



November 19, 2002

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IT-MC-CK09-0163
Project No. 796886

Mr. Lee Douglas Coker
U.S. Army Corps of Engineers, Mobile District
Attn: EN-GE/Lee Coker
109 St. Joseph Street
Mobile, AL 36602

Contract: **Contract No. DACA21-96-D-0018/CK09**
 Fort McClellan, Alabama

Subject: **Draft Site-Specific Field Sampling Plan Addendum III for the Remedial**
 Investigation at Landfill No. 3, Parcel 80(6)

Dear Mr. Coker:

This draft site-specific field sampling plan (SFSP) is sent for your review and concurrence. This draft plan serves as Addendum III to the April 2001 *Site-Specific Groundwater Monitoring Well Installation and Field Sampling Plan for the Remedial Investigation at Landfill No. 3, Parcel 80(6)*. The purpose of this proposed investigation is to further delineate the nature and extent of chlorinated volatile organic compounds (VOC) in groundwater. The proposed field activities and monitoring well installation rationale were discussed at the September and October 2002 Base Realignment and Closure Cleanup Team (BCT) meetings. During those meetings, the BCT agreed to the strategy described in this addendum. Please review this plan and respond with either a letter of concurrence or written comments describing any recommendations.

Background. Landfill No. 3, Parcel 80(6), is located in the northwest corner of the Main Post (Figure 1). The landfill is bounded by Alabama State Highway 21 (Anniston-Jacksonville Highway) to the west and by Gobbler Road to the east (Figure 1). This 23-acre site was the sanitary landfill for Fort McClellan (FTMC) from 1946 to 1967. The northern, eastern, and western boundaries of the landfill are well defined (i.e., the terminus of trench depressions, drainage swales, and roads). The landfill was constructed using trenches that extend east to west across the site. The waste was placed in the trenches and subsequently covered with topsoil. The landfill was not capped when it was closed in 1967, and settling is occurring, indicating that water is infiltrating through the topsoil. Forty-nine trench depressions can be observed oriented east to west.

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The groundwater elevation maps for existing residuum and bedrock wells are shown on Figures 2 and 3, respectively. Groundwater flow in the residuum is to the west, with localized mounding beneath the fill. West of the Anniston-Jackson Highway, groundwater flow in the bedrock appears to flow to the northeast. East of the Anniston-Jackson Highway, groundwater flow in the bedrock appears to flow to the northwest. Groundwater in the residuum and bedrock appears to be hydraulically connected, based on water level measurements from well pairs.

The results of groundwater sampling during previous investigations have verified the presence of chlorinated VOCs in residuum and bedrock monitoring wells. Figure 4 shows the total chlorinated VOC isopleth map in the residuum monitoring wells at Landfill No. 3, from previous investigations conducted by IT Corporation (IT). Figure 5 shows the total chlorinated VOC isopleth map in the bedrock monitoring wells. Based on the isopleth maps, VOCs in groundwater extend along Alabama State Highway 21 to the northeast. The extent of the groundwater contaminant plume is defined to the west and south of Landfill No. 3; however, neither the northern lateral nor vertical extent of the contaminant plume has been defined. Because the extent of the VOCs in groundwater has not been fully established, further investigation of Landfill No 3 is necessary.

Field Activities. The proposed investigation includes:

- Install 10 bedrock groundwater monitoring wells
- Collect bedrock cores from six monitoring well locations
- Perform discrete groundwater sampling from approximately 60 intervals at six bedrock well locations
- Perform borehole geophysical logging at six bedrock well locations
- Collect groundwater samples from 47 monitoring wells (37 pre-existing monitoring wells and 10 proposed monitoring wells)
- Collect groundwater samples from two residential wells (Medders and Lowery, shown on Figure 6)
- Collect groundwater samples from two City of Weaver municipal wells (Weaver No. 2 and Weaver No. 3).

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Figure 6 shows the approximate locations of the ten proposed groundwater monitoring wells and the off-site property boundaries in the vicinity of Landfill No. 3. The property boundaries are based on property ownership maps obtained from the Calhoun County Alabama Tax Division.

Six of the proposed locations (OLF-G39, OLF-G40, OLF-G41, OLF-G42, OLF-G45, and OLF-G46) are on Army property surrounding Landfill No. 3. Two proposed locations (OLF-G43 and OLF-G44) are within the City of Anniston right-of-way on Midway Lane, northwest of Landfill No. 3. The remaining two proposed locations (OLF-G47 and OLF-G48) are within the median of Alabama State Highway 21, north of Landfill No. 3. The monitoring well installation rationale is outlined in Table 1. The actual well locations will be selected in the field based on field conditions and site access issues.

Monitoring Wells OLF-G43 and OLF-G47. These monitoring wells will be installed using a truck-mounted sonic drill rig to minimize investigative derived waste. No samples will be collected for lithologic description. It is estimated that the monitoring wells will be installed to depths of 220 and 200 feet below ground surface (bgs), respectively. The monitoring wells will be drilled and installed as specified in Appendix C of the installation-wide sampling and analysis plan (SAP). The monitoring well boreholes will be drilled to the total proposed well depth outlined in Table 1. If competent bedrock formations are encountered, air rotary drilling methods may be utilized to complete the borehole.

Monitoring Wells OLF-G39, OLF-G40, OLF-G41, OLF-G44, OLF-G46, and OLF-G48. These monitoring wells will be installed as single-cased wells using sonic and rock coring drilling methods and will be installed to depths ranging from approximately 155 to 295 feet bgs (Table 1). The boring for each monitoring well will be advanced to refusal using sonic drilling methods until competent bedrock is encountered. Bedrock coring will be performed from the top of competent bedrock to the target depth of each well (Table 1).

Soil and bedrock samples will be collected from the boreholes of these monitoring wells for the purpose of describing the lithology of residuum and bedrock. Samples will be collected using a 6-inch-diameter sonic core barrel with an 8-inch-diameter temporary sonic outer casing. Residuum samples will be collected continuously from ground surface to the top of bedrock. Residuum samples will be retrieved in 5- or 10-foot sections and placed in clear plastic sleeves provided by the drilling subcontractor. The residuum samples will be screened in the field for

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the presence of VOC contamination using a photoionization detector. No residuum samples will be collected for chemical analysis. The residuum will be logged in accordance with American Society for Testing and Materials Method D 2488 using the Unified Soil Classification System.

Upon reaching competent bedrock, continuous bedrock sampling will be performed using a PQ (nominal 5-inch-diameter) or SQ (nominal 4-inch-diameter) wireline triple-tube core barrel with a longitudinally split inner tube. Bedrock coring will be performed with a bit appropriate for the formation to maximize core recovery. If broken rock zones, washout zones, or other conditions are encountered that inhibit core barrel advancement, the coring will be discontinued, the borehole will be reamed with air rotary methods, and temporary steel casing will be advanced to the broken rock zone. The borehole will then be advanced to the target depth (Table 1) with the core barrel. Rock cores will be described in accordance with methods outlined in the July 1998 U.S. Army Corps of Engineers (USACE) South Atlantic Division Manual DM 1110-1-1 and placed in core boxes provided by the drilling subcontractor. The field geologist shall document the volume of water introduced into the borehole, volume of water recovered, drilling rates, bit drops, water pressure, and downhole pressure of drilling tools.

During rock coring drilling activities at monitoring wells OLF-G39, OLF-G40, OLF-G41, OLF-G44, OLF-G46, and OLF-G48, discrete groundwater samples will be collected utilizing a single- or double-packer system that allows 20-foot intervals to be isolated for sampling. Groundwater sample collection will begin at the estimated depths specified in Table 1 or where groundwater is first encountered, and continue at 20-foot intervals thereafter (e.g., 50 to 70 feet bgs, 70 to 90 feet bgs). The samples will be collected through a properly decontaminated submersible pump made of stainless steel and Teflon, such as Grundfos Rediflo-2™ or equivalent, affixed with a Teflon-coated polyethylene discharge line, and an inflatable packer located above the pump (to effectively seal off upper intervals). Prior to collecting a discrete groundwater sample, five volumes of water from the isolated sampling zone will be removed. The isolated sampling zone will be allowed to recharge for a maximum time period of one hour. If there is an insufficient volume of water to sample after one hour, the borehole will be advanced 20 feet and the discrete sampling procedure will be repeated. However, the one-hour recharge period may be extended at the discretion of the IT site manager. Groundwater samples collected from the sampling zone will be screened for field parameters (pH, temperature, specific conductivity, dissolved oxygen, and oxidation-reduction potential), and a representative sample will be sent to an off-site laboratory for 24-hour turn-around for VOC analysis. Discrete groundwater sampling at 20-foot

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intervals will provide information on groundwater quality and will aid in determining the well screen placement. The discrete groundwater sampling data will be used for screening only and will not be considered definitive; the data will not be reported with data packages, nor will it be validated. Instead, only laboratory certificate of analysis deliverables will be required. Discrete groundwater sampling methodology outlined in Attachment 5, Procedure No. FTMC-GW-002, and Procedure No. FTMC-GW-003 of the SAP will be followed when collecting discrete samples in bedrock and residuum, respectively.

After the completion of rock coring and discrete groundwater sample collection, borehole geophysical logging will be performed at monitoring wells OLF-G39, OLF-G40, OLF-G41, OLF-G44, OLF-G46, and OLF-G48. The logging will include dip meter, natural gamma, temperature, resistivity, and caliper logging. The purpose of the geophysical logging is to provide additional information regarding fractures and lithology noted during coring. With the exception of natural gamma logging, all borehole geophysical logging will be performed only in the open portion of the borehole. Natural gamma logging will be completed in the entire borehole (open and temporarily sonic cased intervals).

After completion of geophysical logging, the coring tools will be removed and the borehole will be reamed using sonic or air rotary drilling methods with a 7-7/8-inch-diameter bit. An air compressor fitted with an in-line organic compound filter shall be used if the air rotary drilling is employed. If necessary, potable water may also be used as a lubricant. The field geologist shall document the volume of water introduced into the borehole.

Monitoring Wells OLF-G42 and OLF-G45. These monitoring wells are proposed to be installed using air rotary drilling methods to estimated depths presented in Table 1. An air rotary rig with a 7-7/8-inch percussion or rotary bit will be used. If lost circulation or borehole collapse is encountered during drilling, eccentric rotary bit drilling (ODEX or equivalent) may be used to advance the borehole and install temporary casing following procedures outlined in Section C.3.1.2 of Appendix C of the SAP. During air rotary or eccentric rotary drilling, the driller's observations shall be noted, such as amount of water used, amount of water lost, drilling rates, voids, and fractures encountered. No discrete groundwater sampling or geophysical logging will be performed at OLF-G42 and OLF-G45.

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Monitoring Well Construction. At the completion of each boring, a 4-inch-diameter monitoring well will be installed. The well casing will consist of new 4-inch ID, Schedule 80, threaded, flush-joint, PVC pipe. Attached to the bottom of the well casing will be a section of new, threaded, flush-joint 0.010-inch continuous wrap PVC well screen, approximately 15 feet long. At the discretion of the IT site manager, an approximately 3- to 5-foot long sump composed of new, 4-inch ID, Schedule 80, threaded, flush-joint PVC pipe may be attached to the bottom of the well screen. After the casing and screen materials are lowered into the boring, a filter pack will be installed around the well screen. The filter pack will be tremied into place from the bottom of the screen or sump to approximately 5 feet above the top of the screen. The filter pack will consist of 20/40 silica sand. A fine sand layer (30/70 silica sand), approximately 5 feet thick, will be placed above the filter pack. A bentonite seal will then be placed above the fine sand layer and will be extended from the top of the fine sand to a minimum of 5 feet above the fine sand layer. The bentonite seal may be extended beyond 5 feet above the top of the fine sand based on the presence of fractures and/or voids noted during coring and borehole geophysics. The remaining annular space will be grouted with a bentonite-cement mixture, using approximately 7 to 8 gallons of water and approximately 5 pounds of bentonite per 94-pound bag of Type I or Type II Portland cement. The grout will be tremied into place with a side-discharge tremie pipe from the top of the bentonite seal to ground surface. The bedrock monitoring wells will be completed and developed as specified in Appendix C of the SAP. Groundwater samples will not be collected from these wells for a period of at least 14 days after well development.

Monitoring Well Completion. Monitoring wells installed off Army property (OLF-G43, OLF-G44, OLF-G47, and OLF-G48) shall be completed with flush-to-grade well covers using an 8- or 12-inch-diameter steel flush-mount, bolt-down, traffic bearing monitoring well cover. The flush mount cover will be installed in a minimum 3-foot by 3-foot square, 4-inch thick, concrete pad. The pad will be sloped away from the well and constructed flush with the ground surface. A brass identification tag will be installed on the north side of the concrete pad to serve as a well marker. A lockable watertight well cap provided by the drilling subcontractor will be installed atop the well casing. For monitoring wells installed on Army property, a 5-foot length of protective steel casing with a locking cap will be installed over the well pipe to a depth of approximately 2.5 feet bgs. A minimum 3-by-3-foot square concrete pad will be constructed around the well. The concrete pad will be a minimum of 4 inches thick. The concrete pad will slope away from the well and be flush with the ground surface at the pad edges. An internal drainage hole will be drilled through the steel casing approximately 6 inches above the well pad.

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The monitoring well will be identified by a stenciled number painted on the protective steel casing.

Four 3-inch-diameter, 6-foot-long, steel guard posts will be placed 1 foot from the corners of the concrete well pad. The guard posts will be sunk in concrete to a depth of 3 feet bgs.

Additionally, the guard posts will be filled with concrete and will be painted fluorescent yellow.

Well Development. Newly installed monitoring wells will be developed in accordance with procedures outlined in the April 2001 *Site-Specific Groundwater Monitoring Well Installation and Field Sampling Plan Attachment for Landfill No. 3, Parcel 80(6)* and specified in Section 5.1 and Appendix C of the SAP.

Groundwater Sampling. Following well completion and development activities, groundwater samples will be collected from the 10 new monitoring wells, 37 pre-existing monitoring wells, 2 City of Weaver municipal wells, and 2 residential wells (Medders and Lowery) and analyzed for VOCs. Groundwater samples will be collected from the monitoring well locations shown on Figure 6. The groundwater sample designations and required quality assurance/quality control sample quantities are listed in Table 2. The groundwater sample data collected from the monitoring wells will be considered definitive. Prior to sampling monitoring wells, static water level will be measured from each of the monitoring wells listed in Table 2. Water level measurements will be performed as outlined in Section 5.5 of the SAP.

Groundwater samples will be collected in accordance with the procedures outlined in Section 6.1.1.5 and Attachment 5 of the SAP. Low-flow groundwater sampling methodology, outlined in Attachment 5 of the SAP, Procedure No. FTMC-GW-001, may be used as deemed necessary by the IT site manager. The groundwater samples will be analyzed using U.S. Environmental Protection Agency (EPA) SW-846 methods, including Update III Methods where applicable, as shown in Table 3. Equipment decontamination procedures will follow the methodology presented in Section 6.5.1.1 of the SAP.

Sample documentation and chain of custody will be recorded as specified in Chapter 6.0 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are discussed in Chapter 4.0 and listed in Table 4-1 of the 2002 installation-wide quality assurance plan (QAP) contained in the SAP. The samples will be analyzed for the parameters listed in Tables 2 and 3 of this SFSP. The samples will be analyzed using EPA SW-

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846 methods, including Update III Methods where applicable, as presented in Table 3 in this SFSP and Chapter 5.0 in the QAP. Data will be reported in accordance with definitive data requirements of Chapter 2 of the USACE Engineering Manual 200-1-6, *Chemical Quality Assurance For Hazardous, Toxic and Radioactive Waste (HTRW) Projects*, and evaluated by the stipulated requirements for the generation of definitive data (Section 7.2.2 of the QAP). Chemical data will be reported by the laboratory via hard-copy data packages using Contract Laboratory Program-like forms, along with electronic copies. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria. Equipment decontamination procedures will follow the methodology presented in Section 6.5.1.1 of the SAP.

Investigative-Derived Waste. Investigative-derived waste (IDW) generated during well installation and groundwater sampling will be managed in accordance with the procedures outlined in Appendix D of the SAP. Drill cuttings and water will be generated during drilling as the bit and rods are advanced. The drill spoils will be directed into lined, watertight roll-off boxes or other suitable containers via a diverter and an appropriate length of high-pressure discharge hose, per methodology outlined in the SAP.

It is proposed that liquid waste generated on Army property during this investigation be treated and disposed of on site as shown in the schematic on Figure 7. After allowing time for settling, untreated liquids (from drilling and groundwater sampling) in the first roll-off box will be siphoned from the top of the container and pumped through a sand filter and then through a granular activated carbon (GAC) canister into a second lined, watertight roll-off box. The intent of the sand filter is to extract suspended drill cuttings to reduce particles going into the GAC. The GAC will remove VOCs in the water. When the second box is approximately 75 percent full of treated water, a grab sample of the treated water in the second box will be collected and analyzed for VOCs, using a quick turnaround time. Assuming the treated water has no detection of VOCs above surface water ecological screening values, it will be discharged onto the ground using a submersible pump. The treated water will be allowed to percolate into the ground and will not be allowed to flow directly into a drainage ditch or creek. Treated water, containing VOCs exceeding surface water ecological screening values, will be characterized and disposed of following IDW disposal procedures outlined in the SAP. In addition, the sand and GAC used to filter and treat the water will be characterized and disposed of following IDW disposal procedures outlined in the SAP.

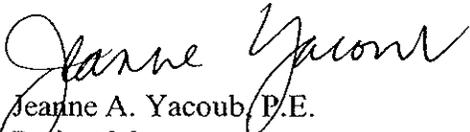
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All work conducted during the groundwater investigation at the Landfill No. 3 will be conducted in accordance with this SFSP and the attached revised site-specific safety and health plan.

Schedule. The project schedule for the field activities will be provided by the IT project manager to the BCT.

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

Attachments

Distribution: Lisa Holstein, FTMC (7 copies)
Doyle Brittain, EPA Region IV (1 copy)
Philip Stroud, ADEM (2 copies)
Hugh Vick, Gannett Fleming (3 copies)
Miki Schneider, JPA (1 copy)

Table 1

**Monitoring Well Locations and Rationale
Remedial Investigation at Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 4)

Monitoring Well Location	Sample Medium	Monitoring Well Location Rationale
OLF-G39	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G39, will be installed approximately 100 feet east existing well GSBP-155-MW03. The well will be used to establish the groundwater quality at this location and to further define the horizontal and vertical extent of the VOC plume at Landfill No. 3. The well will be sonic drilled from the ground surface to top of bedrock which is estimated to be approximately 50 feet below ground surface (ft bgs). The well will be cored from the top of bedrock to its total depth (approximately 50 ft to 275 ft bgs). Approximately 11 discrete groundwater samples will be collected at 20-foot intervals from approximately 50 ft to 275 ft bgs during drilling to screen for the presence of contaminants and to assist in the selection of the well screen interval. The borehole will be logged from approximately 50 ft to 275 ft bgs with natural gamma, caliper, dipmeter, resistivity and temperature downhole geophysical logging tools prior to setting the 4-inch ID Sch. 80 PVC well.
OLF-G40	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G40, will be installed to the east of Landfill No. 3 next to residuum well, LF4-MW1. Although contamination was not detected in LF4-MW01, this proposed deep well will be used to determine the quality of groundwater at a greater depth, defining the vertical extent of the VOC plume east of Landfill No. 3. The borehole will be sonic drilled from the ground surface to top of bedrock which is estimated to be approximately 50 ft bgs. The borehole will be cored from the top of bedrock to its total depth (approximately 50 ft to 155 ft bgs). Approximately 5 discrete groundwater samples will be collected at 20-foot intervals during drilling from approximately 50 ft to 155 ft bgs to screen for the presence of contaminants and to assist in the selection of the well screen interval. The borehole will be logged from approximately 50 feet bgs to 155 feet bgs with natural gamma, caliper, dipmeter, resistivity and temperature downhole geophysical logging tools prior to setting the 4-inch ID Sch. 80 PVC well.
OLF-G41	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G41, will be installed to the south of Landfill No. 3 next to residuum well, OLF-G10. Although contamination was not detected in OLF-G10, this deep well will be used to determine the quality of groundwater at a greater depth, defining the vertical extent of the VOC plume south of Landfill No. 3. The well will be sonic drilled from the ground surface to top of bedrock which is estimated to be approximately 50 ft bgs. The borehole will be cored from the top of bedrock to its total depth (approximately 50 ft to 250 ft bgs). Approximately 10 discrete groundwater samples will be collected at 20-foot intervals during drilling from approximately 50 ft to 250 feet bgs to screen for the presence of contaminants and to assist in the selection of the well screen interval. The borehole will be logged from approximately 50 feet bgs to 250 feet bgs with natural gamma, caliper, dipmeter, resistivity and temperature downhole geophysical logging tools prior to setting the 4-inch ID Sch. 80 PVC well.

Table 1

**Monitoring Well Locations and Rationale
Remedial Investigation at Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

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Monitoring Well Location	Sample Medium	Monitoring Well Location Rationale
OLF-G42	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G42, will be installed to the north of Landfill No. 3 next to residuum well, OLF-G04. Although only low concentrations of contamination were detected in OLF-G04, this deep well will be used to determine the quality of groundwater at a greater depth, defining the vertical extent of the VOC plume north of Landfill No. 3. The borehole will be drilled with air rotary methods to the proposed total depth of 175 feet bgs and a 4-inch ID Sch. 80 PVC well will be installed. No coring, discrete sampling, or geophysical logging will be performed at OLF-G42.
OLF-G43	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G43, will be installed on Midway Lane (City of Anniston right-of-way property), approximately 500 feet to the northwest of OLF-G34. The well will be the shallower of two wells in the westernmost cluster of a three-cluster fence of wells to be located north of Landfill No. 3. The well will be used to establish the groundwater quality at this location and to further define the horizontal and vertical extent of the VOC plume at Landfill No. 3. The borehole will be drilled and the 4-inch ID Sch. 80 PVC well is planned to a total depth of approximately 220 ft bgs. The selection of the well screen interval will be based on information supplied from the coring, discrete sampling, and geophysical logging of proposed Monitoring Well OLF-G44. No coring, discrete sampling, or geophysical logging will be performed at OLF-G43.
OLF-G44	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G44, will be installed on Midway Lane (City of Anniston right-of-way property), approximately 500 feet northwest of OLF-G34. The well will be the deeper of two wells in the westernmost cluster of a three-cluster fence of wells to be located north of Landfill No. 3. The well is intended to establish the groundwater quality at this location and to further define the horizontal and vertical extent of the VOC plume at Landfill No. 3. The borehole will be sonic drilled from the ground surface to top of bedrock which is estimated to be approximately 50 ft bgs. The borehole will be cored from the top of bedrock to its total depth (approximately 50 ft bgs to 295 ft bgs). Approximately 12 discrete groundwater samples will be collected at 20-foot intervals during drilling from approximately 100 feet bgs to 295 feet bgs to screen for the presence of contaminants and to assist in the selection of the well screen interval. The borehole will be logged from approximately 50 ft to 295 ft bgs with natural gamma, caliper, dipmeter, resistivity and temperature downhole geophysical logging tools prior to setting the 4-inch ID Sch. 80 PVC

Table 1

**Monitoring Well Locations and Rationale
Remedial Investigation at Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

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Monitoring Well Location	Sample Medium	Monitoring Well Location Rationale
OLF-G45	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G45, will be installed approximately 580 feet east of US Highway 21, near the northern boundary of Fort McClellan. The well will be the shallower of two wells in the easternmost cluster of a three-cluster fence of wells to be located north of Landfill No. 3. The well is intended to establish the groundwater quality at this location and to further define the horizontal and vertical extent of the VOC plume at Landfill No. 3. The borehole will be drilled with air rotary methods to the proposed total depth of 170 feet bgs and a 4-inch ID Sch. 80 PVC well will be installed. The selection of the well screen interval will be based on information supplied from the coring, discrete sampling, and geophysical logging of proposed Monitoring Well OLF-G46. No coring, discrete sampling, or geophysical logging will be performed at OLF-G45.
OLF-G46	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G46, will be installed approximately 580 feet east of US Highway 21 near the northern boundary of Fort McClellan. The well will be the deeper of two wells in the easternmost cluster of a three-cluster fence of wells to be located north of Landfill No. 3. The well will be used to establish the groundwater quality at this location and to further define the horizontal and vertical extent of the VOC plume at Landfill No. 3. The borehole will be sonic drilled from the ground surface to top of bedrock which is estimated to be approximately 50 ft bgs. The borehole will be cored from the top of bedrock to its total depth (approximately 50 ft bgs to 250 ft bgs). Approximately 10 discrete groundwater samples will be collected at 20-foot intervals during drilling from approximately 50 ft bgs to 250 ft bgs to screen for the presence of contaminants and to assist in the selection of the well screen interval. The borehole will be logged from approximately 50 ft bgs to 250 ft bgs with natural gamma, caliper, dipmeter, resistivity and temperature downhole geophysical logging tools prior to setting the 4-inch ID Sch. 80 PVC well.
OLF-G47	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G47, will be installed approximately 700 feet northeast of OLF-G33, in the median of US Highway 21. The well will be the shallower of two wells in the central cluster of a three-cluster fence of wells to be located north of Landfill No. 3. The well is intended to establish the groundwater quality at this location and to further define the horizontal and vertical extent of the VOC plume at Landfill No. 3. The borehole will be drilled and the 4-inch ID Sch. 80 PVC well is planned to a total depth of approximately 200 ft bgs. The selection of the well screen interval will be based on information supplied from the coring, discrete sampling, and geophysical logging of proposed Monitoring Well OLF-G48. No discrete sampling or geophysical logging will be performed at OLF-G47.

Table 1

**Monitoring Well Locations and Rationale
Remedial Investigation at Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

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Monitoring Well Location	Sample Medium	Monitoring Well Location Rationale
OLF-G48	Groundwater	Proposed bedrock groundwater monitoring well, OLF-G48, will be installed approximately 700 feet northeast of OLF-G33, in the median of US Highway 21. The well will be the deeper of two wells in the central cluster of a three-cluster fence of wells to be located north of Landfill No. 3. The well will be used to establish the groundwater quality at this location and to further define the horizontal and vertical extent of the VOC plume at Landfill No. 3. The borehole will be sonic drilled from the ground surface to top of bedrock which is estimated to be approximately 50 ft bgs. The borehole will be cored from the top of bedrock to its total depth (approximately 50 ft to 290 ft bgs). Approximately 12 discrete groundwater samples will be collected at 20-foot intervals during drilling from approximately 50 ft bgs to 290 ft bgs to screen the well for the presence of contaminants and to assist in the selection of the well screen interval. The borehole will be logged from approximately 50 ft bgs to 290 ft bgs with natural gamma, caliper, dipmeter, resistivity and temperature downhole geophysical logging tools prior to setting the 4-inch ID Sch. 80 PVC well.

Note: Well screens for proposed wells OLF-G39 through OLF-G48 will consist of 4-inch ID, 15-foot long, 0.010-inch continuous wire wrapped PVC.

Table 2

**Groundwater Sample Designations and QA/QC Sample Quantities
Remedial Investigation at Landfill No. 3, Parcel 80(6)
Fort McClellan, Alabama**

(Page 1 of 3)

Sample Location	Sample Designation	Sample Matrix ^a	QA/QC Samples		Analytical Suite
			Field Duplicates	MS/MSD	
OLF-G01	OLF-G01-GW-PE3124-REG	Groundwater			TCL VOCs
OLF-G02	OLF-G02-GW-PE3125-REG	Groundwater			TCL VOCs
OLF-G03	OLF-G03-GW-PE3126-REG	Groundwater			TCL VOCs
OLF-G04	OLF-G04-GW-PE3127-REG	Groundwater	OLF-G04-GW-PE3128-FD		TCL VOCs
OLF-G05	OLF-G05-GW-PE3129-REG	Groundwater			TCL VOCs
OLF-G06	OLF-G06-GW-PE3130-REG	Groundwater		OLF-G06-GW-PE3130-MS/MSD	TCL VOCs
OLF-G07	OLF-G07-GW-PE3131-REG	Groundwater			TCL VOCs
OLF-G08	OLF-G08-GW-PE3132-REG	Groundwater			TCL VOCs
OLF-G09	OLF-G09-GW-PE3133-REG	Groundwater			TCL VOCs
OLF-G10	OLF-G10-GW-PE3134-REG	Groundwater			TCL VOCs
OLF-G11	OLF-G11-GW-PE3135-REG	Groundwater			TCL VOCs
OLF-G12	OLF-G12-GW-PE3136-REG	Groundwater			TCL VOCs
OLF-G15 ^b	OLF-G15-GW-PE3137-REG	Groundwater			TCL VOCs
OLF-G16	OLF-G16-GW-PE3138-REG	Groundwater			TCL VOCs
OLF-G17	OLF-G17-GW-PE3139-REG	Groundwater		OLF-G17-GW-PE3139-MS/MSD	TCL VOCs
OLF-G18	OLF-G18-GW-PE3140-REG	Groundwater			TCL VOCs
OLF-G19	OLF-G19-GW-PE3141-REG	Groundwater	OLF-G19-GW-PE3142-FD		TCL VOCs
OLF-G20	OLF-G20-GW-PE3143-REG	Groundwater			TCL VOCs

Tab. 2

**Groundwater Sample Designations and QA/QC Sample Quantities
Remedial Investigation at Landfill No. 3, Parcel 80(6)
Fort McClellan, Alabama**

(Page 2 of 3)

Sample Location	Sample Designation	Sample Matrix ^a	QA/QC Samples		Analytical Suite
			Field Duplicates	MS/MSD	
OLF-G21	OLF-G21-GW-PE3144-REG	Groundwater			TCL VOCs
OLF-G22	OLF-G22-GW-PE3145-REG	Groundwater			TCL VOCs
OLF-G23	OLF-G23-GW-PE3146-REG	Groundwater			TCL VOCs
OLF-G24	OLF-G24-GW-PE3147-REG	Groundwater			TCL VOCs
OLF-G25	OLF-G25-GW-PE3148-REG	Groundwater			TCL VOCs
OLF-G26	OLF-G26-GW-PE3149-REG	Groundwater			TCL VOCs
OLF-G27	OLF-G27-GW-PE3150-REG	Groundwater	OLF-G27-GW-PE3151-FD		TCL VOCs
OLF-G28	OLF-G28-GW-PE3152-REG	Groundwater			TCL VOCs
OLF-G29	OLF-G29-GW-PE3153-REG	Groundwater			TCL VOCs
OLF-G30	OLF-G30-GW-PE3154-REG	Groundwater			TCL VOCs
OLF-G31	OLF-G31-GW-PE3155-REG	Groundwater			TCL VOCs
OLF-G32	OLF-G32-GW-PE3156-REG	Groundwater			TCL VOCs
OLF-G33	OLF-G33-GW-PE3157-REG	Groundwater			TCL VOCs
OLF-G34	OLF-G34-GW-PE3158-REG	Groundwater			TCL VOCs
OLF-G35	OLF-G35-GW-PE3159-REG	Groundwater			TCL VOCs
OLF-G36	OLF-G36-GW-PE3160-REG	Groundwater			TCL VOCs
OLF-G37	OLF-G37-GW-PE3161-REG	Groundwater			TCL VOCs
OLF-G38	OLF-G38-GW-PE3162-REG	Groundwater	OLF-G38-GW-PE3163-FD		TCL VOCs

Table 2

**Groundwater Sample Designations and QA/QC Sample Quantities
Remedial Investigation at Landfill No. 3, Parcel 80(6)
Fort McClellan, Alabama**

(Page 3 of 3)

Sample Location	Sample Designation	Sample Matrix ^a	QA/QC Samples		Analytical Suite
			Field Duplicates	MS/MSD	
OLF-G39	OLF-G39-GW-PE3164-REG	Groundwater			TCL VOCs
OLF-G40	OLF-G40-GW-PE3165-REG	Groundwater			TCL VOCs
OLF-G41	OLF-G41-GW-PE3166-REG	Groundwater			TCL VOCs
OLF-G42	OLF-G42-GW-PE3167-REG	Groundwater			TCL VOCs
OLF-G43	OLF-G43-GW-PE3168-REG	Groundwater			TCL VOCs
OLF-G44	OLF-G44-GW-PE3169-REG	Groundwater			TCL VOCs
OLF-G45	OLF-G45-GW-PE3170-REG	Groundwater			TCL VOCs
OLF-G46	OLF-G46-GW-PE3171-REG	Groundwater			TCL VOCs
OLF-G47	OLF-G47-GW-PE3172-REG	Groundwater			TCL VOCs
OLF-G48	OLF-G48-GW-PE3173-REG	Groundwater			TCL VOCs
LF4-MW1	LF4-MW1-GW-PE3174-REG	Groundwater			TCL VOCs
Weaver#2	Weaver#2-GW-PE3175-REG	Groundwater			TCL VOCs
Weaver#3	Weaver#3-GW-PE3176-REG	Groundwater	Weaver#3-GW-PE3177-FD		TCL VOCs
Medders	Medders-GW-PE3178-REG	Groundwater			TCL VOCs
Lowery	Lowery-GW-PE3179-REG	Groundwater		Lowery-GW-PE3179-MD/MSD	TCL VOCs

^a Groundwater samples will be collected from the approximate top 5 to 10 feet of the water column per Attachment 5 of the SAP (IT, 2002a)

^b There are not monitoring well locations for OLF-G13 and OLF-G14

FD - Field duplicate.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Field sample.

TCL - Target compound list.

VOC - Volatile organic compound.

Table 3

**Analytical Samples
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a				EMAX Total No. Analysis
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	

Landfill No. 3: 51 groundwater samples

All samples will be analyzed for the following parameters:

TCL VOCs	8260B	water	normal	51	1	51	5	3	6	10	78
----------	-------	-------	--------	----	---	----	---	---	---	----	----

Landfill No. 3 Subtotal:	51	5	3	6	10	78
---------------------------------	----	---	---	---	----	----

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

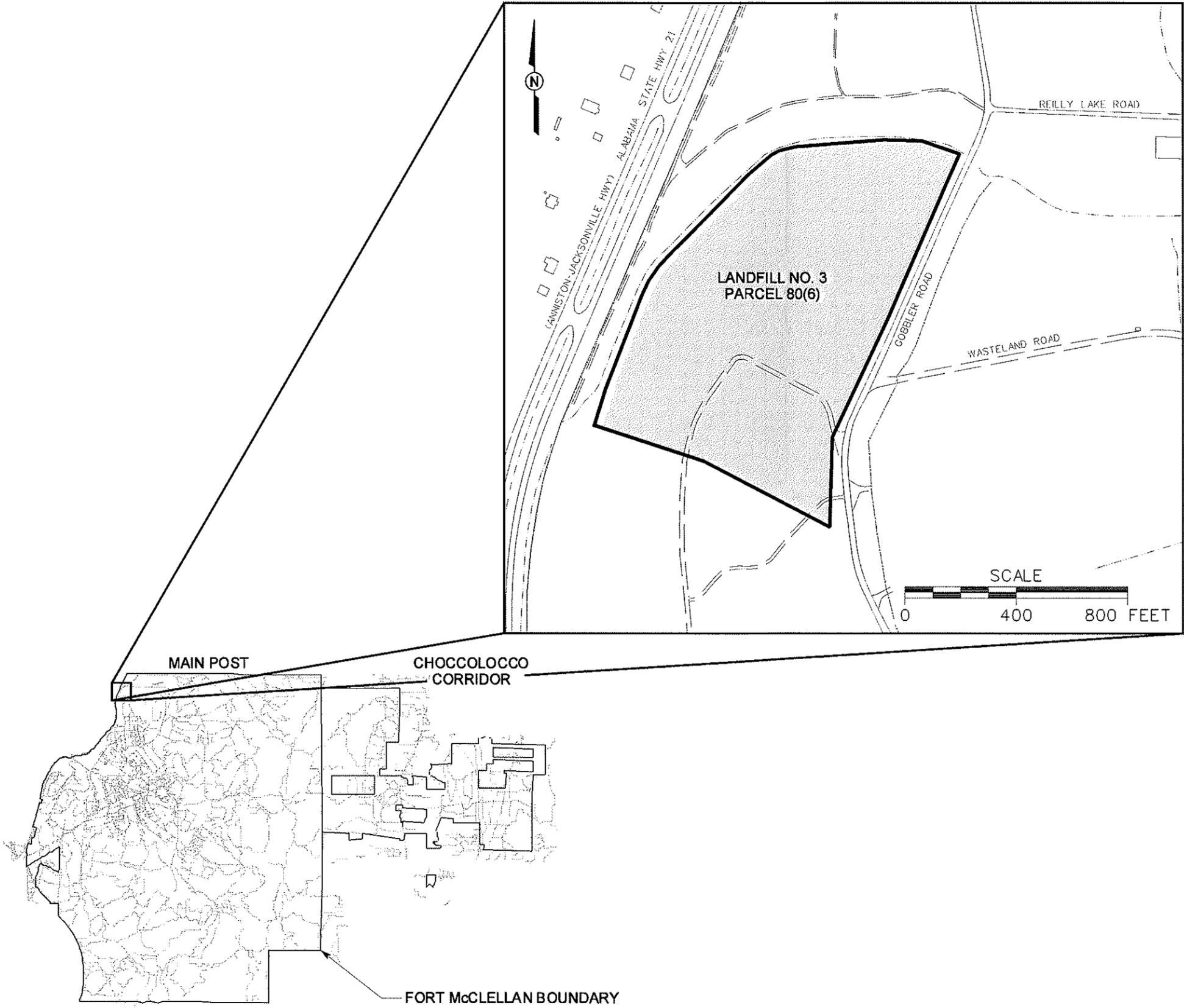
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.

TCL - Target compound list.
TAT - Turn-around time
VOCs - Volatile organic compounds.

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

11/14/02
 STARTING DATE: 10/29/02
 DATE LAST REV.:
 DRAFT, CHCK. BY:
 ENGR. CHCK. BY: S. MORAN
 PROJ. MGR.: J. YACOUJ
 PROJ. NO.: 796886
 DWG. NO.: ... \796886es.124

ebomer
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 DRAWN BY: D. BOMAR
 DRAWN BY:



LEGEND

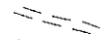
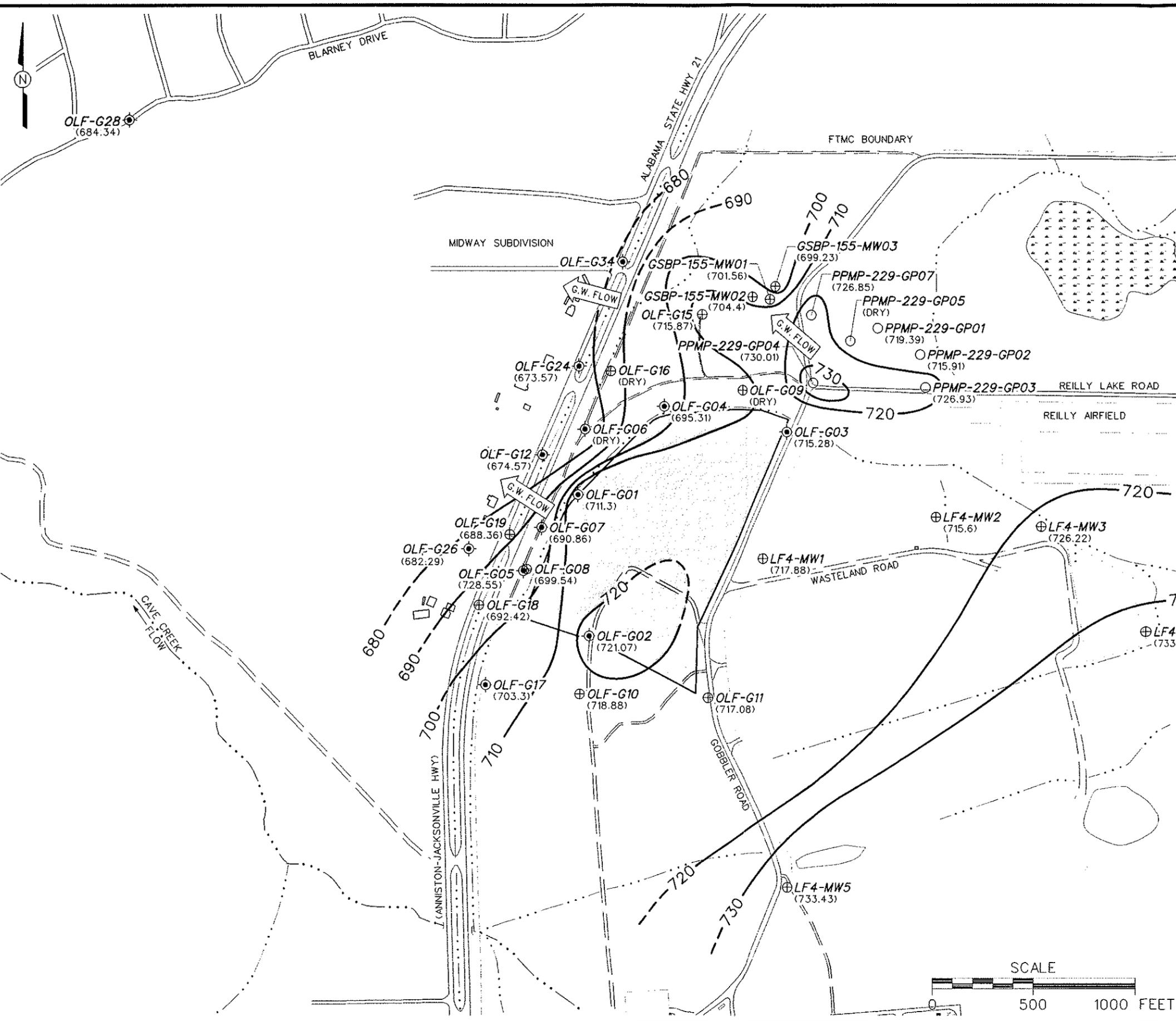
-  UNIMPROVED ROADS AND PARKING
-  PAVED ROADS AND PARKING
-  BUILDING
-  PARCEL BOUNDARY
-  SURFACE DRAINAGE / CREEK
-  FENCE

FIGURE 1
 SITE LOCATION MAP
 LANDFILL NO. 3
 PARCEL 80(6)

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



DWG. NO.: ... \796886.es.119
 PROJ. NO.: 796886
 INITIATOR: L. O'HARE
 PROJ. MGR.: J. YACOB
 DRAFT. CHK. BY:
 ENGR. CHK. BY: S. MORAN
 DATE LAST REV.:
 DRAWN BY:
 STARTING DATE: 10/22/02
 DRAWN BY: D. SOMAR
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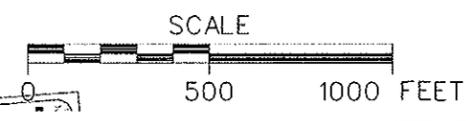


LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- (726.35) GROUNDWATER ELEVATION (FT MSL) (OCTOBER 2002)
- G.W. FLOW
- MARSH / WETLANDS
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- FENCE
- RESIDUUM/TRANSITION MONITORING WELL LOCATION
- RESIDUUM MONITORING WELL LOCATION
- TEMPORARY RESIDUUM MONITORING WELL LOCATION

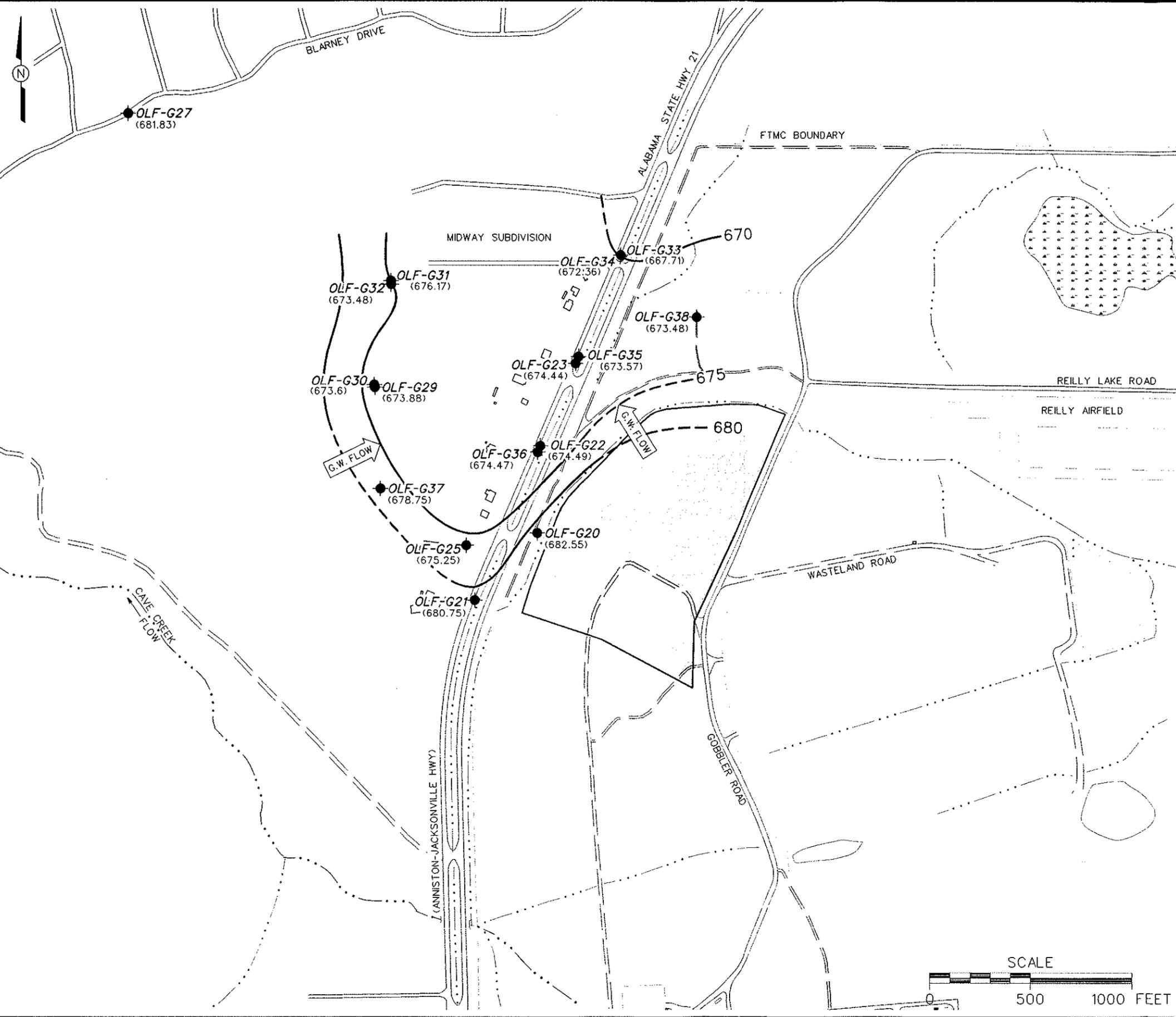
FIGURE 2
RESIDUUM GROUNDWATER
ELEVATION MAP
LANDFILL NO. 3
PARCEL 80(6)

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



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DRAWN BY: D. BOWAR	DRAWN BY:	ENGR. CHCK. BY: S. MORAN	PROJ. MGR.: V. YACCOUB	PROJ. NO.: 796886



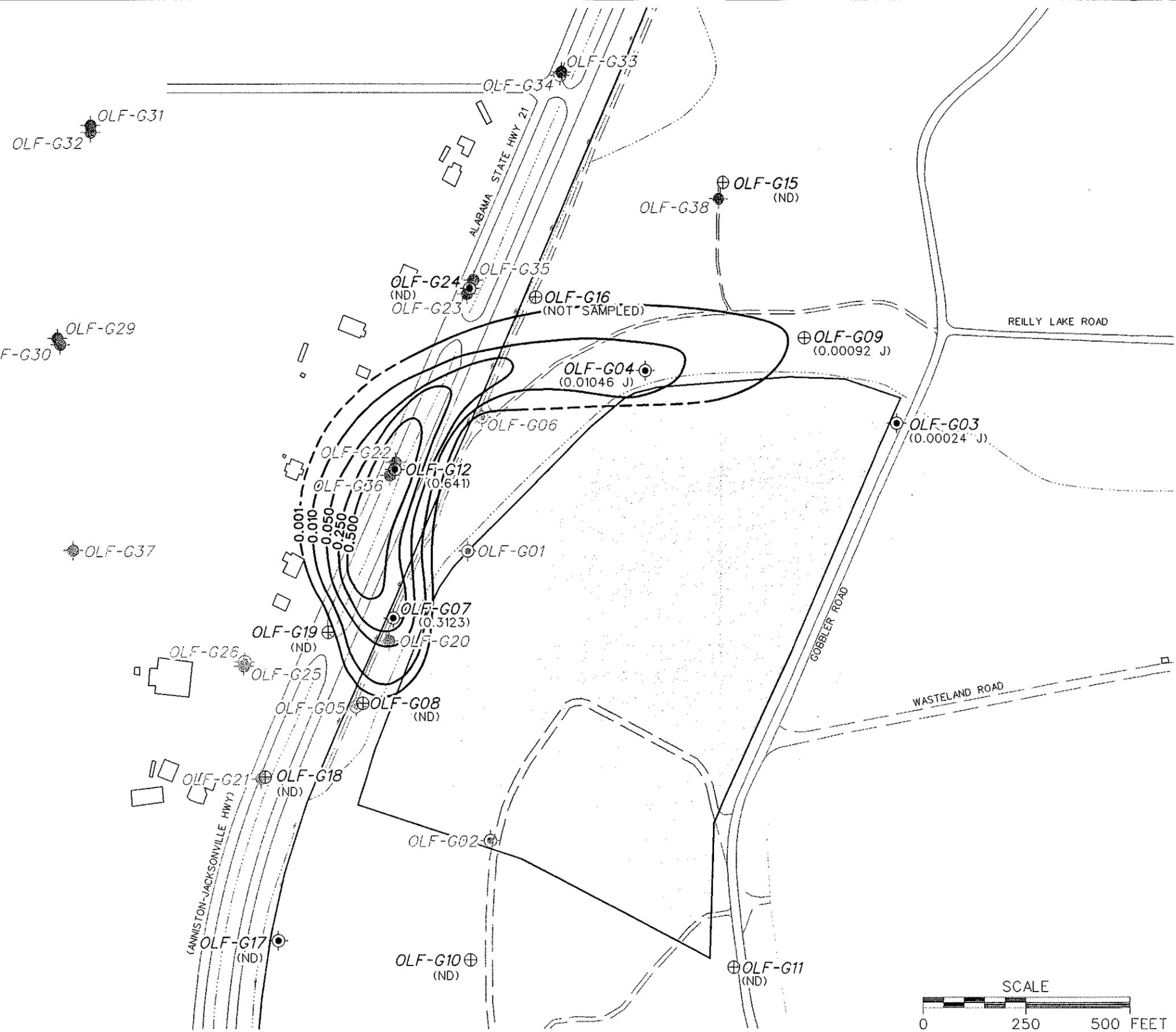
- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
 - (672.36) GROUNDWATER ELEVATION (FT MSL) (OCTOBER 2002)
 - G.W. FLOW
 - MARSH / WETLANDS
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - BEDROCK MONITORING WELL LOCATION

FIGURE 3
BEDROCK GROUNDWATER
ELEVATION MAP
LANDFILL NO. 3
PARCEL 80(6)

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



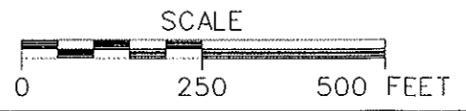
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 PROJ. NO.: 796886
 INITIATOR: L. O'HARE
 PROJ. MGR.: J. YACOUB
 DRAFT. CHK. BY: S. MORAN
 ENGR. CHK. BY: S. MORAN
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 STARTING DATE: 10/28/02
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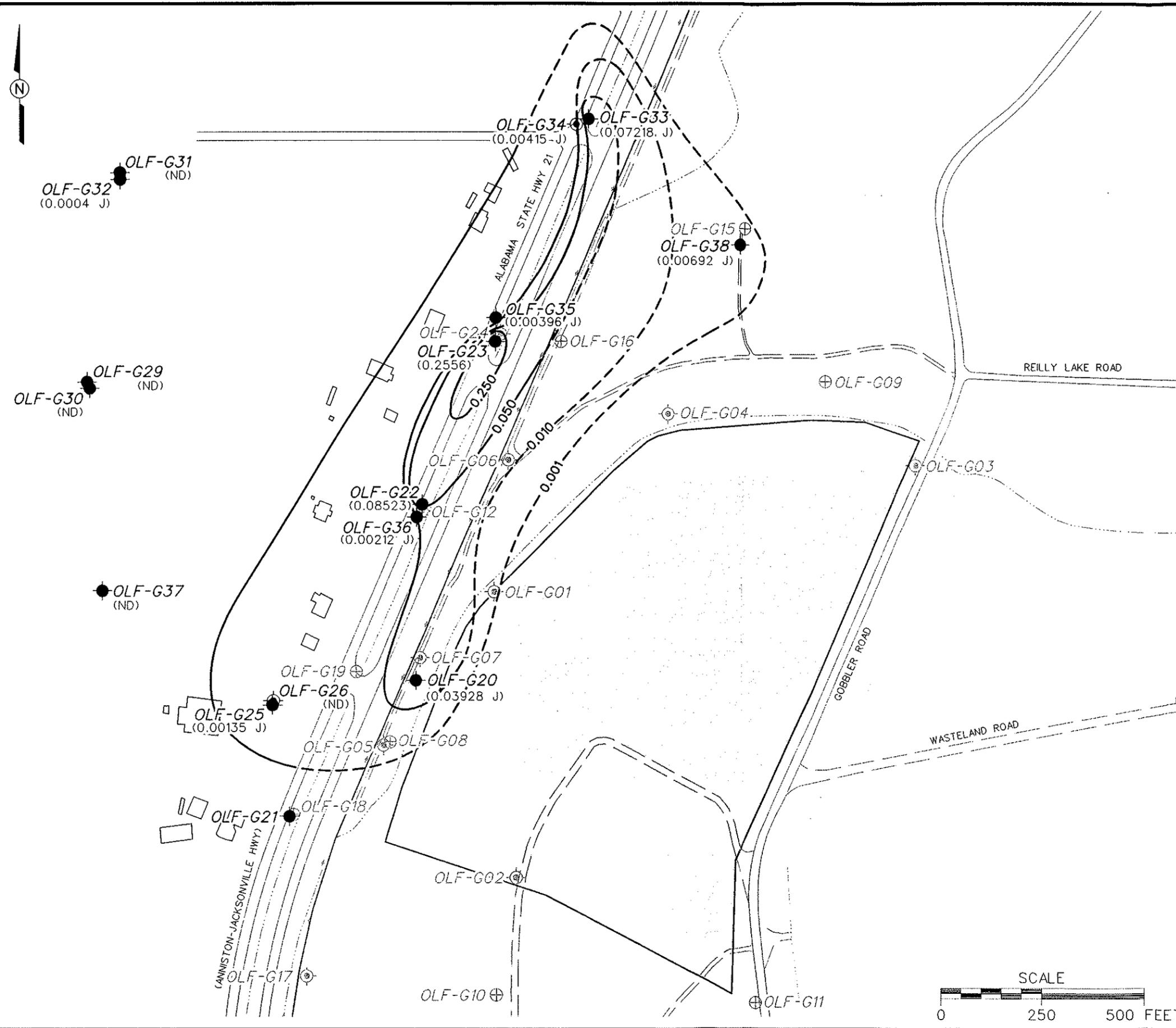
- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - RESIDUUM/TRANSITION MONITORING WELL LOCATION
 - RESIDUUM MONITORING WELL LOCATION
 - BEDROCK MONITORING WELL LOCATION
 - TOTAL CHLORINATED VOC CONCENTRATION IN MILLIGRAMS PER LITER (mg/L) (DASHED WHERE INFERRED)
 - (0.001) CONCENTRATION IN mg/L
 - mg/L MILLIGRAMS PER LITER
 - J COMPOUND WAS POSITIVELY IDENTIFIED; REPORTED VALUE IS AN ESTIMATED CONCENTRATION
 - (ND) NOT DETECTED

FIGURE 4
 TOTAL CHLORINATED VOCs
 ISOPLETH MAP IN
 RESIDUUM MONITORING WELLS
 LANDFILL NO. 3
 PARCEL 80(6)

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



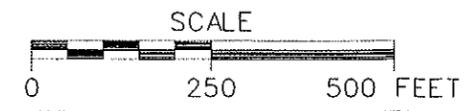
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 ENGR. CHCK. BY: S. MORAN
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 STARTING DATE: 10/28/02
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - RESIDUUM/TRANSITION MONITORING WELL LOCATION
 - RESIDUUM MONITORING WELL LOCATION
 - BEDROCK MONITORING WELL LOCATION
 - TOTAL CHLORINATED VOC CONCENTRATION IN MILLIGRAMS PER LITER (mg/L) (DASHED WHERE INFERRED)
 - (0.001) CONCENTRATION IN mg/L
 - mg/L MILLIGRAMS PER LITER
 - J COMPOUND WAS POSITIVELY IDENTIFIED; REPORTED VALUE IS AN ESTIMATED CONCENTRATION
 - (ND) NOT DETECTED

FIGURE 5
 TOTAL CHLORINATED VOCs
 ISOPLETH MAP IN
 BEDROCK MONITORING WELLS
 LANDFILL NO. 3
 PARCEL 80(6)

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



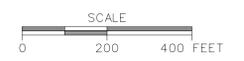
INITIATOR: B. HEDBERG DWG. NO.: 796886s.118
 PROJ. MGR.: J. YACOLUB PROJ. NO.: 796886
 DRAFT, CHCK. BY: ENGR. CHCK. BY: S. MORAN
 DATE LAST REV.: DRAWN BY:
 STARTING DATE: 09/16/02
 DRAWN BY: D. BOMAR

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- LEGEND:**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - 35** PARCEL NUMBER (CALHOUN COUNTY, ALABAMA AD VALOREM TAX DIVISION MAPS 11-18-02, 11-18-02-04, and 11-18-02-09)
 - PROPERTY LINE
 - LAND HOOK
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - UTILITY POLE
 - EXISTING RESIDUUM/TRANSITION MONITORING WELL LOCATION
 - EXISTING RESIDUUM MONITORING WELL LOCATION
 - EXISTING BEDROCK MONITORING WELL LOCATION
 - EXISTING DOMESTIC WELL LOCATION (LOCATION APPROXIMATED)
 - TEMPORARY RESIDUUM MONITORING WELL LOCATION
 - PROPOSED BEDROCK MONITORING WELL LOCATION

FIGURE 6
 PROPOSED WELL LOCATIONS VICINITY OF
 LANDFILL NO. 3
 U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT MCCLLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



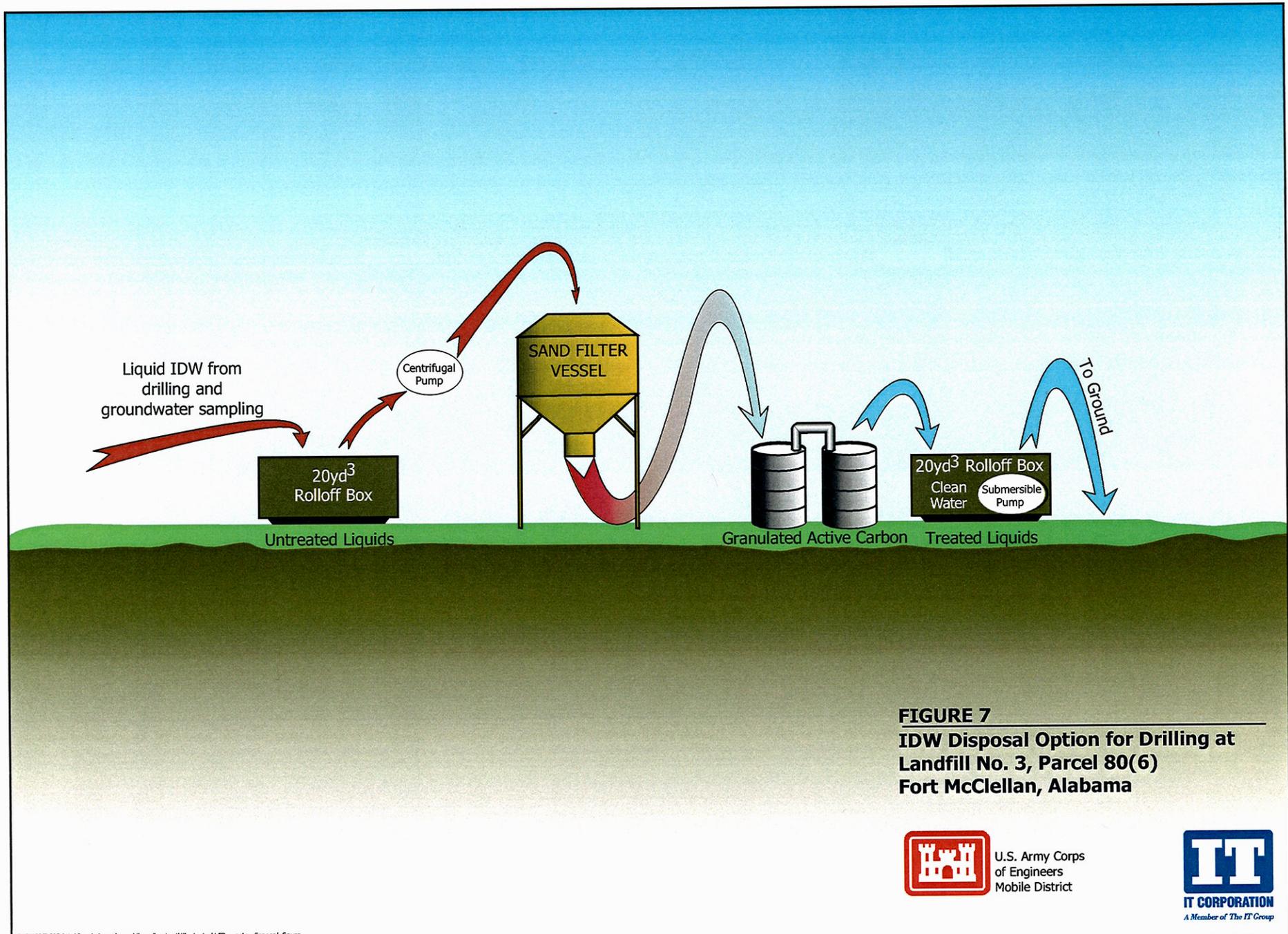


FIGURE 7
IDW Disposal Option for Drilling at
Landfill No. 3, Parcel 80(6)
Fort McClellan, Alabama



U.S. Army Corps
of Engineers
Mobile District



IT CORPORATION
A Member of The IT Group

Draft
Site-Specific Safety and Health Plan Attachment
Monitoring Well Installation and Sampling
Landfill No. 3, Parcel 80(6)
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

Task Order CK09
Contract No. DACA21-96-D-0018
IT Project No. 796886

November 2002

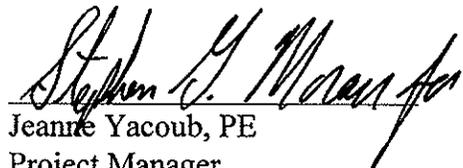
Revision 1

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

This Site-Specific Safety and Health Plan must be used in conjunction with the Installation-Wide Safety and Health Plan, Fort McClellan, Alabama.

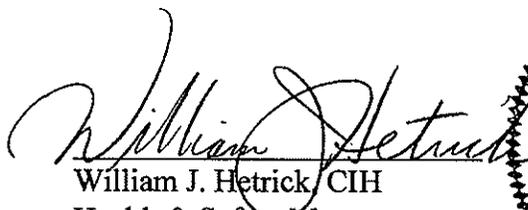
Draft
Site-Specific Safety and Health Plan Attachment Approval
Fort McClellan, Calhoun County, Alabama

I have read and approve this site-specific safety and health plan attachment for the monitoring well installation and sampling at Landfill No. 3 and vicinity at Fort McClellan, Alabama, with respect to project hazards, regulatory requirements, and IT Corporation procedures.

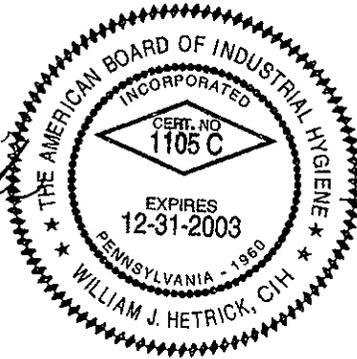


Jeanne Yacoub, PE
Project Manager

11/13/02
Date



William J. Hetrick, CIH
Health & Safety Manager



11/6/02
Date



Jeff Tarr
Site Coordinator

11/13/02
Date

Acknowledgments

The approved version of this site-specific safety and health plan (SSHP) attachment for the monitoring well installation and sampling at Landfill No. 3 and vicinity at Fort McClellan, Alabama, has been provided to the site coordinator. I acknowledge my responsibility to provide the site coordinator with the equipment, materials, and qualified personnel to implement fully all safety requirements in this SSHP attachment. I will formally review this plan with the health and safety staff every six months until project completion.

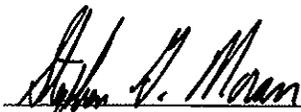


Project Manager

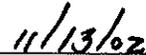


Date

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.
---------------	---

Fort McClellan Project Emergency Contacts

Range Control Office (Main Post).....	(256) 848-6772
Fire Department (off post)	911
Ambulance (off post)	911
Regional Medical Center	(256) 235-5121
Security Police (SSG Busch)	(256)282-0140 or 0141
DOD Guard Force (Mr. Bolton)	(256) 848-5680, 848-4732
Anniston Police Department.....	(256) 238-1800
Chemical Agent Emergencies.....	(256) 895-1598
(Mike Smith, CEHNC)	cell phone (256) 426-0657
UXO Emergencies	(256) 895-1598
(Mike Smith, CEHNC)	cell phone (256) 426-0657
UXO Nonemergencies/Reporting Only (Ronald Levy)	(256) 848-6853
National Response Center & Terrorist Hotline.....	(800) 424-8802
Poison Control Center.....	(800) 222-1222
EPA Region IV	(404) 562-8725
Ronald Levy, BRAC Environmental Coordinator, FTMC Transition Force	(256) 848-6853
Lisa Holstein, FTMC Transition Force.....	(256) 848-7455
Lee Coker, U.S. Army Corps of Engineers, Mobile District.....	(251) 690-3099
Phillip Stroud, Alabama Department of Environmental Management.....	(334) 270-5646
Doyle Brittain, EPA Region IV	(404) 562-8259
Ross McCollum, U.S. Army Corps of Engineers, Mobile District	(251) 690-3113
Mike Moore, Fort McClellan Safety Office	(256) 848-5433
Darryl Stabile, U.S. Army Corps of Engineers.....	(251) 690-2784
Jeanne Yacoub, IT Project Manager.....	(770) 663-1429
Jeff Tarr, IT Site Manager	(256) 848-3482, -3499
Bill Hetrick, IT H&S Manager	Direct dial (865) 692-3571
Dr. Jerry H. Berke, Health Resources Occupational Physician.....	(800) 350-4511

Table of Contents

	Page
List of Tables	ii
List of Figures	ii
List of Acronyms	iii
1.0 Site Work Plan Summary	1
2.0 Site Characterization and Analysis	2
2.1 Anticipated Hazards	2
2.2 General Site Information	3
3.0 Personal Protective Equipment	5
4.0 Site Monitoring	7
5.0 Activity Hazard Analysis	8

Attachment 1 – List of Abbreviations and Acronyms

Attachment 2 – Evaluating OE/UXO/CWM in Support of HTRW Activities

List of Tables

<i>Number</i>	<i>Title</i>	<i>Follows Page</i>
2-1	Toxicological Properties of Chemicals	4
4-1	Action Levels	7
4-2	Air Monitoring Frequency and Location	7
5-1	Activity Hazard Analysis	8

List of Figures

<i>Number</i>	<i>Title</i>	<i>Follows Page</i>
1-1	Organization Chart	1
5-1	Hospital Emergency Route	8

List of Acronyms

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

1.0 Site Work Plan Summary

Project Objective. The objective of this investigation at Fort McClellan (FTMC), Calhoun County, Alabama, is to further delineate the extent of volatile organic compound contaminants in groundwater in the vicinity of Landfill No. 3, Parcel 80(6).

Project Tasks

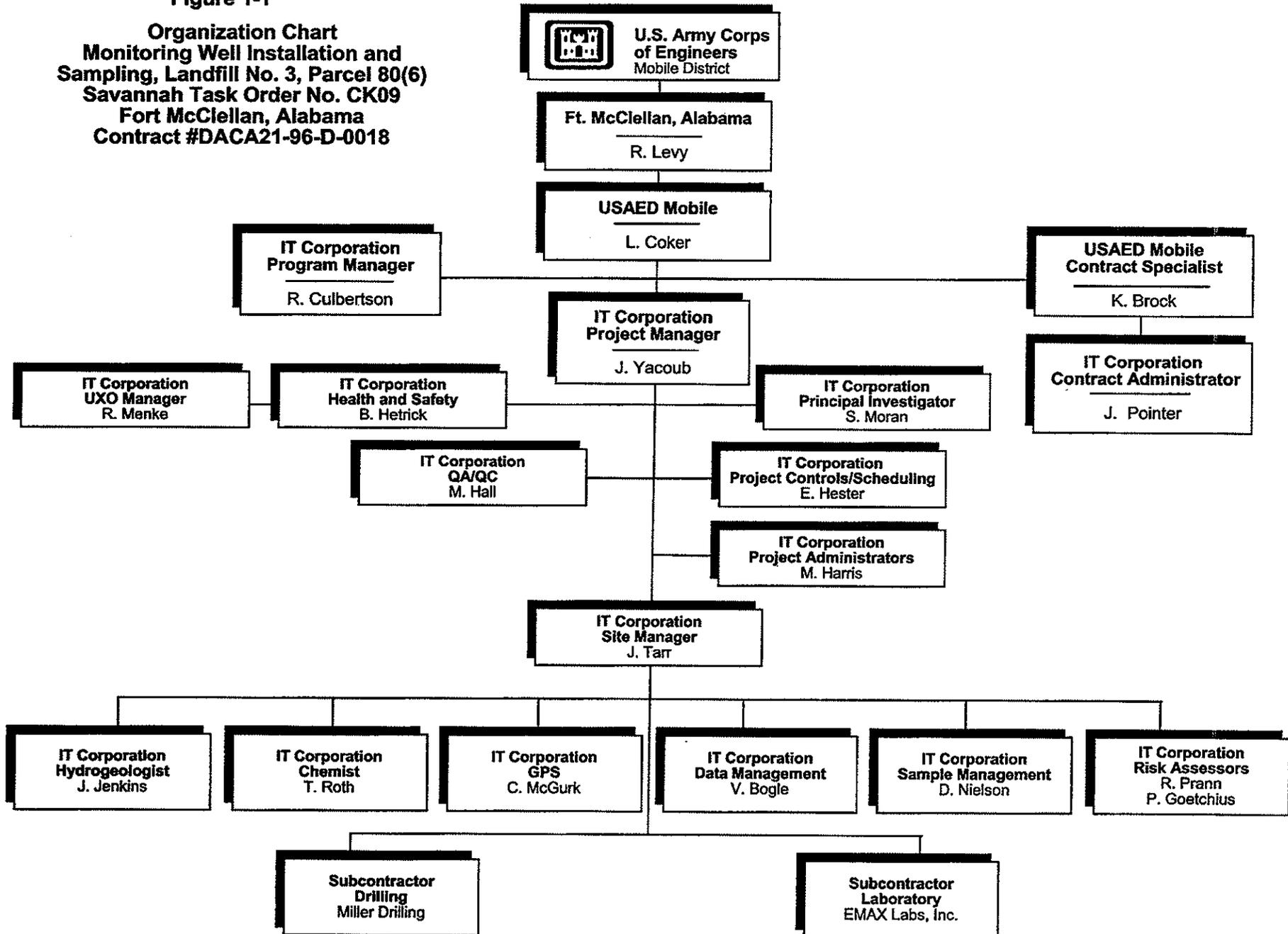
- Install bedrock monitoring wells.
- Collect groundwater samples from pre-existing monitoring wells and the newly installed bedrock monitoring wells.

An organization chart is included on Figure 1-1.

Personnel Requirements. Up to ten employees.

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. This site-specific SHP must be used in conjunction with the SHP for FTMC, Alabama.

Figure 1-1
Organization Chart
Monitoring Well Installation and
Sampling, Landfill No. 3, Parcel 80(6)
Savannah Task Order No. CK09
Fort McClellan, Alabama
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 February 2002, Revision 3, IT Corporation (IT) *Draft Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama.*

Landfill No. 3 was the sanitary landfill for FTMC from 1946 to 1967. The landfill was constructed using trenches that extend northwest across the site from 3rd Avenue. The waste was placed in the trenches and subsequently covered with topsoil. The depth of these trenches has not been determined. A complete manifest of all waste deposited at the landfill is not available. However, it has been reported that empty pesticide containers and burned ammunition pallets or crates were disposed of here. The pesticide containers were reported to have been triple-rinsed prior to disposal. Additionally, there is a high potential that disposal of paint containers, fluorescent bulbs and ballasts, waste oil, and construction debris occurred here. The landfill was not capped when it was closed in 1967, and settling is occurring, indicating that water is infiltrating through the topsoil.

Potential chemicals of concern at Landfill No. 3 include benzene, lead, 1,1,2-trichloroethane, trichloroethene, 1,1,2,2-tetrachloroethane, and tetrachloroethene. Table 2-1 lists the toxicological properties of chemicals anticipated or to be encountered or used at Landfill No. 3.

The site activities off Army property at Landfill No. 3 could require temporary public road restrictions in the form of roadway transition tapers and traffic control devices. All personnel who will be performing site work adjacent to State Route 21 or other roadways shall wear Class 3 garments in accordance with the International Safety Equipment Association and the American National Standards Institute. Class 3 garments shall contain a minimum of 1,240 inches of

fluorescent background fabric and 310 inches of reflective material. A follow-up meeting shall be initiated by IT with the Alabama Department of Transportation to confirm that roadway safety and traffic control requirements are still current with those discussed in a prior meeting on April 19, 2001 and documented in an April 19, 2001 IT memorandum concerning the Landfill No. 3 project. If the Alabama Department of Transportation has initiated more restrictive requirements than those discussed previously, the most restrictive procedures shall be followed and reviewed by employees working on the Landfill No. 3 site. Drilling equipment shall be positioned facing traffic flow when possible to add additional physical protection to employees engaged in drilling and boring activities. The same approach shall apply when sampling or developing wells on site using site support vehicles.

During installation of median wells, one lane of Alabama State Route 21 will be closed and the traffic control plan and signage previously furnished to IT by Alabama Department of Transportation (ALDOT) will be strictly observed. Lane closure signs will be placed every 500 feet to a distance of 1500 feet from where the lane will be closed. A flashing arrow sign and orange safety cones will be used to divert traffic into a single lane. No flagman or police will be required except for when equipment is being moved into the median. While working near the median crossovers, both sides of the crossovers will be blocked off with cones. Should a vehicle accident occur in the vicinity of the median wells during well installation activities, IT shall furnish an accident report and letter to ALDOT and state in the report whether signs were properly in place.

Attachment 2, *Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities*, confirms that the historical records available for the site have been reviewed and that unexploded ordnance (UXO) support is not required for the Landfill No. 3 site activities. Additionally, based on all available information, it is anticipated that the potential for chemical warfare agents is low, and no real-time air monitoring for chemical warfare materials (CWM) will be required.

2.2 General Site Information

Location of Site. Landfill No. 3, Parcel 80(6), is located in the northwest corner of the Main Post. The landfill is bounded on the west by the Anniston-Jackson Highway (Route 21), by 4th Avenue to the east, the installation's boundary to the north, and Cave Creek to the south. The site covers an area of approximately 23 acres.

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Duration of Planned Employee Activity. Employee activity duration is anticipated to be three months.

Pathways for Hazardous Substance Dispersion. Possible pathways for hazardous substances in the area are groundwater and soils. Exposure pathways described in Table 2-1 include inhalation, absorption, ingestion, and contact. Proper use of PPE in addition to air monitoring will minimize potential employee exposure to hazardous substances.

Table 2-1

Toxicological Properties of Chemicals
 Landfill No. 3, Parcel 80(6)
 Fort McClellan, Calhoun County, Alabama

(Page 1 of 5)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Acetone [67-64-1]	9.7	13-100	Inh Ing Con	Irritated eyes, nose, and throat; headache, dizziness; dermatitis.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	1000 ppm 500 ppm 250 ppm	750 ppm	PEL TLV REL	2500 ppm (10% of LEL) yá,
Benzene [71-43-2]	9.24	34-119	Inh Abs Ing Con	Irritates eyes, nose, respiratory system; giddiness; headache, nausea, staggered gait; fatigue, anorexia, lassitude; dermatitis; bone-marrow depression. Carcinogenic.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	1 ppm 0.5 ppm 0.1 ppm	5 ppm 2.5 ppm 1 ppm	PEL TLV REL	Ca [500 ppm]
Fuel oil (diesel oil, medium)	?	?	Ing Inh Con	Ingestion causes nausea, vomiting, and cramps; depressed central nervous system, headache, coma, death; pulmonary irritation; kidney and liver damage; aspiration causes severe lung irritation, coughing, gagging, dyspnea, substernal stress, pulmonary edema; bronchopneumonia; excited, then depressed, central nervous system.	Eye: Irrigate promptly Skin: Soap wash Breath: Respiratory support Swallow: Immediate medical attention Aspiration: Immediate medical attention	100 mg/m ³ 100 mg/m ³ (Kerosene)		PEL TLV REL	None
Gasoline [8006-61-9]	?	0.3	Inh Ing Con	Intoxication, headaches, blurred vision, dizziness, nausea; eye, nose throat irritation; potential kidney and other cancers. Carcinogenic.	Eye: Irrigate immediately (15 min) Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	300 ppm Ca, lowest feasible conc.	500 ppm	PEL TLV REL	None

Table 2-1

**Toxicological Properties of Chemicals
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 5)

Substance [CAS]	IP ^a (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
n-Hexane [110-54-3]	10.18	65-248	Inh Ing Con	Lightheadedness; nausea, headache; numbness of the extremities, muscular weakness; irritation of the eyes and nose; dermatitis; chemical pneumonia; giddiness.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	500 ppm 50 ppm (skin) 50 ppm		PEL TLV REL	1,100 ppm (10% of LEL)
Hydrogen chloride (hydrochloric acid) [74-90-8]	12.74	0.255-10.6	Inh Ing Con	Inflamed nose, throat, larynx; cough, burns throat, choking; burns eyes, skin; dermatitis; in animals; laryngeal spasm; pulmonary edema.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention		C 5 ppm C 5 ppm C 5 ppm	PEL TLV REL	50 ppm
Isopropyl alcohol (isopropanol) [67-63-0]	10.16	43-200	Inh Ing Con	Mild irritation of the eyes, nose, and throat; drowsiness, dizziness, headache; dry, cracked skin.	Eye: Irrigate immediately Skin: Water flush Breath: Respiratory support Swallow: Immediate medical attention	400 ppm 400 ppm 400 ppm	500 ppm 500 ppm	PEL TLV REL	2,000 ppm (10% of LEL)
Lead	NA	NA	Inh Ing Con	Weak, insomnia, facial pallor, constipated, abdominal pain, colic, anemia, irritated eyes, paralysis of wrists and ankles, encephalopathy.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	0.05 mg/m ³ 0.05 mg/m ³ <0.1 mg/m ³		PEL TLV REL	100 mg/m ³
Nitric acid [7697-37-2]	11.95	0.3-1	Inh Ing Con	Irritated eyes, mucous membranes, and skin; delayed pulmonary edema, pneumonitis, bronchitis; dental erosion.	Eye: Irrigate immediately Skin: Water flush promptly Breath: Respiratory support Swallow: Immediate medical attention	2 ppm 2 ppm 2 ppm	4 ppm 4 ppm	PEL TLV REL	25 ppm

Table 2-1

**Toxicological Properties of Chemicals
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 5)

Substance [CAS]	IP* (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
Portland cement	NA	NA	Inh	Fine gray powder that can be irritating if inhaled or in eyes.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	15 mg/m ³ Total dust 5 mg/m ³ Respirable dust 10 mg/m ³ 10 mg/m ³ Total dust 5 mg/m ³ Respirable dust		PEL TLV REL	5000 mg/m ³
Sodium hydroxide [1310-73-2]	NA	NA	Inh Ing Con	Irritated nose; pneumonitis; burns eyes, and skin; temporary loss of hair.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	2 mg/m ³	C 2 mg/m ³ C 2 mg/m ³	PEL TLV REL	10 mg/m ³
Sulfuric acid [7664-93-9]	?	0.15	Inh Ing Con	Irritated eyes, nose, and throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatitis; dental erosion; tracheobronchitis; skin and eye burns; dermatitis.	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	1 mg/m ³ 1 mg/m ³ 1 mg/m ³	3 mg/m ³	PEL TLV REL	15 mg/m ³

Table 2-1

**Toxicological Properties of Chemicals
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 5)

Substance [CAS]	IP* (eV)	Odor Threshold (ppm)	Route ^b	Symptoms of Exposure	Treatment	TWA ^c	STEL ^d	Source ^e	IDLH (NIOSH) ^f
1,1,2-Trichloroethane [79-00-5]	11.00	?	Inh Ing Con Abs	CNS depression; irritated eyes, nose; dermatitis; liver, kidney damage. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	10 ppm (skin) 10 ppm (skin) 10 ppm (skin)	-- -- --	PEL TLV REL	Ca [100 ppm]
Trichloroethylene (TCE, trichloroethene) [79-01-6]	9.45	21.4	Inh Ing Con	Headache, vertigo; visual disturbance, tremors, somnolence, nausea, vomiting; irritated eyes; dermatitis; cardiac arrhythmia, paresthesia. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 50 ppm 25 ppm	C 200 ppm 100 ppm	PEL TLV REL	Ca [1,000 ppm]
1,1,2,2-Tetrachloroethane [79-34-5]	11.10	?	Inh Ing Con Abs	Jaundice, hepatitis; dermatitis; nausea, vomiting; abdominal pain, kidney damage. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	5 ppm (skin) 1 ppm (skin) 1 ppm (skin)	-- -- --	PEL TLV REL	Ca [100 ppm]
Tetrachloroethene [127-18-4]	9.32	?	Inh Ing Con Abs	Flushed face, neck; headache, vertigo, dizziness, somnolence, nausea; irritated eyes, nose, throat; dermatitis; liver damage. Carcinogenic.	Eye: Irrigate immediately Skin: Soap wash promptly Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 25 ppm --	C 200 ppm 100 ppm --	PEL TLV REL	Ca [150 ppm]

*IP = Ionization potential (electron volts).

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

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

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

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

AEL = Airborne Exposure Limit.

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

Table 2-1

Toxicological Properties of Chemicals Landfill No. 3, Parcel 80(6) Fort McClellan, Calhoun County, Alabama

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

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

NE = No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. No. 97-140, 1997).

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

Ca = Carcinogen.

NA = Not applicable.

? = Unknown.

LEL = Lower explosive limits.

LC₅₀ = Lethal concentration for 50 percent of population tested.

LD₅₀ = Lethal dose for 50 percent of population tested.

NIC = Notice of intended change (ACGIH).

References:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 1998, compiled by the American Conference of Governmental Industrial Hygienists.

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Fazzuluri, F. A., *Compilation of Odor and Taste Threshold Values Data*, American Society for Testing and Materials, 1978.

Gemet, L. J. Van, *Compilation of Odor Threshold Values in Air and Water*, CIVO, Netherlands, 1977.

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Lewis, Richard J., Sr., 1992, *Sax's Dangerous Properties of Industrial Materials*, 8th ed., Van Nostrand Reinhold, New York.

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and Health Pocket Guide to Chemicals, Pub. No. 97-140, 1997, National Institute for Occupational Safety and Health.

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

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

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

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

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

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
Monitoring well installation	Modified Level D*
Groundwater sampling	Modified Level D*

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

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

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

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

- Tyvek coveralls when handling dry contaminants (e.g., soil borings)
- Poly-coated Tyvek when decontaminating heavy equipment
- Latex boot covers
- Nitrile, heavy work, or latex gloves
- Steel-toed safety boots
- Safety glasses
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

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

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

- National Institute of Occupational Safety and Health-approved full-face, air-purifying respirator equipped with organic vapor/acid P100 gas cartridge
- Hooded, Saran-coated Tyvek, taped at gloves, boots, and respirator
- Nitrile gloves (outer). Leather work gloves may be worn (outer) as appropriate to the task.
- Latex or lightweight nitrile gloves (inner)
- Neoprene steel-toed boots or latex overbooties/steel-toed safety boots
- Hard hat
- Hearing protection (when working near/adjacent to operating equipment).

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

4.0 Site Monitoring

The environmental contaminants of concern at Landfill No. 3 are benzene, lead, 1,1,2-trichloroethane, trichloroethene, 1,1,2,2-tetrachloroethane, and tetrachloroethene. Table 4-1 contains action levels for site monitoring at the Landfill No. 3. No monitoring is recommended for lead, since soil particulate generation is anticipated to be minimal.

Monitoring will be performed by the site safety and health officer or qualified geologist during the performance of ground-intrusive operations. A calibrated photoionization detector/organic vapor analyzer with an 11.7 electron volt lamp or a flame ionization detector 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 sampling locations and BZ to determine if any combustible/flammable gases or oxygen levels are present that would necessitate evacuation of the work area. Benzene detector tubes will be used to monitor benzene if volatile organic compounds are detected at concentrations over 5 parts per million (ppm). Table 4-2 contains the air monitoring frequency and location for site monitoring at Landfill No. 3.

Table 4-1

**Action Levels
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

When in Level C Personal Protective Equipment (PPE)

Analyte	Action Level	Required Action ^a
Volatile Organic Compounds (VOC)	≥ 10 parts per million (ppm) above background in breathing zone (BZ)	Stop work, evacuate work area, notify CIH.
Oxygen	$\geq 20\%$, $\leq 23\%$ $< 20\%$, $> 23\%$	Normal operations. Stop work, evacuate work area/notify CIH.
Flammable vapors	$\geq 10\%$ lower explosive limit (LEL) $< 10\%$ LEL	Stop work, evacuate work area, notify CIH. Continue operations, monitor for VOCs.
Benzene	≥ 5 ppm in BZ	Notify CIH Stop work, evacuate work area, upgrade to Level B

When in Level D Modified/D PPE

Analyte	Action Level	Required Action ^b
VOCs	≥ 5 ppm above background in BZ	Detector tube for Benzene. Stop activities, suspend work activities for 15 to 30 minutes; if readings are sustained, then upgrade to Level C PPE/notify CIH.
Oxygen	$\geq 20\%$, $\leq 23\%$ $< 20\%$, $> 23\%$	Normal operations. Stop work, evacuate work area/notify CIH.
Flammable vapors	$\geq 10\%$ LEL $< 10\%$ LEL	Stop work, evacuate work area/notify CIH. Continue operations, monitor for VOCs.
Benzene	≥ 1 ppm in BZ	Upgrade to Level C PPE

Table 4-1

Action Levels
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama

(Page 2 of 2)

When in Support Zone

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

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

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

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

CIH = Certified Industrial Hygienist.

Table 4-2

**Air Monitoring Frequency and Location
Land No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

Work Activity	Instrument	Frequency	Location
Staging equipment	OV Monitor	Initially for area	Breathing zone (BZ) of employees
	LEL/O ₂	Periodically	BZ of Employees
	Benzene detector tube	VOCs > 5 ppm	BZ of Employees
Installing Groundwater Monitoring Wells	OV Monitor	Periodically	BZ of Employees
	LEL/O ₂	Periodically	BZ of Employees
	Benzene detector tube	VOCs > 5 ppm	BZ of Employees
Sampling Groundwater Monitoring Wells	OV Monitor	Periodically	BZ of Employees
	LEL/O ₂	Periodically	BZ of Employees
	Benzene detector tube	VOCs > 5 ppm	BZ of Employees

OV = Organic vapor.

LEL/O₂ = Lower explosive limit/oxygen.

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
- Surveying
- Soil boring and surface/subsurface sampling
- Moving and shipping samples
- Disposal of investigation-derived waste (fork lift operations)
- High-pressure water jetting
- Rock coring and well installation
- Groundwater sampling.

All injuries and illnesses must be immediately reported to the site manager or the site safety and health officer (SSHO), 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
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 12)

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

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 12)

Activity	Potential Hazards	Recommended Controls
	Noise	<ul style="list-style-type: none"> • Sound levels above 85 decibels (dBA) mandates hearing protection.
	Lighting	<ul style="list-style-type: none"> • Adequate lighting will be provided to ensure a safe working environment.
	Cold stress	<ul style="list-style-type: none"> • Workers should wear insulated clothing when temperatures drop below 40 degrees Fahrenheit (°F). • Drink warm beverages on breaks. Refrain from drinking caffeinated beverages. • Remove wet clothing promptly. • Take breaks in warm areas. • Reduce work periods as necessary. • Layer work clothing.
	Poison ivy/oak/sumac	<ul style="list-style-type: none"> • Avoid plant areas if possible. • Wear long sleeves and long pants. • Promptly wash clothing that has contacted poisonous plants. • Wash affected areas immediately with soap and water.
	Heat rash	<ul style="list-style-type: none"> • Keep the skin clean and dry. • Change perspiration-soaked clothing, as necessary. • Bathe at end of work shift or day. • Apply powder to affected area. • Comply with IT Procedure HS400 (May 13, 1999).
	Heat cramps	<ul style="list-style-type: none"> • Drink plenty of cool fluids even when not thirsty. • Provide cool fluid for work crews. • Move victim to shaded, cool area. • Comply with IT Procedure HS400 (May 13, 1999).
	Heat exhaustion	<ul style="list-style-type: none"> • Conduct physiological worker monitoring as needed (i.e., heart rate, and oral temperature). • Set up work/rest periods. • Use the "buddy system." • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks. • Comply with IT Procedure HS 400 (May 13, 1999).

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 12)

Activity	Potential Hazards	Recommended Controls
Staging Equipment (continued)	Heat stroke	<ul style="list-style-type: none"> • Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices. • Comply with IT Procedure HS400 (May 13, 1999).
	Contact with moving equipment/vehicles	<ul style="list-style-type: none"> • Work area will be barricaded/demarcated. • Equipment will be laid out in an area free of traffic flow. • Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic. • Barriers shall be used to protect workers from vehicular traffic. • Barriers shall be used to guard excavations adjacent to streets or roadways. • Flagging shall be used for the short term (less than 24 hours) to identify hazards until proper barricades or barriers are provided. • Heavy equipment shall have backup alarms.
	Forklift operations	<ul style="list-style-type: none"> • Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.
	Portable electric tools	<ul style="list-style-type: none"> • Portable electric tools that are unsafe due to faulty plugs, damaged cords, or other reasons, shall be tagged (do not use) and removed from service. • Portable electric tools and all cord and plug connected equipment shall be protected by a ground-fault circuit interrupter (GFCI) device. • Electrical tools shall be inspected daily prior to use.

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 4 of 12)

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

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 5 of 12)

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

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 6 of 12)

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

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 7 of 12)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (continued)	Access/egress hazards	<ul style="list-style-type: none"> • Use qualified and trained bushhog operator. • Keep employees out of the bushhog work area. • Utilize good housekeeping practices. • Keep aisleways, pathways, and work areas free of obstruction. • Clean ice or snow off of walkways or work stations. • Use appropriate footwear for the task assigned.
	Heat rash	<ul style="list-style-type: none"> • Keep the skin clean and dry. • Change perspiration-soaked clothing, as necessary. • Bathe at end of work shift or day. • Apply powder to affected area. • Comply with IT Procedure HS400 (May 13, 1999).
	Heat cramps	<ul style="list-style-type: none"> • Drink plenty of cool fluids even when not thirsty. • Provide cool fluid for work crews. • Move victim to shaded, cool area. • Comply with IT Procedure HS400 (May 13, 1999)
	Heat exhaustion	<ul style="list-style-type: none"> • Conduct physiological worker monitoring as needed (i.e., heart rate, and oral temperature). • Set up work/rest periods. • Use the buddy system. • Allow workers time to acclimate. • Have ice packs available for use. • Take frequent breaks. • Comply with IT Procedure HS400 (May 13, 1999).
	Heat stroke	<ul style="list-style-type: none"> • Evaluate possibility of night work. • Perform physiological monitoring on workers during breaks. • Wear body cooling devices. • Comply with IT Procedure HS400 (May 13, 1999).

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 8 of 12)

Activity	Potential Hazards	Recommended Controls
Soil Boring and Surface/Subsurface Sampling (continued)	Lightning strikes	<ul style="list-style-type: none"> • Whenever possible, halt activities and take cover. • If outdoors, stay low to the ground. • Limit the body surface area that is in contact with the ground (i.e., kneeling on one knee is better than lying on the ground). • Seek shelter in a building if possible. • Stay away from windows. • If available, crouch under a group of trees instead of one single tree. • Keep all body parts in contact with the ground as close as possible. • If in a group, keep 6 feet of distance between people. • Remain 6 feet away from tree trunk if seeking shelter beneath tree(s).
Moving and Shipping Collected Samples	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. • Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Pinch points	<ul style="list-style-type: none"> • Keep hands, fingers, and feet clear of moving/suspended materials and equipment. • Beware of contact points. • Stay alert at all times!
	Cut hazards	<ul style="list-style-type: none"> • Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	<ul style="list-style-type: none"> • Label all containers as to contents and associated hazards.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
Material Storage	Flammable and combustible liquids	<ul style="list-style-type: none"> • Store in NO SMOKING AREA. • Fire extinguisher readily available. • Transfer only when properly grounded and bonded.
Disposal of Investigation-Derived Waste (IDW) (Forklift Operation)	Personnel injury, property damage, and/or equipment damage	<ul style="list-style-type: none"> • Use qualified and trained forklift operators. • The operator shall not exceed the load capacity rating for the forklift. • The load capacity shall be clearly visible on the forklift. • Forklift operators shall inform their supervisor of any prescribed medication that they are taking that would impair their judgement.

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 9 of 12)

Activity	Potential Hazards	Recommended Controls
Disposal of Investigation-Derived Waste (IDW) (Forklift Operation) (continued)	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> • Stop immediately at any sign of obstruction. • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.
	Cut hazards	
High-Pressure Water Jetting Operations	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. • Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Good housekeeping shall be implemented. • The work area shall be kept clean as feasible. • Inspect the work area for slip, trip, and fall hazards.
	Fueling	<ul style="list-style-type: none"> • Only approved safety cans shall be used to store fuel. • Do not refuel equipment while it is operating. • Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Faulty or damaged equipment	<ul style="list-style-type: none"> • Equipment shall be inspected before being placed into service and at the beginning of each shift. • Preventive maintenance procedures recommended by the manufacturer shall be followed. • A lockout/tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
	High-pressure water	<ul style="list-style-type: none"> • Jetting gun operator must wear appropriate PPE including hard hat, impact-resistant safety glasses with side shields, water-resistant clothing, metatarsal guards for feet and legs, and hearing protection (if appropriate). • One standby person shall be available within the vicinity of the pump during jetting operation. • The work area shall be isolated and adequate barriers will be used to warn other site personnel.
	Unqualified operators	<ul style="list-style-type: none"> • Only qualified and trained personnel are permitted to operate machinery and mechanized equipment associated with water jet cutting and cleaning.

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 10 of 12)

Activity	Potential Hazards	Recommended Controls
High-Pressure Water Jetting Operations (continued)	Out of control equipment	<ul style="list-style-type: none"> • No machinery or equipment is permitted to run unattended. • Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Noise	<ul style="list-style-type: none"> • Sound levels above 85 dBA mandates hearing protection by nearby site personnel.
	Activation during repairs	<ul style="list-style-type: none"> • All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Pinch points	<ul style="list-style-type: none"> • Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert and clear of materials suspended .
	Falling objects	<ul style="list-style-type: none"> • Hard hats are required by site personnel. • Stay alert and clear of material suspended overhead.
	Flying debris	<ul style="list-style-type: none"> • Impact-resistant safety glasses with side shields are required.
	Contact with potentially contaminated materials	<ul style="list-style-type: none"> • All site personnel will wear the appropriate PPE.
Rock Coring, Well Installation	Faulty or damaged equipment being utilized to perform work	<ul style="list-style-type: none"> • All machinery or mechanized equipment will be inspected by a competent mechanic and certified to be in safe operating condition. • Equipment will be inspected before use and at the beginning of each shift. • Faulty/unsafe equipment will be tagged and if possible locked out. • Drill rigs shall be equipped with reverse signal alarm, backup warning lights, or the vehicle is backed up only when an observer signals it is safe to do so.

Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 11 of 12)

Activity	Potential Hazards	Recommended Controls
Rock Coring, Well Installation (continued)	Uneven terrain, poor ground support, inadequate clearances, contact with utilities	<ul style="list-style-type: none"> • Inspections or determinations of road conditions and structures shall be made in advance to ensure that clearances and load capacities are safe for the passage or placing of any machinery or equipment. • All mobile equipment and areas in which they are operated shall be adequately illuminated. • Whenever the equipment is parked, the parking brake shall be set. • Equipment parked on inclines will have the wheels chocked. • Inspect brakes and tire pressure on drill rig before staging for work. • Obtain trenching/drilling permit prior to operation.
	Inexperienced operator	<ul style="list-style-type: none"> • Machinery and mechanized equipment shall be operated only by designated personnel. • Heavy equipment operators shall inform their supervisor(s) of any prescribed medication that they are taking that would impair their judgement.
	Jacks/outriggers	<ul style="list-style-type: none"> • Ensure proper footing and cribbing.
	Falling objects	<ul style="list-style-type: none"> • Remove unsecured tools and materials before raising or lowering the derrick. • Stay alert and clear of materials suspended overhead.
	Pinch points	<ul style="list-style-type: none"> • Keep feet and hands clear of moving/suspended materials and equipment. • Stay alert at all times!
	Fire	<ul style="list-style-type: none"> • Mechanized equipment shall be shut down prior to and during fueling operations. • Have fire extinguishers inspected and readily available.
	Fall hazards	<ul style="list-style-type: none"> • Personnel are not allowed to work off of machinery or use them as ladders. • Use fall protection when working above 6 feet.
	Noise	<ul style="list-style-type: none"> • Hearing protection is mandatory above 85 dBA.
	Contact with rotating or reciprocating machine part	<ul style="list-style-type: none"> • Use machine guards; use long-handled shovels to remove auger cuttings. • Safe lockout procedures for maintenance work.
	Heavy lifting	<ul style="list-style-type: none"> • Use proper lifting techniques. • Lifts greater than 60 pounds require assistance or mechanical equipment; size up the lift.
	Slip, trip, and fall hazards	<ul style="list-style-type: none"> • Practice good housekeeping; keep work area picked up and clean as feasible. • Continually inspect the work area for slip, trip, and fall hazards.
Contact with potentially contaminated materials	<ul style="list-style-type: none"> • Real-time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized. 	

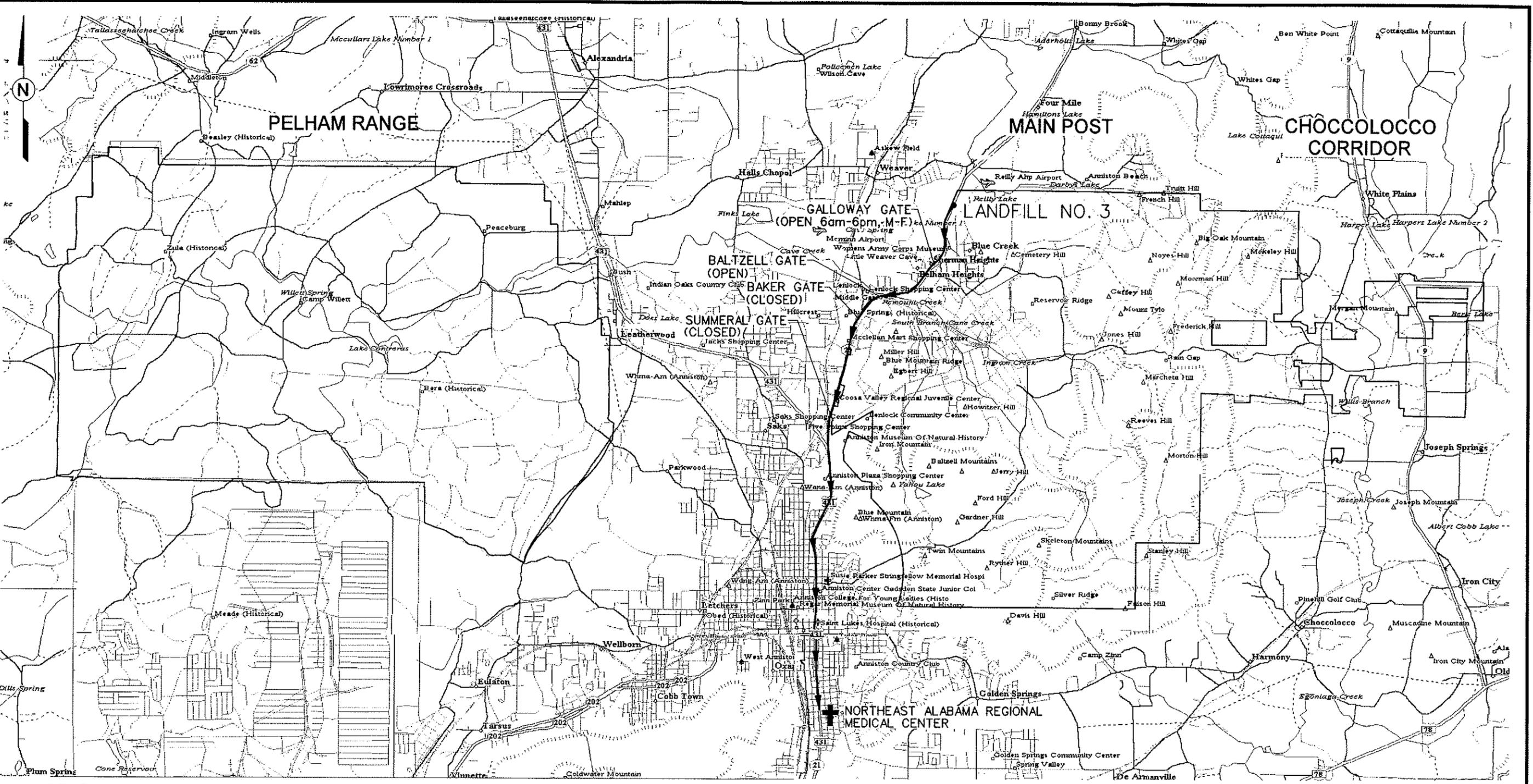
Table 5-1

**Activity Hazard Analysis
Landfill No. 3, Parcel 80(6)
Fort McClellan, Calhoun County, Alabama**

(Page 12 of 12)

Activity	Potential Hazards	Recommended Controls
Groundwater Sampling and Measuring Water Levels	Cross-contamination and contact with potentially contaminated materials	<ul style="list-style-type: none"> • Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. • Avoid skin contact with water. • Handle samples with care. • Only essential personnel will be in the work area. • Real-time air monitoring will take place before and during sampling activities. • All personnel will follow good hygiene practices. • Proper decontamination procedures will be followed. • All liquids and materials used for decontamination will be contained and disposed of in accordance with Federal, state, and local regulations.
	Cut hazards	<ul style="list-style-type: none"> • Use care when handling glassware. • Wear adequate hand protection.
	Hazard communication	<ul style="list-style-type: none"> • MSDSs shall be obtained for hazardous chemicals brought on site. • Label all containers as to contents and appropriate hazard warning.

10/29/02 STARTING DATE: 07/29/02 DATE LAST REV.:
 09:46:38 AM DRAWN BY: D. BOMAR
 DRAFT, CHECK BY: J. JENKINS
 ENGR. CHECK BY: J. JENKINS
 NITATOR: J. RAGSDALE DWG. NO.: 796886es.123
 PROJ. MGR.: J. YACOUB PROJ. NO.: 796886

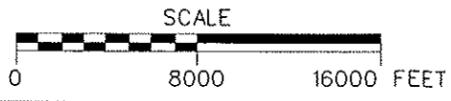


LEGEND:

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

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

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



**FIGURE 5-1
 HOSPITAL EMERGENCY ROUTE**

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



ATTACHMENT 1

LIST OF ABBREVIATIONS AND ACRONYMS

List of Abbreviations and Acronyms

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

List of Abbreviations and Acronyms (Continued)

DDT	dichlorodiphenyltrichloroethane	ESE	Environmental Science and Engineering, Inc.	GB	sarin
DEH	Directorate of Engineering and Housing	ESMP	Endangered Species Management Plan	gc	clay gravels; gravelsand-clay mixtures
DEP	depositional soil	ESN	Environmental Services Network, Inc.	GC	gas chromatograph
DFTPP	decafluorotriphenylphosphine	ESV	ecological screening value	GCL	geosynthetic clay liner
DI	deionized	ET	exposure time	GC/MS	gas chromatograph/mass spectrometer
DID	data item description	EU	exposure unit	GCR	geosynthetic clay liner
DIMP	di-isopropylmethylphosphonate	Exp.	explosives	GFAA	graphite furnace atomic absorption
DM	dry matter; adamsite	E-W	east to west	GIS	Geographic Information System
DMBA	dimethylbenz(a)anthracene	EZ	exclusion zone	gm	silty gravels; gravelsand-silt mixtures
DMMP	dimethylmethylphosphonate	FAR	Federal Acquisition Regulations	gp	poorly graded gravels; gravelsand mixtures
DOD	U.S. Department of Defense	FB	field blank	gpm	gallons per minute
DOJ	U.S. Department of Justice	FD	field duplicate	GPR	ground-penetrating radar
DOT	U.S. Department of Transportation	FDA	U.S. Food and Drug Administration	GPS	global positioning system
DP	direct-push	Fe ⁺³	ferric iron	GRA	general responseaction
DPDO	Defense Property Disposal Office	Fe ⁺²	ferrous iron	GS	ground scar
DPT	direct-push technology	FedEx	Federal Express, Inc.	GSA	General Services Administration; Geologic Survey of Alabama
DQO	data quality objective	FEMA	Federal Emergency Management Agency	GSBP	Ground Scar Boiler Plant
DRMO	Defense Reutilization and Marketing Office	FFCA	Federal Facilities Compliance Act	GSSI	Geophysical Survey Systems, Inc.
DRO	diesel range organics	FFE	field flame expedient	GST	ground stain
DS	deep (subsurface) soil	FFS	focused feasibility study	GW	groundwater
DS2	Decontamination Solution Number 2	FI	fraction of exposure	gw	well-graded gravels; gravelsand mixtures
DSERTS	Defense Site Environmental Restoration Tracking System	Fl	filtered	H&S	health and safety
DWEL	drinking water equivalent level	Flt	filtered	HA	hand auger
E&E	Ecology and Environment, Inc.	FMDC	Fort McClellan Development Commission	HCl	hydrochloric acid
EB	equipment blank	FML	flexible membrane liner	HD	distilled mustard
EBS	environmental baseline survey	FMP 1300	Former Motor Pool 1300	HDPE	high-density polyethylene
EC ₅₀	effects concentration for 50 percent of a population	f _{oc}	fraction organic carbon	HEAST	Health Effects Assessment Summary Tables
ECBC	Edgewood Chemical/Biological Command	FOMRA	Former Ordnance Motor Repair Area	Herb.	herbicides
ED	exposure duration	FOST	Finding of Suitability to Transfer	HHRA	human health risk assessment
EDD	electronic data deliverable	Foster Wheeler	Foster Wheeler Environmental Corporation	HI	hazard index
EF	exposure frequency	FR	Federal Register	H ₂ O ₂	hydrogen peroxide
EDQL	ecological data quality level	Frtn	fraction	HPLC	high performance liquid chromatography
EE/CA	engineering evaluation and cost analysis	FS	field split; feasibility study	HNO ₃	nitric acid
Elev.	elevation	FSP	field sampling plan	HQ	hazard quotient
EM	electromagnetic	ft	feet	HQ _{screen}	screening-level hazard quotient
EMI	Environmental Management Inc.	ft/day	feet per day	hr	hour
EM31	Geonics Limited EM31 Terrain Conductivity Meter	ft/ft	feet per foot	HRC	hydrogen releasing compound
EM61	Geonics Limited EM61 High-Resolution Metal Detector	ft/yr	feet per year	HSA	hollow-stem auger
EOD	explosive ordnance disposal	FTA	Fire Training Area	HTRW	hazardous, toxic, and radioactive waste
EODT	explosive ordnance disposal team	FTMC	Fort McClellan	'I'	out of control, data rejected due to low recovery
EPA	U.S. Environmental Protection Agency	FTMRA	FTMC Reuse & Redevelopment Authority	IATA	International Air Transport Authority
EPC	exposure point concentration	g	gram	ICAL	initial calibration
EPIC	Environmental Photographic Interpretation Center	g/m ³	gram per cubic meter	ICB	initial calibration blank
EPRI	Electrical Power Research Institute	G-856	Geometrics, Inc. G856 magnetometer	ICP	inductively-coupled plasma
ER	equipment rinsate	G-858G	Geometrics, Inc. G858G magnetic gradiometer	ICRP	International Commission on Radiological Protection
ERA	ecological risk assessment	GAF	gastrointestinal absorption factor	ICS	interference check sample
ER-L	effects range-low	gal	gallon	ID	inside diameter
ER-M	effects range-medium	gal/min	gallons per minute	IDL	instrument detection limit

List of Abbreviations and Acronyms (Continued)

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

List of Abbreviations and Acronyms (Continued)

O&M	operation and maintenance	PPMP	Print Plant Motor Pool	SARA	Superfund Amendments and Reauthorization Act
OB/OD	open burning/open detonation	ppt	parts per thousand	sc	clayey sands; sand-clay mixtures
OD	outside diameter	PR	potential risk	Sch.	Schedule
OE	ordnance and explosives	PRA	preliminary risk assessment	SCM	site conceptual model
oh	organic clays of medium to high plasticity	PRG	preliminary remediation goal	SD	sediment
OH•	hydroxyl radical	PS	chloropicrin	SDG	sample delivery group
ol	organic silts and organic silty clays of low plasticity	PSSC	potential sitespecific chemical	SDWA	Safe Drinking Water Act
OP	organophosphorus	pt	peat or other highly organic silts	SDZ	safe distance zone; surface danger zone
ORC	Oxygen Releasing Compound	PVC	polyvinyl chloride	SEMS	Southern Environmental Management & Specialties, Inc.
ORP	oxidation-reduction potential	QA	quality assurance	SF	cancer slope factor
OSHA	Occupational Safety and Health Administration	QA/QC	quality assurance/quality control	SFSP	site-specific field sampling plan
OSWER	Office of Solid Waste and Emergency Response	QAM	quality assurance manual	SGF	standard grade fuels
OVM-PID/FID	organic vapor meter-photoionization detector/flame ionization detector	QAO	quality assurance officer	SHP	installation-wide safety and health plan
OWS	oil/water separator	QAP	installation-wide quality assurance plan	SI	site investigation
oz	ounce	QC	quality control	SINA	Special Interest Natural Area
PA	preliminary assessment	QST	QST Environmental, Inc.	SL	standing liquid
PAH	polynuclear aromatic hydrocarbon	qty	quantity	SLERA	screening-level ecological risk assessment
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity	Qual	qualifier	sm	silty sands; sandsilt mixtures
Parsons	Parsons Engineering Science, Inc.	R	rejected data; resample; retardation factor	SM	Serratia marcescens
Pb	lead	R&A	relevant and appropriate	SMDP	Scientific Management Decision Point
PBMS	performance-based measurement system	RA	remedial action	s/n	signal-to-noise ratio
PC	permeability coefficient	RAO	remedial action objective	SO ₄ ⁻²	sulfate
PCB	polychlorinated biphenyl	RBC	risk-based concentration; red blood cell	SOD	soil oxidant demand
PCDD	polychlorinated dibenzo-p-dioxins	RCRA	Resource Conservation and Recovery Act	SOP	standard operating procedure
PCDF	polychlorinated dibenzofurans	RD	remedial design	SOPQAM	U.S. EPA's <i>Standard Operating Procedure/Quality Assurance Manual</i>
PCE	perchloroethene	RDX	cyclonite	sp	poorly graded sands; gravelly sands
PCP	pentachlorophenol	ReB3	Rarden silty clay loams	SP	submersible pump
PDS	Personnel Decontamination Station	REG	regular field sample	SPCC	system performance calibration compound
PEF	particulate emission factor	REL	recommended exposure limit	SPCS	State Plane Coordinate System
PEL	permissible exposure limit	RFA	request for analysis	SPM	sample planning module
PERA	preliminary ecological risk assessment	RfC	reference concentration	SQRT	screening quick reference tables
PES	potential explosive site	RfD	reference dose	Sr-90	strontium-90
Pest.	pesticides	RGO	remedial goal option	SRA	streamlined human health risk assessment
PETN	pentarey thritol tetranitrate	RI	remedial investigation	SRM	standard reference material
PFT	portable flamethrower	RL	reporting limit	Ss	stony rough land, sandstone series
PG	professional geologist	RME	reasonable maximum exposure	SS	surface soil
PID	photoionization detector	ROD	Record of Decision	SSC	site-specific chemical
PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes	RPD	relative percent difference	SSHO	site safety and health officer
PM	project manager	RRF	relative response factor	SSHHP	site-specific safety and health plan
POC	point of contact	RSD	relative standard deviation	SSL	soil screening level
POL	petroleum, oils, and lubricants	RTC	Recruiting Training Center	SSSL	site-specific screening level
POTW	publicly owned treatment works	RTECS	Registry of Toxic Effects of Chemical Substances	SSSSL	site-specific soil screening level
POW	prisoner of war	RTK	real-time kinematic	STB	supertropical bleach
PP	peristaltic pump; Proposed Plan	SA	exposed skin surface area	STC	source-term concentration
ppb	parts per billion	SAD	South Atlantic Division	STD	standard deviation
PPE	personal protective equipment	SAE	Society of Automotive Engineers	STEL	short-term exposure limit
ppm	parts per million	SAIC	Science Applications International Corporation	STL	Severn-Trent Laboratories
		SAP	installation-wide sampling and analysis plan	STOLS	Surface Towed Ordnance Locator System®

List of Abbreviations and Acronyms (Continued)

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

ATTACHMENT 2

EVALUATING OE/UXO/CWM IN SUPPORT OF HTRW ACTIVITIES

Evaluating OE/UXO/CWM Hazards in Support of HTRW Activities
Site Name: Landfill No. 3, Parcel 80(6)

Job Number: 796886

Date: 10/23/02

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

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

List agent breakdown products identified:

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

Site Name: Landfill No. 3, Parcel 80(6)

Job Number: 796886

Date: 10/23/02

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

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

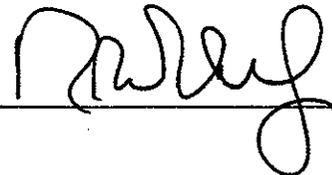
<p>5. Based on the information provided in questions 1 through 5, above, the following guidelines will be used for establishing PPE requirements for activities to be performed at this site; Specific details are provided in the SSHP:</p>	
<p>5a. High Exposure Potential - High exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the IT CIH, PPE for all personnel in the exclusion zone at a site identified as having a "High Exposure Potential" will be Level B (supplied air) or Level C (full-face respirator with HEPA/Acid Gas/OV cartridges w/ emergency egress hood) and chemically resistant coveralls. Specific PPE requirements are in the SSHP for this site.</p>
<p>5b. Moderate Exposure Potential - Moderate exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the IT CIH, PPE for all personnel in the exclusion zone at a site identified as having a "Moderate Exposure Potential" will be Modified Level D (disposable coveralls and emergency egress hood) carried by all personnel. Specific PPE requirements are in the SSHP for this site.</p>
<p>5c. Low Exposure Potential - Low exposure potential is determined by evaluating the potential presence of CWM in conjunction with the task(s) to be performed, as well as the specific location and duration of the task(s).</p>	<p>Subject to review by the IT CIH, no additional PPE requirements above those stated in the SSHP are needed for sites identified as having "Low Exposure Potential." Specific PPE requirements are in the SSHP for this site.</p>

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

Exceptions/Explanations:

Review Signatures:

IT UXO Technical Manager



Date: 28 Oct 02

IT H&S Specialist



Date: 10/24/02

Site Name: Landfill No. 3, Parcel 80(6)

Job Number: 796886

Date: 10/23/02

Additional Notes and Explanations:

Landfill No. 3, Parcel 80(6), is located in the northwest corner of the Main Post. The landfill is bounded by woods near the Anniston-Jacksonville Highway (Route 21) to the west, and 4th Avenue to the east. This 21-acre site was the sanitary landfill for the installation from 1946 until 1967. The northern, eastern and western boundaries are well defined (i.e., terminus of trench depressions, drainage swales, and roads). The landfill was constructed using trenches that extend east west across the site. The waste was placed in the trenches and subsequently covered with topsoil. The depths of these trenches have not been determined. A complete manifest of all wastes deposited at the landfill was not available. However, it has been reported that empty pesticide containers, ammunition, and burned ammunition pallets or crates were disposed of in the landfill (ESE, 1998). The pesticide containers were reported to have been triple-rinsed prior to disposal. Additionally, there is a high potential that disposal of paint containers, fluorescent bulbs and ballasts, waste oil, and construction debris were buried here. The landfill was not capped when it was closed in 1967, and settling is occurring, which could indicate that water is infiltrating through the topsoil. Forty-nine trench depressions can be observed oriented east to west.