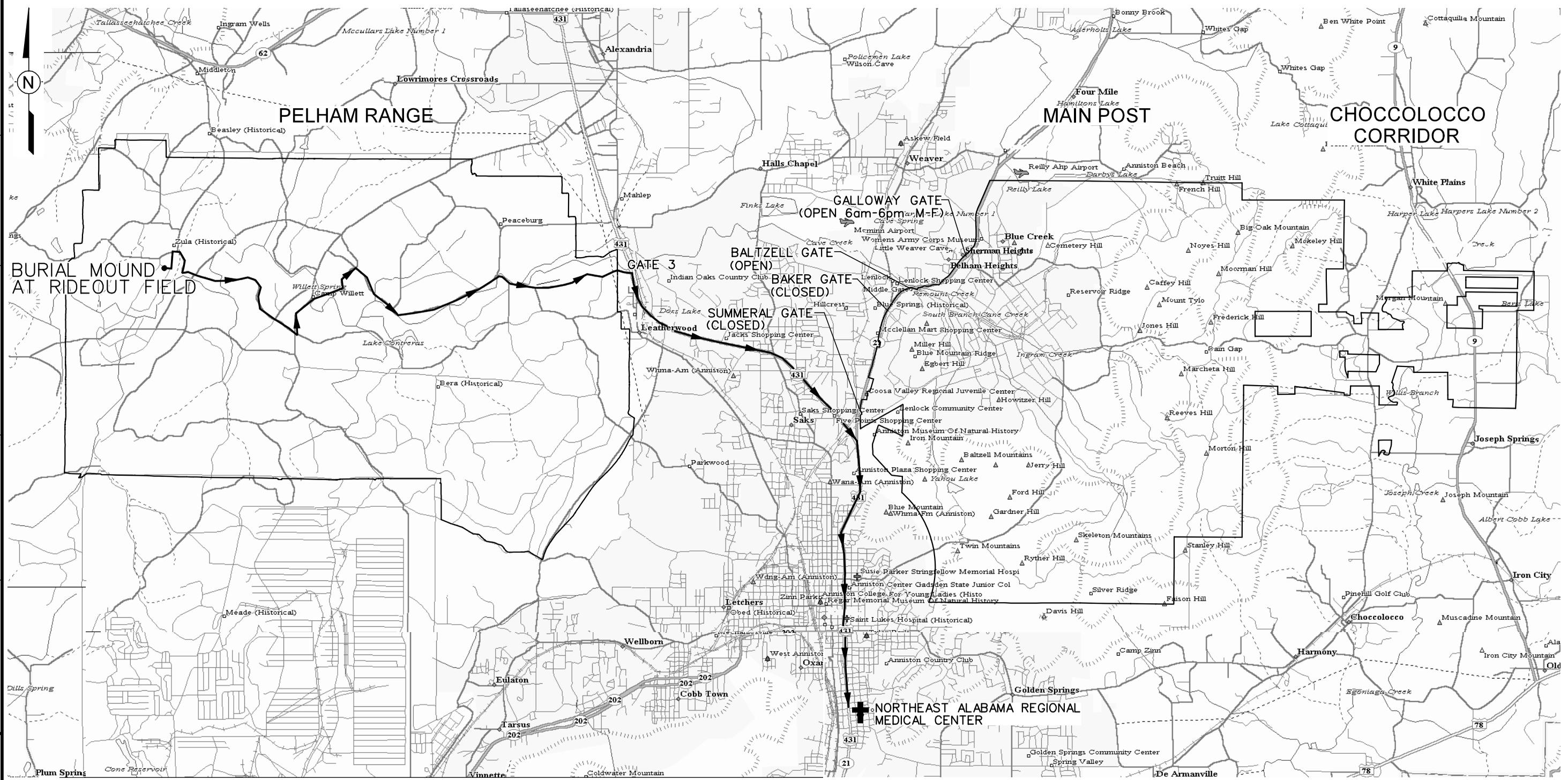
**Table 5-1**

**Activity Hazard Analysis  
Burial Mound at Rideout Field  
Fort McClellan, Calhoun County, Alabama**

(Page 11 of 11)

Activity	Potential Hazards	Recommended Controls
High-pressure water jetting operations (continued)	Faulty or damaged equipment	<ul style="list-style-type: none"> <li>• Equipment shall be inspected before being placed into service and at the beginning of each shift.</li> <li>• Preventive maintenance procedures recommended by the manufacturer shall be followed.</li> <li>• A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.</li> </ul>
	High-pressure water	<ul style="list-style-type: none"> <li>• 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).</li> <li>• One standby person shall be available within the vicinity of the pump during jetting operation.</li> <li>• The work area shall be isolated and adequate barriers will be used to warn other site personnel.</li> </ul>
	Unqualified operators	<ul style="list-style-type: none"> <li>• Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.</li> </ul>
	Out of control equipment	<ul style="list-style-type: none"> <li>• No machinery or equipment is permitted to run unattended.</li> <li>• 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.</li> </ul>
	Noise	<ul style="list-style-type: none"> <li>• Sound levels above 85 dBA mandates hearing protection by nearby site personnel.</li> </ul>
	Activation during repairs	<ul style="list-style-type: none"> <li>• All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.</li> </ul>
	Pinch points	<ul style="list-style-type: none"> <li>• Keep feet and hands clear of moving/suspended materials and equipment.</li> <li>• Stay alert and clear of materials suspended</li> </ul>
	Falling objects	<ul style="list-style-type: none"> <li>• Hard hats are required by site personnel.</li> <li>• Stay alert and clear of material suspended overhead.</li> </ul>
	Flying debris	<ul style="list-style-type: none"> <li>• Impact-resistant safety glasses with side shields are required.</li> </ul>
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> <li>• All site personnel will wear the appropriate PPE.</li> </ul>

DWG. NO.: ...774645es.699  
 PROJ. NO.: 774645  
 INITIATOR: J. BROWN  
 PROJ. MGR.: J. YACOUB  
 DRAFT. CHK. BY:  
 ENGR. CHK. BY: S. MORAN  
 DATE LAST REV.:  
 DRAWN BY: D. BILLINGSLEY  
 05/16/01  
 STARTING DATE: 12/20/00  
 08:47:51 AM  
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**LEGEND:**

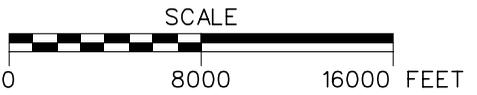
-  ROUTE TO NORTHEAST ALABAMA REGIONAL MEDICAL CENTER
-  U.S. HIGHWAY
-  HOSPITAL
-  INVESTIGATION SITES

**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 McCLELLAN  
 CALHOUN COUNTY, ALABAMA  
 Contract No. DACA21-96-D-0018



**ATTCHMENT 1  
PELHAM RANGE EMERGENCY ROUTE  
AND  
RANGE CONTROL CONTACT**

## **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.
- Four 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 10<sup>th</sup> Street
- Hospital is 1-1/2 blocks ahead:

Northeast Alabama Regional Medical Center  
400 East 10<sup>th</sup> 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.**

## **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.

Enclosure One

# PELHAM RANGE EVACUATION ROUTES

