4.0 Site Characterization

This chapter presents the results of the landfill gas investigation and wetland determination conducted at the Stump Dump, Parcel 82(7) as well as information on regional and site geology, and site hydrology.

4.1 Landfill Gas Investigation

Shaw performed a landfill gas investigation at the Stump Dump, Parcel 82(7) in May and June of 2003. Field activities included surface emissions screening (using a flame ionization detector), subsurface soil gas screening, and screening of nearby monitoring wells (i.e., within 200 feet) for the presence of landfill gases. In addition, a subsurface soil gas sample was collected from the subsurface soil gas screening location with the highest measured concentration of methane to confirm the presence of volatile compounds detected during screening activities.

The surface emissions screening at Parcel 82(7) did not indicate the presence of any VOCs along the perimeter or above the surface of the Stump Dump. Methane was not detected in any of the screened monitoring wells. Methane was detected at a trace level at one subsurface soil gas screening location. A subsurface soil gas sample was collected from this location in June 2003. The analytical results revealed low concentrations of VOCs. Detailed information on the landfill gas screening methodology, sample locations, and results is provided in the Draft Landfill Gas Investigation report (Shaw, 2003a).

4.2 Wetland Determination

An assessment of wetlands located within an approximate 200-foot perimeter of the Stump Dump was performed in December 2002. The wetlands were delineated in accordance with the USACE wetlands delineation manual to determine the extent of federally regulated jurisdictional wetlands and waters of the United States.

Observed on or immediately adjacent to the fill area were five non-jurisdictional, man-made detention ponds and associated riprap-lined drainage ditches. The routine onsite wetland determination concluded that natural drainage-ways, located approximately 150 to 300 feet to the southwest, are considered jurisdictional waters of the United States (Shaw, 2003b).

The USACE-Mobile District approved the wetland determination for a 5-year period on April 2, 2003. The Clean Water Act prohibits filling activities in waters and wetlands of the United

States, unless authorized by permit. Filling activities include grading, land clearing with heavy equipment, and construction of a built-up road. Additionally, should the landfills or fill areas be surveyed for inclusion on a legal description or property plat, a copy of the survey must be submitted to the USACE for review and approval.

4.3 Regional and Site Geology

4.3.1 Regional Geology

Calhoun County includes parts of two physiographic provinces, the Piedmont Upland Province and the Valley and Ridge Province. The Piedmont Upland Province occupies the extreme eastern and southeastern portions of the county and is characterized by metamorphosed sedimentary rocks. The generally accepted range in age of these metamorphics is Cambrian to Devonian.

The majority of Calhoun County, including the Main Post of FTMC, lies within the Appalachian fold-and-thrust structural belt (Valley and Ridge Province) where southeastward-dipping thrust faults with associated minor folding are the predominant structural features. The fold-and-thrust belt consists of Paleozoic sedimentary rocks that have been asymmetrically folded and thrust-faulted, with major structures and faults striking in a northeast-southwest direction.

Northwestward transport of the Paleozoic rock sequence along the thrust faults has resulted in the imbricate stacking of large slabs of rock referred to as thrust sheets. Within an individual thrust sheet, smaller faults may splay off the larger thrust fault, resulting in imbricate stacking of rock units within an individual thrust sheet (Osborne and Szabo, 1984). Geologic contacts in this region generally strike parallel to the faults, and repetition of lithologic units is common in vertical sequences. Geologic formations within the Valley and Ridge Province portion of Calhoun County have been mapped by Warman and Causey (1962), Osborne and Szabo (1984), and Moser and DeJarnette (1992) and vary in age from Lower Cambrian to Pennsylvanian.

The basal unit of the sedimentary sequence in Calhoun County is the Cambrian Chilhowee Group. The Chilhowee Group consists of the Cochran, Nichols, Wilson Ridge, and Weisner Formations (Osborne and Szabo, 1984) but in Calhoun County is either undifferentiated or divided into the Cochran and Nichols Formations and an upper, undifferentiated Wilson Ridge and Weisner Formation. The Cochran is composed of poorly sorted arkosic sandstone and conglomerate with interbeds of greenish gray siltstone and mudstone. Massive to laminated

greenish gray and black mudstone makes up the Nichols Formation, with thin interbeds of siltstone and very fine-grained sandstone (Osborne et al., 1988). These two formations are mapped only in the eastern part of the county.

The Wilson Ridge and Weisner Formations are undifferentiated in Calhoun County and consist of both coarse-grained and fine-grained clastics. The coarse-grained facies appears to dominate the unit and consists primarily of coarse-grained, vitreous quartzite and friable, fine- to coarse-grained, orthoquartzitic sandstone, both of which locally contain conglomerate. The fine-grained facies consists of sandy and micaceous shale and silty, micaceous mudstone, which are locally interbedded with the coarse clastic rocks. The abundance of orthoquartzitic sandstone and quartzite suggests that most of the Chilhowee Group bedrock in the vicinity of FTMC belongs to the Weisner Formation (Osborne and Szabo, 1984).

The Cambrian Shady Dolomite overlies the Weisner Formation northeast, east, and southwest of the Main Post and consists of interlayered bluish gray or pale yellowish gray sandy dolomitic limestone and siliceous dolomite with coarsely crystalline, porous chert (Osborne et al., 1989). A variegated shale and clayey silt have been included within the lower part of the Shady Dolomite (Cloud, 1966). Material similar to this lower shale unit was noted in core holes drilled by the Alabama Geologic Survey on FTMC (Osborne and Szabo, 1984). The character of the Shady Dolomite in the FTMC vicinity and the true assignment of the shale at this stratigraphic interval are still uncertain (Osborne, 1999).

The Rome Formation overlies the Shady Dolomite and locally occurs to the northwest and southeast of the Main Post, as mapped by Warman and Causey (1962) and Osborne and Szabo (1984), and immediately to the west of Reilly Airfield (Osborne and Szabo, 1984). The Rome Formation consists of variegated, thinly interbedded grayish red-purple mudstone, shale, siltstone, and greenish red and light gray sandstone, with locally occurring limestone and dolomite. Weaver Cave, located approximately 1 mile west of the northwest boundary of the Main Post, is situated in gray dolomite and limestone mapped as the Rome Formation (Osborne et al., 1997). The Conasauga Formation overlies the Rome Formation and occurs along anticlinal axes in the northeastern portion of Pelham Range (Warman and Causey, 1962; Osborne and Szabo, 1984) and the northern portion of the Main Post (Osborne et al., 1997). The Conasauga Formation is composed of dark gray, finely to coarsely crystalline, medium- to thick-bedded dolomite with minor shale and chert (Osborne et al., 1989).

Overlying the Conasauga Formation is the Knox Group, which is composed of the Copper Ridge and Chepultepec dolomites of Cambro-Ordovician age. The Knox Group is undifferentiated in Calhoun County and consists of light medium gray, fine to medium crystalline, variably bedded to laminated, siliceous dolomite and dolomitic limestone that weather to a chert residuum (Osborne and Szabo, 1984). The Knox Group underlies a large portion of the Pelham Range area.

The Ordovician Newala and Little Oak Limestones overlie the Knox Group. The Newala Limestone consists of light to dark gray, micritic, thick-bedded limestone with minor dolomite. The Little Oak Limestone is comprised of dark gray, medium- to thick-bedded, fossiliferous, argillaceous to silty limestone with chert nodules. These limestone units are mapped as undifferentiated at FTMC and in other parts of Calhoun County. The Athens Shale overlies the Ordovician limestone units. The Athens Shale consists of dark gray to black shale and graptolitic shale with localized interbedded dark gray limestone (Osborne et al., 1989). These units occur within an eroded "window" in the uppermost structural thrust sheet at FTMC and underlie much of the developed area of the Main Post.

Other Ordovician-aged bedrock units mapped in Calhoun County include the Greensport Formation, Colvin Mountain Sandstone, and Sequatchie Formation. These units consist of various siltstones, sandstones, shales, dolomites, and limestones and are mapped as one, undifferentiated unit in some areas of Calhoun County. The only Silurian-age sedimentary formation mapped in Calhoun County is the Red Mountain Formation. This unit consists of interbedded red sandstone, siltstone, and shale with greenish gray to red silty and sandy limestone.

The Devonian Frog Mountain Sandstone consists of sandstone and quartzitic sandstone with shale interbeds, dolomudstone, and glauconitic limestone (Osborne et al., 1988). This unit locally occurs in the western portion of Pelham Range.

The Mississippian Fort Payne Chert and the Maury Formation overlie the Frog Mountain Sandstone and are composed of dark to light gray limestone with abundant chert nodules and greenish gray to grayish red phosphatic shale, with increasing amounts of calcareous chert toward the upper portion of the formation (Osborne and Szabo, 1984). These units occur in the northwestern portion of Pelham Range. Overlying the Fort Payne Chert is the Floyd Shale, also of Mississippian age, which consists of thin-bedded, fissile brown to black shale with thin

intercalated limestone layers and interbedded sandstone. Osborne and Szabo (1984) reassigned the Floyd Shale, which was mapped by Warman and Causey (1962) on the Main Post of FTMC, to the Ordovician Athens Shale based on fossil data.

The Pennsylvanian Parkwood Formation overlies the Floyd Shale and consists of a medium to dark gray, silty, clay shale and mudstone with interbedded light to medium gray, very fine to fine grained, argillaceous, micaceous sandstone. Locally the Parkwood Formation also contains beds of medium to dark gray argillaceous, bioclastic to cherty limestone and beds of clayey coal up to a few inches thick (Raymond et., al. 1988). The Parkwood Formation in Calhoun County is generally found within a structurally complex area known as the Coosa deformed belt. In the deformed belt, the Parkwood Formation and Floyd Shale are mapped as undifferentiated because their lithologic similarity and significant deformation make it impractical to map the contact (Thomas and Drahovzal, 1974; Osborne et al., 1988). The undifferentiated Parkwood Formation and Floyd Shale are found throughout the western quarter of Pelham Range.

The Jacksonville thrust fault is the most significant structural geologic feature in the vicinity of the Main Post of FTMC, both for its role in determining the stratigraphic relationships in the area and for its contribution to regional water supplies. The trace of the fault extends northeastward for approximately 39 miles between Bynum, Alabama, and Piedmont, Alabama. The fault is interpreted as a major splay of the Pell City fault (Osborne and Szabo, 1984). The Ordovician sequence that makes up the Eden thrust sheet is exposed at FTMC through an eroded window, or fenster, in the overlying thrust sheet. Rocks within the window display complex folding, with the folds being overturned and tight to isoclinal. The carbonates and shales locally exhibit well-developed cleavage (Osborne and Szabo, 1984). The FTMC window is framed on the northwest by the Rome Formation; north by the Conasauga Formation; northeast, east, and southwest by the Shady Dolomite; and southeast and southwest by the Chilhowee Group (Osborne et al., 1997). Two small klippen of the Shady Dolomite, bounded by the Jacksonville fault, have been recognized adjacent to the Pell City fault at the FTMC window (Osborne et al., 1997).

The Pell City fault serves as a fault contact between the bedrock within the FTMC window and the Rome and Conasauga Formations. The trace of the Pell City fault is also exposed approximately nine miles west of the FTMC window on Pelham Range, where it traverses northeast to southwest across the western quarter of Pelham Range. Here, the trace of the Pell City fault marks the boundary between the Pell City thrust sheet and the Coosa deformed belt.

The eastern three-quarters of Pelham Range is located within the Pell City thrust sheet, while the remaining western quarter of Pelham is located within the Coosa deformed belt. The Pell City thrust sheet is a large-scale thrust sheet containing Cambrian and Ordovician rocks and is relatively less structurally complex than the Coosa deformed belt (Thomas and Neathery, 1982). The Pell City thrust sheet is exposed between the traces of the Jacksonville and Pell City faults along the western boundary of the FTMC window and along the trace of the Pell City fault on Pelham Range (Thomas and Neathery, 1982; Osborne et al., 1988). The Coosa deformed belt is a narrow northeast-to-southwest-trending linear zone of complex structure (approximately 5 to 20 miles wide and approximately 90 miles long) consisting mainly of thin imbricate thrust slices. The structure within these imbricate thrust slices is often internally complicated by small-scale folding and additional thrust faults (Thomas and Drahovzal, 1974).

4.3.2 Site Geology

The soil type in the area of the Stump Dump is Stony Rough Land, sandstone (Ss). This miscellaneous land type consists of rough mountainous areas with many outcrops of sandstone and quartzite bedrock, loose rock fragments, and scattered patches of sandy soil material. It also includes rock escarpments on higher parts of the Choccolocco and Coldwater Mountains where quartzite of the Weisner formation is common. Slopes generally are more than 25 percent. The soil material is generally shallow over bedrock. Runoff is high, infiltration is slow, and the capacity for available moisture is low. This land type is low in natural fertility.

A north-south trending imbricate thrust fault (Jacksonville Fault) is mapped by the Geological Survey of Alabama along the middle portion of the parcel. Bedrock west of the fault is mapped as Shady Dolomite. Bedrock east of the fault is mapped as the Chilhowee Group (Osborne et al., 1997). A geologic map of the site is presented on Figure 4-1.

4.4 Site Hydrology

4.4.1 Surface Hydrology

Precipitation in the form of rainfall averages about 53 inches annually in Anniston, Alabama, with infiltration rates annually exceeding evapotranspiration rates (U.S. Department of Commerce, 1998). The major surface water features on the Main Post of FTMC include Remount Creek, Cane Creek, and Cave Creek. These waterways flow in a general northwest to westerly direction towards the Coosa River on the western boundary of Calhoun County.

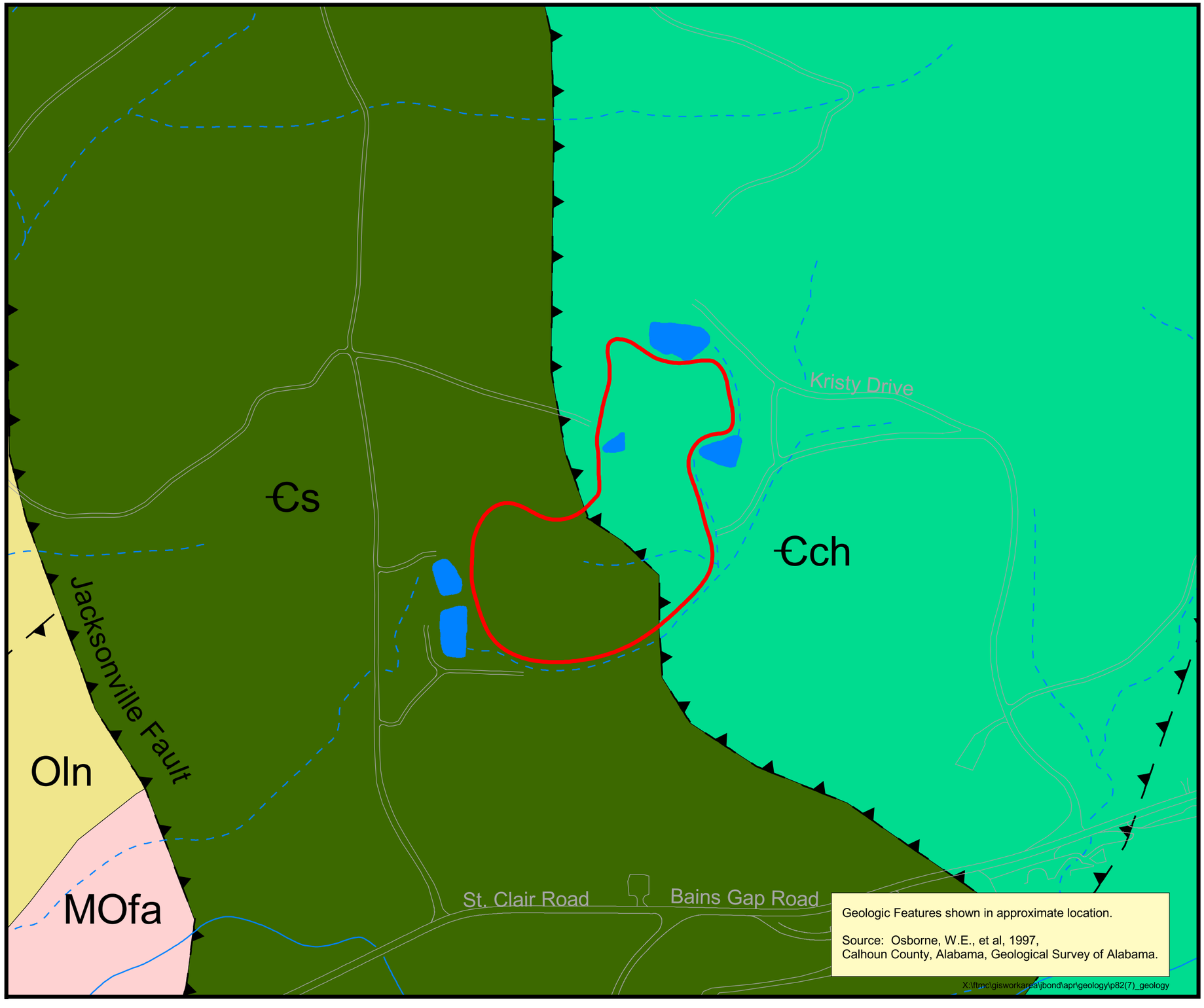

Figure 4-1

Site Geologic Map

Stump Dump, Parcel 82(7)
Fort McClellan, Alabama

Legend

- Parcel Boundary
- Surface Water Feature (may be ephemeral)
- Roads
- Streams (dashed where intermittent)

Geology

- MOfa — Mississippian/Ordovician - Floyd and Athens Shale, undifferentiated
- Oln — Ordovician - Little Oak and Newala Limestones, undifferentiated
- Cs — Cambrian - Shady Dolomite
- Cch — Cambrian - Chilhowee Group, undifferentiated
- Thrust Fault (dashed where inferred; barbs on upper plate)

300 0 300 Feet

NAD83 State Plane Coordinates

N

Shaw Environmental, Inc.

U.S. Army Corps of Engineers
Mobile District

Contract No. DACA21-96-D-0018

Site elevation ranges from approximately 910 to 1,055 feet above sea level. There are no natural streams on or near the site; five drainage control ponds exist on and around the site. Surface water is diverted off the landfill cover into a man-made ditch that flows northeast to southwest and forms the eastern and southern perimeter of the site. The man-made ditch discharges into an intermittent stream that flows to the southwest and eventually empties into Cane Creek.

4.4.2 Hydrogeology

Shaw installed eight permanent groundwater monitoring wells at the Stump Dump in November and December 1998. During boring and well installation activities, groundwater was encountered at depths ranging from approximately 43 to 142 feet bgs. Groundwater was encountered in shale at FTA-82-MW01 and FTA-82-MW02, and in weathered shale at FTA-82-MW08. Groundwater was encountered in consolidated sandstone at FTA-82-MW04 at a depth of 120 feet bgs.

Static groundwater levels were measured in monitoring wells at the site on January 8, 2002, as summarized in Table 3-4. A groundwater elevation map was constructed from the January 2002 data and is shown on Figure 4-2. Groundwater flow at the site is predominantly to the southwest. The groundwater contours show that monitoring well FTA-82-MW03 is influenced by groundwater flow from the slope east of FTA-82-MW03. The potentiometric surface likely reflects natural topography that existed prior to borrow and fill activities.

DWG. NO.: ...\796886es.183 | PROJ. NO.: 796886
INITIATOR: J. REMO | PROJ. MGR.: J. YACOUB
DRAFT. CHCK. BY: | ENGR. CHCK. BY: S. MORAN
REV.: | DATE LAST REV.: | DRAWN BY:
STARTING DATE: 10/22/03 | DRAWN BY: D. BOMAR
10/22/2003 04:09:57 PM
dbomar
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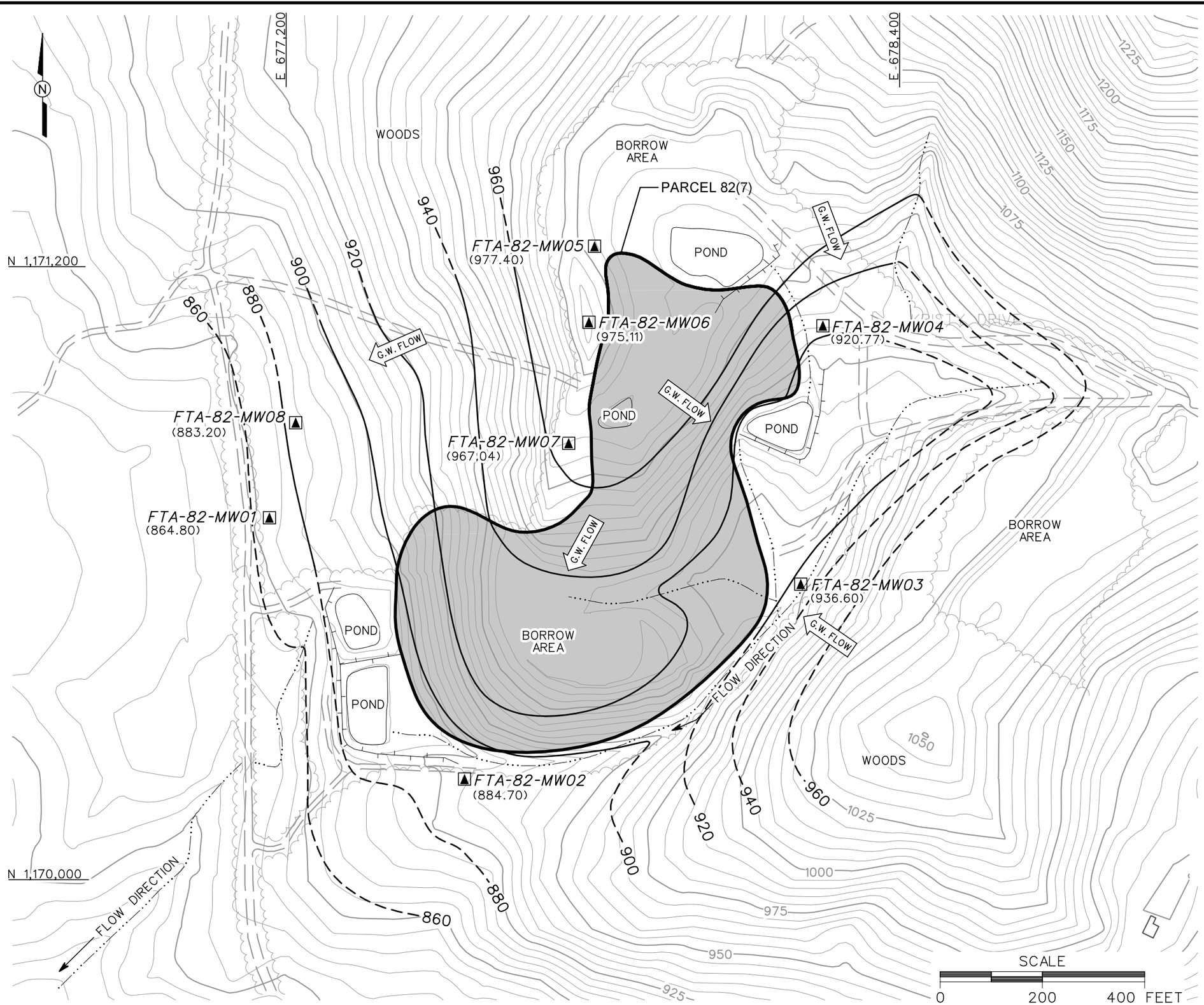

LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- 1000 — TOPOGRAPHIC CONTOURS (CONTOUR INTERVAL - 5 FOOT)
- 940 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- (920.77) — GROUNDWATER ELEVATION (FT MSL) (JANUARY 8, 2002)
- G.W. FLOW — GROUNDWATER FLOW DIRECTION
- TREES / TREELINE
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK
- BERM
- MONITORING WELL SAMPLE LOCATION

FIGURE 4-2
GROUNDWATER ELEVATION MAP
STUMP DUMP
PARCEL 82(7)

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

Shaw™ Shaw Environmental, Inc.

5.0 Summary of Analytical Results

The results of the chemical analyses of samples collected at the Stump Dump, Parcel 82(7), indicate that metals, VOCs, SVOCs, and pesticides were detected in the various site media. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, the analytical results were compared to SSSLs and ESVs for FTMC. The SSSLs and ESVs were developed by Shaw for human health and ecological risk evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC.

Metals concentrations exceeding the SSSLs and ESVs were subsequently compared to metals background screening values to determine if the metals concentrations are within natural background concentrations (SAIC, 1998). Site metals data were further evaluated using statistical and geochemical methods to determine if the metals were site related (Appendix H).

The following sections and Tables 5-1 through 5-6 summarize the results of the comparison of detected constituents to the SSSLs, ESVs, and background screening values. Complete analytical results are presented in Appendix G.

5.1 Surface and Depositional Soil Analytical Results

Eight surface soil samples and six depositional soil samples were collected for chemical analysis at the Stump Dump, Parcel 82(7). Surface and depositional soil samples were collected from the uppermost foot of soil at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs, ESVs, and background screening values, as presented in Table 5-1.

Metals. A total of 21 metals were detected in the surface and depositional soil samples. Six metals (aluminum, arsenic, chromium, iron, manganese, and thallium) were detected at concentrations exceeding SSSLs. These metals results, however, were below their respective background concentrations except for the following metals in one or two samples each:

- Aluminum (17,600 milligrams per kilogram [mg/kg]) exceeded its SSSL (7,803 mg/kg) and background (16,306 mg/kg) at sample location FTA-82-MW02.

- Iron (34,300 and 39,100 mg/kg) exceeded its SSSL (2,345 mg/kg) and background (34,154 mg/kg) at sample locations FTA-82-DEP04 and FTA-82-DEP06.

Table 5-1

Surface and Depositional Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-DEP01					FTA-82-DEP02					FTA-82-DEP03					FTA-82-DEP04				
Sample Number					FX0021					FX0022					FX0023					FX0024				
Sample Date					12-Nov-98					12-Nov-98					12-Nov-98					12-Nov-98				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																								
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	9.61E+03			YES	YES	6.92E+03				YES	1.31E+03				YES	3.42E+03				YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	4.10E+00			YES		3.90E+00			YES		4.10E+00			YES		5.90E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	7.19E+01					6.48E+01					1.13E+02					2.20E+02		YES		YES
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	8.80E-01		YES			ND					1.40E+00		YES		YES	9.30E-01		YES		
Calcium	mg/kg	1.72E+03	NA	NA	ND					ND					ND					ND				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	2.61E+01			YES	YES	3.60E+01			YES	YES	7.20E+00				YES	1.71E+01				YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.12E+01					1.12E+01					7.50E+00					1.80E+01		YES		
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	4.41E+01	J	YES		YES	4.40E+00	J				1.49E+01	J	YES			1.68E+01	J	YES		
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	3.38E+04			YES	YES	1.42E+04			YES	YES	2.06E+04			YES	YES	3.43E+04		YES	YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.18E+01					2.63E+01					1.24E+01					1.87E+01				
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	1.04E+03		YES			ND					ND					ND				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	1.46E+02				YES	1.45E+03			YES	YES	3.98E+02			YES	YES	8.03E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND					7.70E-02					ND					ND				
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	1.21E+01		YES			ND					1.83E+01		YES			7.20E+00				
Potassium	mg/kg	8.00E+02	NA	NA	1.35E+03		YES			ND					ND					8.69E+02		YES		
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					ND					ND					ND				
Silver	mg/kg	3.60E-01	3.91E+01	2.00E+00	ND					ND					ND					ND				
Sodium	mg/kg	6.34E+02	NA	NA	ND					ND					ND					ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.50E+01				YES	2.02E+01				YES	9.70E+00				YES	ND				
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	3.24E+01	J				1.67E+01	J				6.09E+01	J	YES		YES	1.99E+01	J			
VOLATILE ORGANIC COMPOUNDS																								
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND					1.90E-02	B				ND					ND				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	ND					5.40E-01	J				1.10E-02	B				ND				
Bromomethane	mg/kg	NA	1.09E+01	NA	ND					ND					ND					ND				
Cumene	mg/kg	NA	7.77E+02	NA	ND					ND					ND					ND				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	3.50E-03	B				4.40E-03	B				3.80E-03	B				3.10E-03	B			
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					3.90E-03	J				2.10E-03	J				ND				
Trichloroethene	mg/kg	NA	5.72E+01	1.00E-03	ND					ND					ND					ND				
Trichlorofluoromethane	mg/kg	NA	2.33E+03	1.00E-01	ND					ND					ND					ND				
SEMIVOLATILE ORGANIC COMPOUNDS																								
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	ND					ND					ND					ND				
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	ND					ND					ND					ND				
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	8.00E-02	B				7.40E-02	B				9.50E-02	B				1.00E-01	B			
Phenol	mg/kg	NA	4.66E+03	5.00E-02	ND					4.20E-02	J				ND					ND				
PESTICIDES																								
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	ND					2.50E-03				YES	ND					ND				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	ND					ND					ND					ND				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	ND					ND					ND					ND				
delta-BHC	mg/kg	NA	2.33E+00	9.94E+00	ND					ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-DEP05					FTA-82-DEP06					FTA-82-MW01					FTA-82-MW02				
Sample Number					FX0025					FX0026					FX0001					FX0003				
Sample Date					12-Nov-98					8-Mar-99					10-Nov-98					12-Nov-98				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																								
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	1.86E+03				YES	2.31E+03				YES	1.11E+04			YES	YES	1.76E+04		YES	YES	YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	5.20E+00			YES		5.70E+00			YES		4.70E+00			YES		6.70E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	9.00E+01					4.08E+01					6.33E+01					5.21E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	2.90E+00		YES		YES	7.70E-01					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	ND					6.35E+02					ND					ND				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	9.00E+00				YES	7.60E+00				YES	2.32E+01			YES	YES	2.16E+01				YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.34E+01					2.50E+00	J				2.73E+01		YES		YES	1.90E+01		YES		
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	2.28E+01	J	YES			1.17E+01					2.66E+01	J	YES			7.90E+00	J			
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	2.78E+04			YES	YES	3.91E+04		YES	YES	YES	2.30E+04			YES	YES	2.76E+04			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.05E+01					6.00E+00					1.27E+01					1.89E+01				
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	ND					3.85E+02	J				7.68E+02					ND				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	4.06E+02			YES	YES	4.84E+02			YES	YES	3.24E+02				YES	5.07E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND					ND					5.10E-02					2.10E-01		YES		YES
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	3.76E+01		YES		YES	7.60E+00					9.40E+00					7.80E+00				
Potassium	mg/kg	8.00E+02	NA	NA	ND					4.68E+02	J				7.03E+02					ND				
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	6.10E-01		YES			1.40E+00		YES		YES	6.60E-01		YES			ND				
Silver	mg/kg	3.60E-01	3.91E+01	2.00E+00	ND					ND					ND					ND				
Sodium	mg/kg	6.34E+02	NA	NA	ND					5.20E+00	B				ND					ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.44E+01				YES	3.43E+01				YES	2.03E+01				YES	3.18E+01				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	1.28E+02	J	YES		YES	1.55E+01					1.97E+01	J				1.63E+01	J			
VOLATILE ORGANIC COMPOUNDS																								
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND					ND					ND					8.30E-03	B			
Acetone	mg/kg	NA	7.76E+02	2.50E+00	ND					ND					2.20E-02	B				3.30E-01	J			
Bromomethane	mg/kg	NA	1.09E+01	NA	ND					ND					1.40E-03	J				ND				
Cumene	mg/kg	NA	7.77E+02	NA	ND					ND					ND					ND				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	3.40E-03	B				4.10E-03	B				7.10E-03	B				3.20E-03	B			
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					2.60E-03	J				ND					ND				
Trichloroethene	mg/kg	NA	5.72E+01	1.00E-03	ND					ND					ND					ND				
Trichlorofluoromethane	mg/kg	NA	2.33E+03	1.00E-01	ND					ND					ND					ND				
SEMIVOLATILE ORGANIC COMPOUNDS																								
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	ND					ND					ND					ND				
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	ND					ND					ND					ND				
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	7.90E-02	B				ND					ND					ND				
Phenol	mg/kg	NA	4.66E+03	5.00E-02	ND					ND					ND					ND				
PESTICIDES																								
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	ND					ND					ND					ND				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	ND					ND					ND					ND				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	ND					ND					ND					ND				
delta-BHC	mg/kg	NA	2.33E+00	9.94E+00	ND					ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-MW03					FTA-82-MW04					FTA-82-MW05				
Sample Number					FX0005					FX0009					FX0011				
Sample Date					1-Dec-98					16-Nov-98					16-Nov-98				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	3.47E+03	J			YES	2.27E+03				YES	2.78E+03				YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	3.90E+00			YES		2.60E+00			YES		5.20E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	9.96E+01	J				5.13E+01					1.42E+02		YES		
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	5.60E-01	J				ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	5.14E+03	J	YES			ND					ND				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.21E+01				YES	2.76E+01			YES	YES	9.90E+00				YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	3.90E+00	J				ND					8.20E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	1.07E+01					9.10E+00	J				9.70E+00	J			
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	2.00E+04			YES	YES	1.36E+04			YES	YES	2.59E+04			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.24E+01	J				9.00E+00					1.11E+01				
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	1.21E+03	J	YES			ND					ND				
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	5.91E+02			YES	YES	2.28E+02				YES	8.49E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	1.60E-02	J				ND					ND				
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	6.60E+00					5.80E+00					6.50E+00				
Potassium	mg/kg	8.00E+02	NA	NA	6.23E+02					6.02E+02					ND				
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					ND					6.80E-01		YES		
Silver	mg/kg	3.60E-01	3.91E+01	2.00E+00	1.10E+00		YES			ND					ND				
Sodium	mg/kg	6.34E+02	NA	NA	9.23E+01	B				ND					ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	7.40E-01	J		YES		ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	6.60E+00				YES	ND					7.30E+00	B			YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	2.43E+01					1.02E+01	J				1.88E+01	J			
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND					ND					ND				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	7.00E-03	J				8.30E-03	J				1.20E-02	J			
Bromomethane	mg/kg	NA	1.09E+01	NA	ND					ND					ND				
Cumene	mg/kg	NA	7.77E+02	NA	ND					ND					ND				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	3.00E-03	B				3.30E-03	B				3.20E-03	B			
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					1.80E-03	B				ND				
Trichloroethene	mg/kg	NA	5.72E+01	1.00E-03	ND					6.60E-03	B			YES	5.10E-03	B			YES
Trichlorofluoromethane	mg/kg	NA	2.33E+03	1.00E-01	ND					ND					ND				
SEMIVOLATILE ORGANIC COMPOUNDS																			
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	4.00E-02	J				ND					ND				
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	6.30E-02	J				ND					ND				
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	ND					ND					ND				
Phenol	mg/kg	NA	4.66E+03	5.00E-02	ND					ND					ND				
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	ND					ND					ND				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	2.20E-03	J				ND					ND				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	2.30E-03	J				ND					ND				
delta-BHC	mg/kg	NA	2.33E+00	9.94E+00	8.10E-04	J				ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-MW06					FTA-82-MW07					FTA-82-MW08				
Sample Number					FX0013					FX0015					FX0019				
Sample Date					9-Dec-98					9-Dec-98					1-Dec-98				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	4.66E+03				YES	5.48E+03				YES	1.10E+04			YES	YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	2.70E+00			YES		4.00E+00			YES		5.20E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	5.76E+01					1.83E+01	J				2.63E+02	J	YES		YES
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	3.10E-01	J				6.60E-01					1.50E+00		YES		YES
Calcium	mg/kg	1.72E+03	NA	NA	4.03E+02	J				5.69E+01	B				6.19E+02	J			
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.11E+01				YES	2.10E+01				YES	2.65E+01			YES	YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	2.70E+00	J				4.10E+00	J				3.19E+01		YES		YES
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	3.70E+00					1.79E+01		YES			1.54E+01		YES		
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	9.24E+03			YES	YES	2.75E+04			YES	YES	2.54E+04			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	7.80E+00					4.00E+00					4.10E+01	J	YES		
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	1.45E+02	J				1.36E+02	J				5.55E+02	J			
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	2.55E+02				YES	4.41E+01					3.00E+03		YES	YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	2.50E-02	J				ND					6.40E-02				
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	7.90E+00					5.60E+00					1.95E+01		YES		
Potassium	mg/kg	8.00E+02	NA	NA	1.40E+02	J				1.24E+03		YES			4.54E+02	J			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					ND					7.10E-01		YES		
Silver	mg/kg	3.60E-01	3.91E+01	2.00E+00	ND					9.20E-01	J	YES			ND				
Sodium	mg/kg	6.34E+02	NA	NA	2.90E+01	B				4.12E+01	B				8.71E+01	B			
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					1.30E+00			YES	YES
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	7.50E+00				YES	1.71E+01				YES	2.12E+01				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	9.30E+00					1.39E+01					3.53E+01				
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND					ND					5.60E-03	J			
Acetone	mg/kg	NA	7.76E+02	2.50E+00	2.50E-02	J				1.40E-02	J				1.60E-01	J			
Bromomethane	mg/kg	NA	1.09E+01	NA	ND					ND					ND				
Cumene	mg/kg	NA	7.77E+02	NA	ND					ND					5.50E-03	J			
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	2.20E-02	B				1.10E-02	B				2.90E-03	B			
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					ND					ND				
Trichloroethene	mg/kg	NA	5.72E+01	1.00E-03	ND					ND					ND				
Trichlorofluoromethane	mg/kg	NA	2.33E+03	1.00E-01	2.60E-03	B				3.20E-03	B				ND				
SEMIVOLATILE ORGANIC COMPOUNDS																			
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	ND					ND					ND				
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	ND					ND					ND				
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	9.00E-02	B				5.90E-02	B				7.40E-02	B			
Phenol	mg/kg	NA	4.66E+03	5.00E-02	ND					ND					ND				
PESTICIDES																			
4,4'-DDE	mg/kg	NA	1.79E+00	2.50E-03	1.10E-03	J				ND					ND				
4,4'-DDT	mg/kg	NA	1.79E+00	2.50E-03	8.60E-04	J				ND					ND				
Heptachlor	mg/kg	NA	1.40E-01	1.00E-01	ND					ND					ND				
delta-BHC	mg/kg	NA	2.33E+00	9.94E+00	ND					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama* , July.
For SVOCs, concentration listed is the background screening value for soils adjacent to asphalt as given in IT, 2000, *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama* , July.

[b] Residential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT, 2000.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit.

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-2

Subsurface Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location				FTA-82-MW01				FTA-82-MW02				FTA-82-MW03				FTA-82-MW04			
Sample Number				FX0002				FX0004				FX0008				FX0010			
Sample Date				10-Nov-98				13-Nov-98				1-Dec-98				16-Nov-98			
Sample Depth (Feet)				45 - 47				52 - 54				7 - 9				15 - 17			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																			
Aluminum	mg/kg	1.36E+04	7.80E+03	7.96E+03			YES	1.25E+04			YES	9.38E+03			YES	1.29E+03			
Arsenic	mg/kg	1.83E+01	4.26E-01	1.40E+00			YES	4.70E+00			YES	4.60E+00			YES	1.10E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	ND				ND				1.04E+02	J			ND			
Beryllium	mg/kg	8.60E-01	9.60E+00	ND				3.70E+00		YES		1.10E+00		YES		ND			
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND				ND			
Calcium	mg/kg	6.37E+02	NA	ND				ND				2.57E+04	J	YES		ND			
Chromium	mg/kg	3.83E+01	2.32E+01	4.70E+00				1.56E+01				2.08E+01				4.60E+00			
Cobalt	mg/kg	1.75E+01	4.68E+02	1.02E+01				2.21E+02		YES		6.60E+00				ND			
Copper	mg/kg	1.94E+01	3.13E+02	3.49E+01	J	YES		2.80E+02	J	YES		2.04E+01		YES		2.90E+00	J		
Iron	mg/kg	4.48E+04	2.34E+03	1.09E+04			YES	4.88E+04		YES	YES	2.44E+04			YES	5.57E+03			YES
Lead	mg/kg	3.85E+01	4.00E+02	3.00E+00				1.80E+01				2.60E+01	J			2.10E+00			
Magnesium	mg/kg	7.66E+02	NA	2.55E+03		YES		1.04E+03		YES		7.84E+03		YES		ND			
Manganese	mg/kg	1.36E+03	3.63E+02	1.29E+02				5.46E+02			YES	4.17E+02			YES	1.66E+01			
Mercury	mg/kg	7.00E-02	2.33E+00	ND				ND				4.30E-02				ND			
Nickel	mg/kg	1.29E+01	1.54E+02	1.19E+01				6.93E+01		YES		1.52E+01		YES		ND			
Potassium	mg/kg	7.11E+02	NA	3.55E+03		YES		1.22E+03		YES		1.02E+03		YES		ND			
Selenium	mg/kg	4.70E-01	3.91E+01	ND				ND				ND				ND			
Silver	mg/kg	2.40E-01	3.91E+01	ND				ND				ND				ND			
Sodium	mg/kg	7.02E+02	NA	ND				ND				1.62E+02	B			ND			
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				ND				ND			
Vanadium	mg/kg	6.49E+01	5.31E+01	ND				ND				1.27E+01				ND			
Zinc	mg/kg	3.49E+01	2.34E+03	2.14E+01	J			1.44E+02	J	YES		7.20E+01		YES		3.20E+00	J		
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	ND				ND				3.80E-03	J			ND			
Acetone	mg/kg	NA	7.76E+02	6.50E-03	B			1.30E-02	B			3.20E-02	J			1.20E-02	J		
Bromomethane	mg/kg	NA	1.09E+01	ND				ND				ND				ND			
Ethylbenzene	mg/kg	NA	7.77E+02	ND				ND				9.30E-03				ND			
Methylene chloride	mg/kg	NA	8.41E+01	6.10E-03	B			3.70E-03	B			3.30E-03	B			3.90E-03	B		
N-Propylbenzene	mg/kg	NA	7.77E+01	ND				ND				8.60E-03	J			ND			
Trichloroethene	mg/kg	NA	5.72E+01	ND				ND				ND				4.60E-03	B		
Trichlorofluoromethane	mg/kg	NA	2.33E+03	ND				ND				ND				ND			

Table 5-2

Subsurface Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location				FTA-82-MW01				FTA-82-MW02				FTA-82-MW03				FTA-82-MW04			
Sample Number				FX0002				FX0004				FX0008				FX0010			
Sample Date				10-Nov-98				13-Nov-98				1-Dec-98				16-Nov-98			
Sample Depth (Feet)				45 - 47				52 - 54				7 - 9				15 - 17			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
SEMIVOLATILE ORGANIC COMPOUNDS																			
Anthracene	mg/kg	NA	2.33E+03	ND				ND				8.20E-02	J			ND			
Benzo(a)anthracene	mg/kg	NA	8.51E-01	ND				ND				1.70E-01	J			ND			
Benzo(a)pyrene	mg/kg	NA	8.51E-02	ND				ND				1.80E-01	J		YES	ND			
Benzo(b)fluoranthene	mg/kg	NA	8.51E-01	ND				ND				1.70E-01	J			ND			
Benzo(ghi)perylene	mg/kg	NA	2.32E+02	ND				ND				1.20E-01	J			ND			
Benzo(k)fluoranthene	mg/kg	NA	8.51E+00	ND				ND				1.90E-01	J			ND			
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND				ND				1.00E-01	B			ND			
Carbazole	mg/kg	NA	3.11E+01	ND				ND				4.30E-02	J			ND			
Chrysene	mg/kg	NA	8.61E+01	ND				ND				1.70E-01	J			ND			
Fluoranthene	mg/kg	NA	3.09E+02	ND				ND				4.00E-01				ND			
Indeno(1,2,3-cd)pyrene	mg/kg	NA	8.51E-01	ND				ND				1.00E-01	J			ND			
Phenanthrene	mg/kg	NA	2.32E+03	ND				ND				2.60E-01	J			ND			
Pyrene	mg/kg	NA	2.33E+02	ND				ND				2.90E-01	J			ND			

Table 5-2

Subsurface Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location				FTA-82-MW05				FTA-82-MW06				FTA-82-MW07				FTA-82-MW08			
Sample Number				FX0012				FX0014				FX0018				FX0020			
Sample Date				18-Nov-98				17-Dec-98				9-Dec-98				1-Dec-98			
Sample Depth (Feet)				50 - 52				7 - 9				9 - 11				11 - 13			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																			
Aluminum	mg/kg	1.36E+04	7.80E+03	2.52E+03				2.67E+03				2.98E+03				1.37E+04		YES	YES
Arsenic	mg/kg	1.83E+01	4.26E-01	4.90E+00			YES	2.70E+00			YES	8.20E+00			YES	1.30E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	6.72E+02	J	YES	YES	1.53E+01	J			3.60E+01				7.61E+01	J		
Beryllium	mg/kg	8.60E-01	9.60E+00	9.00E-01		YES		1.90E-01	B			7.00E-01				6.80E-01			
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				5.60E-01		YES		ND				ND			
Calcium	mg/kg	6.37E+02	NA	ND				5.39E+01	B			5.51E+01	B			7.31E+01	B		
Chromium	mg/kg	3.83E+01	2.32E+01	2.11E+01				4.09E+01	J	YES	YES	1.65E+01				1.11E+01			
Cobalt	mg/kg	1.75E+01	4.68E+02	3.13E+01	J	YES		5.40E+00				5.50E+00	J			1.47E+01			
Copper	mg/kg	1.94E+01	3.13E+02	1.60E+01				4.60E+00				1.99E+01		YES		6.60E+00			
Iron	mg/kg	4.48E+04	2.34E+03	2.42E+04			YES	1.67E+04			YES	2.32E+04			YES	1.92E+04			YES
Lead	mg/kg	3.85E+01	4.00E+02	5.70E+01	J	YES		3.20E+00				8.00E+00				5.10E+00	J		
Magnesium	mg/kg	7.66E+02	NA	ND				6.85E+01	J			1.83E+02	J			4.77E+03		YES	
Manganese	mg/kg	1.36E+03	3.63E+02	2.79E+03		YES	YES	9.64E+01	J			9.92E+01				5.41E+02			YES
Mercury	mg/kg	7.00E-02	2.33E+00	ND				ND				ND				ND			
Nickel	mg/kg	1.29E+01	1.54E+02	6.40E+00				1.15E+01				1.42E+01		YES		1.45E+01		YES	
Potassium	mg/kg	7.11E+02	NA	7.60E+02		YES		2.01E+02	J			1.30E+03		YES		6.37E+03		YES	
Selenium	mg/kg	4.70E-01	3.91E+01	ND				9.50E-01		YES		ND				ND			
Silver	mg/kg	2.40E-01	3.91E+01	ND				1.20E+00		YES		ND				5.90E-01	J	YES	
Sodium	mg/kg	7.02E+02	NA	ND				ND				4.01E+01	B			9.30E+01	B		
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				ND				7.20E-01	J		YES
Vanadium	mg/kg	6.49E+01	5.31E+01	6.30E+00				ND				1.55E+01				5.30E+00	J		
Zinc	mg/kg	3.49E+01	2.34E+03	1.68E+01				1.06E+01				2.20E+01				3.15E+01			
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/kg	NA	4.66E+03	ND				ND				ND				ND			
Acetone	mg/kg	NA	7.76E+02	ND				9.90E-03	J			ND				1.10E-02	J		
Bromomethane	mg/kg	NA	1.09E+01	ND				1.50E-03	J			ND				ND			
Ethylbenzene	mg/kg	NA	7.77E+02	ND				ND				ND				ND			
Methylene chloride	mg/kg	NA	8.41E+01	4.50E-03	B			5.90E-03	B			7.50E-03	B			3.30E-03	B		
N-Propylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND			
Trichloroethene	mg/kg	NA	5.72E+01	4.10E-03	B			ND				ND				ND			
Trichlorofluoromethane	mg/kg	NA	2.33E+03	ND				ND				4.00E-03	B			ND			

Table 5-2

Subsurface Soil Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location				FTA-82-MW05				FTA-82-MW06				FTA-82-MW07				FTA-82-MW08			
Sample Number				FX0012				FX0014				FX0018				FX0020			
Sample Date				18-Nov-98				17-Dec-98				9-Dec-98				1-Dec-98			
Sample Depth (Feet)				50 - 52				7 - 9				9 - 11				11 - 13			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
SEMIVOLATILE ORGANIC COMPOUNDS																			
Anthracene	mg/kg	NA	2.33E+03	ND				ND				ND				ND			
Benzo(a)anthracene	mg/kg	NA	8.51E-01	ND				ND				ND				ND			
Benzo(a)pyrene	mg/kg	NA	8.51E-02	ND				ND				ND				ND			
Benzo(b)fluoranthene	mg/kg	NA	8.51E-01	ND				ND				ND				ND			
Benzo(ghi)perylene	mg/kg	NA	2.32E+02	ND				ND				ND				ND			
Benzo(k)fluoranthene	mg/kg	NA	8.51E+00	ND				ND				ND				ND			
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND				8.60E-01				1.60E-01	B			7.50E-02	B		
Carbazole	mg/kg	NA	3.11E+01	ND				ND				ND				ND			
Chrysene	mg/kg	NA	8.61E+01	ND				ND				ND				ND			
Fluoranthene	mg/kg	NA	3.09E+02	ND				ND				ND				ND			
Indeno(1,2,3-cd)pyrene	mg/kg	NA	8.51E-01	ND				ND				ND				ND			
Phenanthrene	mg/kg	NA	2.32E+03	ND				ND				ND				ND			
Pyrene	mg/kg	NA	2.33E+02	ND				ND				ND				ND			

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

[b] Residential human health site-specific screening level (SSSL) as given in IT, 2000, *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama*, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit.

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-3

Groundwater Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location				FTA-82-MW01				FTA-82-MW02				FTA-82-MW03				FTA-82-MW04			
Sample Number				FX3001				FX3002				FX3003				FX3006			
Sample Date				5-Jan-99				6-Jan-99				6-Jan-99				8-Jan-99			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																			
Aluminum	mg/L	2.34E+00	1.56E+00	1.19E+00				1.14E+00				1.36E-01	J			3.24E-02	J		
Barium	mg/L	1.27E-01	1.10E-01	1.30E-02	J			7.90E-03	J			1.02E-01	J			2.45E-02	J		
Calcium	mg/L	5.65E+01	NA	1.35E-01	J			7.81E-01	J			5.23E+00	J			2.08E+00	J		
Chromium	mg/L	NA	4.69E-03	4.70E-03	B		YES	5.40E-03	B		YES	4.80E-03	B		YES	4.40E-03	J		
Cobalt	mg/L	2.34E-02	9.39E-02	7.90E-03	J			ND				1.27E-02	J			ND			
Copper	mg/L	2.55E-02	6.26E-02	3.80E-03	J			ND				ND				ND			
Iron	mg/L	7.04E+00	4.69E-01	7.59E-01			YES	1.20E+00			YES	3.50E-01				ND			
Lead	mg/L	8.00E-03	1.50E-02	ND				ND				ND				ND			
Magnesium	mg/L	2.13E+01	NA	8.10E-01	J			7.64E-01	J			2.30E+00	J			4.30E-01	J		
Manganese	mg/L	5.81E-01	7.35E-02	1.23E-01	J		YES	1.71E-02	J			1.83E+00	J	YES	YES	3.40E-02	J		
Nickel	mg/L	NA	3.13E-02	1.04E-02	J			ND				1.22E-02	J			9.90E-03	J		
Potassium	mg/L	7.20E+00	NA	3.69E+00	B			2.57E+00	B			2.38E+00	B			1.87E+00	B		
Sodium	mg/L	1.48E+01	NA	6.01E-01	J			6.44E-01	J			1.14E+00	J			1.23E+00	J		
Thallium	mg/L	1.46E-03	1.02E-04	5.00E-03	B	YES	YES	5.30E-03	B	YES	YES	4.70E-03	B	YES	YES	4.60E-03	B	YES	YES
Vanadium	mg/L	1.70E-02	1.10E-02	8.50E-03	B			8.30E-03	B			8.00E-03	B			ND			
VOLATILE ORGANIC COMPOUNDS																			
1,2-Dimethylbenzene	mg/L	NA	2.80E+00	ND				ND				ND				ND			
Acetone	mg/L	NA	1.56E-01	ND				ND				ND				3.20E-02	J		
Benzene	mg/L	NA	1.41E-03	ND				ND				ND				ND			
Chloroform	mg/L	NA	1.15E-03	ND				ND				3.60E-04	B			1.90E-04	B		
Chloromethane	mg/L	NA	3.93E-03	3.60E-04	J			2.50E-04	B			ND				ND			
Ethylbenzene	mg/L	NA	1.40E-01	ND				ND				ND				ND			
Methylene chloride	mg/L	NA	7.85E-03	ND				ND				5.00E-03	B			ND			
Toluene	mg/L	NA	2.59E-01	ND				ND				ND				ND			
m,p-Xylenes	mg/L	NA	2.80E+00	ND				ND				ND				ND			
SEMIVOLATILE ORGANIC COMPOUNDS																			
Bis(2-Ethylhexyl)phthalate	mg/L	NA	4.31E-03	ND				ND				ND				ND			
Phenol	mg/L	NA	9.31E-01	1.00E-03	B			1.00E-03	B			1.00E-03	B			1.00E-03	B		

Table 5-3

Groundwater Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location				FTA-82-MW05				FTA-82-MW06				FTA-82-MW07				FTA-82-MW08			
Sample Number				FX3007				FX3008				FX3009				FX3010			
Sample Date				11-Jan-99				11-Jan-99				12-Jan-99				6-Jan-99			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS																			
Aluminum	mg/L	2.34E+00	1.56E+00	1.19E+00				1.66E-01	J			4.12E-01				2.58E+00		YES	YES
Barium	mg/L	1.27E-01	1.10E-01	1.69E-01	J	YES	YES	4.41E-02	J			5.73E-02	J			1.87E-02	J		
Calcium	mg/L	5.65E+01	NA	1.63E+00	J			6.75E-01	J			2.75E-01	J			4.16E-01	J		
Chromium	mg/L	NA	4.69E-03	1.21E-02			YES	4.90E-03	J		YES	5.10E-03	J		YES	5.10E-03	B		YES
Cobalt	mg/L	2.34E-02	9.39E-02	ND				ND				ND				ND			
Copper	mg/L	2.55E-02	6.26E-02	4.20E-03	J			3.80E-03	J			ND				6.40E-03	J		
Iron	mg/L	7.04E+00	4.69E-01	1.03E+01		YES	YES	4.35E-01				5.50E-01			YES	2.05E+00			YES
Lead	mg/L	8.00E-03	1.50E-02	ND				8.40E-03		YES		ND				ND			
Magnesium	mg/L	2.13E+01	NA	9.56E-01	J			3.30E-01	J			2.93E-01	J			1.05E+00	J		
Manganese	mg/L	5.81E-01	7.35E-02	1.63E+00	J	YES	YES	2.03E-01	J		YES	1.21E-01	J		YES	1.25E-01	J		YES
Nickel	mg/L	NA	3.13E-02	2.42E-02	J			ND				ND				ND			
Potassium	mg/L	7.20E+00	NA	3.10E+00	B			1.54E+00	B			1.37E+00	B			5.10E+00	B		
Sodium	mg/L	1.48E+01	NA	1.18E+00	J			9.52E-01	J			8.86E-01	J			6.31E-01	J		
Thallium	mg/L	1.46E-03	1.02E-04	4.30E-03	B	YES	YES	5.30E-03	B	YES	YES	5.10E-03	B	YES	YES	5.30E-03	B	YES	YES
Vanadium	mg/L	1.70E-02	1.10E-02	ND				ND				ND				8.40E-03	B		
VOLATILE ORGANIC COMPOUNDS																			
1,2-Dimethylbenzene	mg/L	NA	2.80E+00	2.00E-04	J			ND				ND				ND			
Acetone	mg/L	NA	1.56E-01	9.30E-02	J			ND				ND				2.60E-03	J		
Benzene	mg/L	NA	1.41E-03	2.10E-04	J			ND				ND				ND			
Chloroform	mg/L	NA	1.15E-03	ND				2.40E-04	B			ND				ND			
Chloromethane	mg/L	NA	3.93E-03	ND				ND				ND				2.90E-04	B		
Ethylbenzene	mg/L	NA	1.40E-01	4.40E-04	J			ND				ND				ND			
Methylene chloride	mg/L	NA	7.85E-03	ND				ND				ND				ND			
Toluene	mg/L	NA	2.59E-01	1.10E-02				ND				ND				ND			
m,p-Xylenes	mg/L	NA	2.80E+00	1.60E-03				ND				ND				ND			
SEMIVOLATILE ORGANIC COMPOUNDS																			
Bis(2-Ethylhexyl)phthalate	mg/L	NA	4.31E-03	1.10E-03	J			ND				ND				ND			
Phenol	mg/L	NA	9.31E-01	1.10E-03	B			ND				ND				1.00E-03	B		

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

[b] Residential human health site-specific screening level (SSSL) as given in IT, 2000, *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama*, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit.

J - Compound was positively identified; reported value is an estimated concentration.

mg/L - Milligrams per liter.
NA - Not available.
ND - Not detected.
Qual - Data validation qualifier.

Table 5-4

Surface Water Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-SW/SD01					FTA-82-SW/SD02					FTA-82-SW/SD03				
Sample Number					FX2001					FX2002					FX2003				
Sample Date					28-Jan-99					27-Jan-99					28-Jan-99				
Parameter	Units	BKG[a]	SSSL[b]	ESV[c]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/L	5.26E+00	1.53E+01	8.70E-02	5.16E+00				YES	5.22E+00				YES	2.72E+00				YES
Arsenic	mg/L	2.17E-03	7.30E-04	1.90E-01	ND					3.60E-03	J	YES	YES		ND				
Barium	mg/L	7.54E-02	1.10E+00	3.90E-03	6.48E-02	J			YES	6.34E-02	J			YES	2.71E-02	J			YES
Beryllium	mg/L	3.90E-04	1.75E-02	5.30E-04	6.10E-04	B	YES		YES	5.70E-04	B	YES		YES	ND				
Calcium	mg/L	2.52E+01	NA	1.16E+02	1.02E+01					8.24E+00					2.57E+00	J			
Chromium	mg/L	1.11E-02	4.08E-02	1.10E-02	5.70E-03	J				6.90E-03	J				ND				
Iron	mg/L	1.96E+01	4.70E+00	1.00E+00	5.22E+00			YES	YES	6.14E+00			YES	YES	1.43E+00				YES
Lead	mg/L	8.67E-03	1.50E-02	1.32E-03	ND					1.90E-03	J			YES	ND				
Magnesium	mg/L	1.10E+01	NA	8.20E+01	3.82E+00	J				3.17E+00	J				1.24E+00	J			
Manganese	mg/L	5.65E-01	6.40E-01	8.00E-02	7.82E-02					9.26E-02				YES	1.66E-02				
Potassium	mg/L	2.56E+00	NA	5.30E+01	3.48E+00	J	YES			3.55E+00	J	YES			2.79E+00	J	YES		
Sodium	mg/L	3.44E+00	NA	6.80E+02	1.17E+00	B				9.09E-01	B				5.14E-01	B			
Thallium	mg/L	2.49E-03	1.02E-03	4.00E-03	4.10E-03	B	YES	YES	YES	6.80E-03	B	YES	YES	YES	ND				
Vanadium	mg/L	1.52E-02	7.90E-02	1.90E-02	1.06E-02	J				1.30E-02	J				ND				
Zinc	mg/L	4.04E-02	4.65E+00	5.89E-02	1.35E-02	J				1.65E-02	J				ND				
VOLATILE ORGANIC COMPOUNDS																			
Acetone	mg/L	NA	1.57E+00	7.80E+01	1.30E-03	J				1.70E-03	J				1.30E-03	J			

Table 5-4

Surface Water Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-SW/SD04					FTA-82-SW/SD06				
Sample Number					FX2004					FX2006				
Sample Date					28-Jan-99					28-Jan-99				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS														
Aluminum	mg/L	5.26E+00	1.53E+01	8.70E-02	6.34E+00		YES		YES	3.49E-01				YES
Arsenic	mg/L	2.17E-03	7.30E-04	1.90E-01	ND					ND				
Barium	mg/L	7.54E-02	1.10E+00	3.90E-03	2.37E-02	J			YES	1.90E-02	J			YES
Beryllium	mg/L	3.90E-04	1.75E-02	5.30E-04	ND					ND				
Calcium	mg/L	2.52E+01	NA	1.16E+02	1.78E+00	J				1.31E+00	J			
Chromium	mg/L	1.11E-02	4.08E-02	1.10E-02	5.80E-03	J				ND				
Iron	mg/L	1.96E+01	4.70E+00	1.00E+00	3.76E+00				YES	4.45E-01				
Lead	mg/L	8.67E-03	1.50E-02	1.32E-03	ND					ND				
Magnesium	mg/L	1.10E+01	NA	8.20E+01	9.30E-01	J				6.48E-01	J			
Manganese	mg/L	5.65E-01	6.40E-01	8.00E-02	2.12E-02					2.24E-02				
Potassium	mg/L	2.56E+00	NA	5.30E+01	2.24E+00	J				4.39E+00	J	YES		
Sodium	mg/L	3.44E+00	NA	6.80E+02	5.83E-01	B				7.46E-01	B			
Thallium	mg/L	2.49E-03	1.02E-03	4.00E-03	4.60E-03	B	YES	YES	YES	ND				
Vanadium	mg/L	1.52E-02	7.90E-02	1.90E-02	8.00E-03	J				ND				
Zinc	mg/L	4.04E-02	4.65E+00	5.89E-02	ND					ND				
VOLATILE ORGANIC COMPOUNDS														
Acetone	mg/L	NA	1.57E+00	7.80E+01	1.50E-03	J				2.50E-03	J			

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

[b] Recreational site user site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT, 2000, *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit.

J - Compound was positively identified; reported value is an estimated concentration.

mg/L - Milligrams per liter.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-5

Sediment Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-SW/SD01					FTA-82-SW/SD02					FTA-82-SW/SD03				
Sample Number					FX1001					FX1004					FX1005				
Sample Date					28-Jan-99					28-Jan-99					28-Jan-99				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																			
Aluminum	mg/kg	8.59E+03	1.15E+06	NA	1.24E+04		YES			6.03E+03					2.21E+03				
Arsenic	mg/kg	1.13E+01	5.58E+01	7.24E+00	4.20E+00					4.70E+00					2.80E+00				
Barium	mg/kg	9.89E+01	8.36E+04	NA	1.08E+02		YES			1.15E+02		YES			5.33E+01				
Beryllium	mg/kg	9.70E-01	1.50E+02	NA	1.00E+00		YES			6.80E-01					3.70E-01	J			
Calcium	mg/kg	1.11E+03	NA	NA	6.62E+02	J				2.39E+03		YES			1.09E+02	J			
Chromium	mg/kg	3.12E+01	2.79E+03	5.23E+01	2.16E+01					1.18E+01					4.30E+00				
Cobalt	mg/kg	1.10E+01	6.72E+04	5.00E+01	5.70E+00	J				5.00E+00	J				3.10E+00	J			
Copper	mg/kg	1.71E+01	4.74E+04	1.87E+01	4.06E+01		YES		YES	1.00E+01					5.20E+00				
Iron	mg/kg	3.53E+04	3.59E+05	NA	3.02E+04					1.94E+04					1.01E+04				
Lead	mg/kg	3.78E+01	4.00E+02	3.02E+01	1.20E+01					1.31E+01					1.13E+01				
Magnesium	mg/kg	9.06E+02	NA	NA	1.71E+03		YES			1.41E+03		YES			9.40E+01	J			
Manganese	mg/kg	7.12E+02	4.38E+04	NA	1.97E+02					4.93E+02					1.49E+02				
Mercury	mg/kg	1.10E-01	2.99E+02	1.30E-01	2.70E-02	J				3.10E-02	J				1.40E-02	J			
Nickel	mg/kg	1.30E+01	1.76E+04	1.59E+01	1.32E+01		YES			7.50E+00					3.20E+00	J			
Potassium	mg/kg	1.01E+03	NA	NA	2.29E+03		YES			5.36E+02	J				5.20E+02	J			
Selenium	mg/kg	7.20E-01	5.96E+03	NA	1.40E+00		YES			9.60E-01		YES			ND				
Sodium	mg/kg	6.92E+02	NA	NA	6.79E+01	B				5.63E+01	B				4.02E+01	B			
Vanadium	mg/kg	4.09E+01	4.83E+03	NA	3.34E+01					2.22E+01					9.10E+00				
Zinc	mg/kg	5.27E+01	3.44E+05	1.24E+02	3.54E+01					2.52E+01					7.70E+00				
VOLATILE ORGANIC COMPOUNDS																			
Acetone	mg/kg	NA	1.03E+05	4.53E-01	1.40E-02	B				ND					1.30E-02	B			
Methylene chloride	mg/kg	NA	9.84E+03	1.26E+00	7.40E-03	B				5.10E-03	B				5.20E-03	B			
Trichlorofluoromethane	mg/kg	NA	3.06E+05	3.07E-03	6.90E-03	J			YES	ND					4.40E-03	J			YES
SEMIVOLATILE ORGANIC COMPOUNDS																			
Anthracene	mg/kg	NA	2.99E+05	3.30E-01	ND					8.10E-02	J				ND				
Benzo(a)anthracene	mg/kg	NA	8.93E+01	3.30E-01	ND					4.90E-01				YES	ND				
Benzo(a)pyrene	mg/kg	NA	8.93E+00	3.30E-01	ND					4.90E-01				YES	ND				
Benzo(b)fluoranthene	mg/kg	NA	8.93E+01	6.55E-01	ND					3.90E-01	J				ND				
Benzo(ghi)perylene	mg/kg	NA	2.79E+04	6.55E-01	ND					3.10E-01	J				ND				
Benzo(k)fluoranthene	mg/kg	NA	8.93E+02	6.55E-01	ND					5.10E-01					ND				
Carbazole	mg/kg	NA	3.26E+03	NA	ND					7.00E-02	J				ND				
Chrysene	mg/kg	NA	9.79E+03	3.30E-01	ND					6.00E-01				YES	ND				
Di-n-butyl phthalate	mg/kg	NA	1.14E+05	1.11E-01	ND					4.60E-02	B				5.10E-02	B			
Dibenz(a,h)anthracene	mg/kg	NA	9.79E+00	3.30E-01	ND					1.10E-01	J				ND				
Fluoranthene	mg/kg	NA	3.73E+04	3.30E-01	ND					1.40E+00				YES	ND				
Indeno(1,2,3-cd)pyrene	mg/kg	NA	8.93E+01	6.55E-01	ND					2.60E-01	J				ND				
Phenanthrene	mg/kg	NA	2.79E+05	3.30E-01	ND					6.10E-01				YES	ND				
Pyrene	mg/kg	NA	3.06E+04	3.30E-01	ND					1.20E+00				YES	ND				

Table 5-5

Sediment Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-SW/SD01					FTA-82-SW/SD02					FTA-82-SW/SD03				
Sample Number					FX1001					FX1004					FX1005				
Sample Date					28-Jan-99					28-Jan-99					28-Jan-99				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES																			
4,4'-DDD	mg/kg	NA	2.35E+02	3.30E-03	ND					1.00E-03	J				ND				
4,4'-DDE	mg/kg	NA	1.66E+02	3.30E-03	ND					5.40E-03	J			YES	ND				
4,4'-DDT	mg/kg	NA	1.66E+02	3.30E-03	ND					3.60E-03	J			YES	ND				
TOTAL ORGANIC CARBON																			
Total Organic Carbon	mg/kg	NA	NA	NA	2.38E+03					2.85E+03					3.11E+03				

Table 5-5

Sediment Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-SW/SD04					FTA-82-SW/SD06				
Sample Number					FX1006					FX1008				
Sample Date					28-Jan-99					28-Jan-99				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS														
Aluminum	mg/kg	8.59E+03	1.15E+06	NA	3.66E+03					6.27E+03				
Arsenic	mg/kg	1.13E+01	5.58E+01	7.24E+00	2.60E+00					5.30E+00				
Barium	mg/kg	9.89E+01	8.36E+04	NA	2.80E+01					7.58E+01				
Beryllium	mg/kg	9.70E-01	1.50E+02	NA	4.00E-01	J				6.90E-01				
Calcium	mg/kg	1.11E+03	NA	NA	1.49E+02	J				4.35E+02	J			
Chromium	mg/kg	3.12E+01	2.79E+03	5.23E+01	1.07E+01					1.02E+01				
Cobalt	mg/kg	1.10E+01	6.72E+04	5.00E+01	1.50E+00	J				3.00E+00	J			
Copper	mg/kg	1.71E+01	4.74E+04	1.87E+01	4.30E+00					9.60E+00				
Iron	mg/kg	3.53E+04	3.59E+05	NA	1.26E+04					2.29E+04				
Lead	mg/kg	3.78E+01	4.00E+02	3.02E+01	4.90E+00					1.23E+01				
Magnesium	mg/kg	9.06E+02	NA	NA	1.47E+02	J				3.57E+02	J			
Manganese	mg/kg	7.12E+02	4.38E+04	NA	4.33E+01					3.03E+02				
Mercury	mg/kg	1.10E-01	2.99E+02	1.30E-01	1.40E-02	J				2.90E-02	J			
Nickel	mg/kg	1.30E+01	1.76E+04	1.59E+01	3.70E+00	J				8.60E+00				
Potassium	mg/kg	1.01E+03	NA	NA	4.18E+02	J				6.34E+02	J			
Selenium	mg/kg	7.20E-01	5.96E+03	NA	ND					1.10E+00		YES		
Sodium	mg/kg	6.92E+02	NA	NA	4.85E+01	B				7.10E+01	B			
Vanadium	mg/kg	4.09E+01	4.83E+03	NA	1.53E+01					2.34E+01				
Zinc	mg/kg	5.27E+01	3.44E+05	1.24E+02	7.00E+00					2.36E+01				
VOLATILE ORGANIC COMPOUNDS														
Acetone	mg/kg	NA	1.03E+05	4.53E-01	2.10E-02	B				9.10E-03	B			
Methylene chloride	mg/kg	NA	9.84E+03	1.26E+00	5.00E-03	B				6.20E-03	B			
Trichlorofluoromethane	mg/kg	NA	3.06E+05	3.07E-03	3.90E-03	J			YES	4.20E-03	J			YES
SEMIVOLATILE ORGANIC COMPOUNDS														
Anthracene	mg/kg	NA	2.99E+05	3.30E-01	ND					ND				
Benzo(a)anthracene	mg/kg	NA	8.93E+01	3.30E-01	ND					ND				
Benzo(a)pyrene	mg/kg	NA	8.93E+00	3.30E-01	ND					ND				
Benzo(b)fluoranthene	mg/kg	NA	8.93E+01	6.55E-01	ND					ND				
Benzo(ghi)perylene	mg/kg	NA	2.79E+04	6.55E-01	ND					ND				
Benzo(k)fluoranthene	mg/kg	NA	8.93E+02	6.55E-01	ND					ND				
Carbazole	mg/kg	NA	3.26E+03	NA	ND					ND				
Chrysene	mg/kg	NA	9.79E+03	3.30E-01	ND					ND				
Di-n-butyl phthalate	mg/kg	NA	1.14E+05	1.11E-01	4.70E-02	B				ND				
Dibenz(a,h)anthracene	mg/kg	NA	9.79E+00	3.30E-01	ND					ND				
Fluoranthene	mg/kg	NA	3.73E+04	3.30E-01	ND					ND				
Indeno(1,2,3-cd)pyrene	mg/kg	NA	8.93E+01	6.55E-01	ND					ND				
Phenanthrene	mg/kg	NA	2.79E+05	3.30E-01	ND					ND				
Pyrene	mg/kg	NA	3.06E+04	3.30E-01	ND					ND				

Table 5-5

Sediment Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location					FTA-82-SW/SD04					FTA-82-SW/SD06				
Sample Number					FX1006					FX1008				
Sample Date					28-Jan-99					28-Jan-99				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
PESTICIDES														
4,4'-DDD	mg/kg	NA	2.35E+02	3.30E-03	ND					ND				
4,4'-DDE	mg/kg	NA	1.66E+02	3.30E-03	ND					ND				
4,4'-DDT	mg/kg	NA	1.66E+02	3.30E-03	ND					ND				
TOTAL ORGANIC CARBON														
Total Organic Carbon	mg/kg	NA	NA	NA	2.71E+03					8.19E+03				

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama* , July.

[b] Recreational site user site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT, 2000, *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July.*

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit.

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-6

Fill Material Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location			FA-82-SB02			FA-82-SB03		
Sample Number			DD0025			DD0026		
Sample Date			31-Mar-00			31-Mar-00		
Sample Depth (Feet)			2 - 3			6 - 7.5		
Parameter	**Units**	**BKG[a]**	**Result**	**Qual**	**>BKG**	**Result**	**Qual**	**>BKG**
METALS								
Aluminum	mg/kg	1.36E+04	5.11E+03			6.48E+03		
Arsenic	mg/kg	1.83E+01	4.90E+00			7.50E+00		
Barium	mg/kg	2.34E+02	8.00E+01			2.32E+02		
Beryllium	mg/kg	8.60E-01	7.70E-01			1.80E+00		YES
Calcium	mg/kg	6.37E+02	2.37E+04		YES	1.07E+04		YES
Chromium	mg/kg	3.83E+01	1.15E+01			5.75E+01		YES
Cobalt	mg/kg	1.75E+01	3.50E+00	J		7.20E+00		
Copper	mg/kg	1.94E+01	1.01E+01			1.89E+01		
Iron	mg/kg	4.48E+04	1.78E+04			2.49E+04		
Lead	mg/kg	3.85E+01	1.07E+01			5.32E+01		YES
Magnesium	mg/kg	7.66E+02	1.69E+03		YES	2.23E+03		YES
Manganese	mg/kg	1.36E+03	2.58E+02			6.40E+02		
Mercury	mg/kg	7.00E-02	2.60E-02	J		7.40E-02		YES
Nickel	mg/kg	1.29E+01	1.09E+01			3.90E+01		YES
Potassium	mg/kg	7.11E+02	5.42E+02	J		6.22E+02		
Thallium	mg/kg	1.40E+00	7.90E-01	J		1.00E+00	J	
Vanadium	mg/kg	6.49E+01	1.83E+01			2.91E+01		
Zinc	mg/kg	3.49E+01	3.58E+01		YES	9.05E+01		YES
VOLATILE ORGANIC COMPOUNDS								
Acetone	mg/kg	NA	4.20E-02	J		1.60E-02	J	
Carbon disulfide	mg/kg	NA	1.00E-03	J		1.00E-03	J	
Methylene chloride	mg/kg	NA	2.90E-03	B		2.50E-03	B	
p-Cymene	mg/kg	NA	ND			2.50E-03	J	

Table 5-6

Fill Material Analytical Results
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location			FA-82-SB02			FA-82-SB03		
Sample Number			DD0025			DD0026		
Sample Date			31-Mar-00			31-Mar-00		
Sample Depth (Feet)			2 - 3			6 - 7.5		
Parameter	Units	BKG[a]	Result	Qual	>BKG	Result	Qual	>BKG
SEMIVOLATILE ORGANIC COMPOUNDS								
Acenaphthene	mg/kg	NA	ND			4.60E-02	J	
Acenaphthylene	mg/kg	NA	ND			7.30E-02	J	
Anthracene	mg/kg	NA	ND			1.60E-01	J	
Benzo(a)anthracene	mg/kg	NA	ND			5.10E-01		
Benzo(a)pyrene	mg/kg	NA	ND			5.10E-01		
Benzo(b)fluoranthene	mg/kg	NA	3.40E-02	J		5.60E-01		
Benzo(ghi)perylene	mg/kg	NA	ND			3.70E-01	J	
Benzo(k)fluoranthene	mg/kg	NA	ND			4.60E-01		
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	1.20E-01	B		1.30E-01	B	
Carbazole	mg/kg	NA	ND			9.70E-02	J	
Chrysene	mg/kg	NA	ND			5.30E-01		
Dibenz(a,h)anthracene	mg/kg	NA	ND			1.20E-01	J	
Fluoranthene	mg/kg	NA	6.60E-02	J		1.00E+00		
Fluorene	mg/kg	NA	ND			5.80E-02	J	
Indeno(1,2,3-cd)pyrene	mg/kg	NA	ND			3.40E-01	J	
Phenanthrene	mg/kg	NA	4.00E-02	J		5.90E-01		
Pyrene	mg/kg	NA	5.80E-02	J		1.10E+00		
PESTICIDES								
4,4'-DDD	mg/kg	NA	1.10E-03	J		2.60E-02		
4,4'-DDE	mg/kg	NA	ND			5.10E-02		
4,4'-DDT	mg/kg	NA	2.20E-03			ND		
Chlordane	mg/kg	NA	ND			4.60E-01		
Endrin	mg/kg	NA	ND			4.10E-03	J	

Analyses performed using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods.

[a] BKG - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in SAIC, 1998, *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit.

J - Compound was positively identified; reported value is an estimated concentration.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

- Manganese (3,000 mg/kg) exceeded its SSSL (363 mg/kg) and background (1,579 mg/kg) at sample location FTA-82-MW08.

The concentrations of 14 metals exceeded ESVs. Of these, the following metals also exceeded their respective background concentrations in one or more samples:

- Aluminum (17,600 mg/kg) exceeded its ESV (50 mg/kg) and background (16,306 mg/kg) at sample location FTA-82-MW02.

- Barium (220 and 263 mg/kg) exceeded its ESV (165 mg/kg) and background (124 mg/kg) at two sample locations (FTA-82-DEP04 and FTA-82-MW08).

- Beryllium (1.4 to 2.9 mg/kg) exceeded its ESV (1.1 mg/kg) and background (0.8 mg/kg) at three sample locations (FTA-82-DEP03, FTA-82-DEP05, and FTA-82-MW08).

- Cobalt (27.3 and 31.9 mg/kg) exceeded its ESV (20 mg/kg) and background (15.2 mg/kg) at two sample locations (FTA-82-MW01 and FTA-82-MW08).

- Copper (44.1 mg/kg) exceeded its ESV (40 mg/kg) and background (12.7 mg/kg) at sample location FTA-82-DEP01.

- Iron (34,300 and 39,100 mg/kg) exceeded its ESV (200 mg/kg) and background (34,154 mg/kg) at two sample locations (FTA-82-DEP04 and FTA-82-DEP06).

- Manganese (3,000 mg/kg) exceeded its ESV (100 mg/kg) and background (1,579 mg/kg) at sample location FTA-82-MW08.

- Mercury (0.21 mg/kg) exceeded its ESV (0.1 mg/kg) and background (0.08 mg/kg) at sample location FTA-82-MW02.

- Nickel (37.6 mg/kg) exceeded its ESV (30 mg/kg) and background (10.3 mg/kg) at sample location FTA-82-DEP05.

- Selenium (1.4 mg/kg) exceeded its ESV (0.81 mg/kg) and background (0.48 mg/kg) at sample location FTA-82-DEP06.

- Zinc (60.9 and 128 mg/kg) exceeded its ESV (50 mg/kg) and background (40.6 mg/kg) at sample locations FTA-82-DEP03 and FTA-82-DEP05.

Volatile Organic Compounds. A total of eight VOCs were detected in the surface and depositional soil samples: 2-butanone, acetone, bromomethane, cumene, methylene chloride, toluene, trichloroethene, and trichlorofluoromethane. The methylene chloride results,

trichloroethene results, trichlorofluoromethane results, two 2-butanone results, and two acetone results were flagged with a "B" data qualifier, indicating that these compounds were also detected in an associated laboratory or field blank sample. The remaining VOC results were flagged with a "J" data qualifier, indicating that the concentrations were estimated. VOC concentrations in surface and depositional soils ranged from 0.0014 to 0.54 mg/kg.

The VOC concentrations were below SSSLs and ESVs except for trichloroethene (0.0051 and 0.0066 mg/kg), which exceeded its ESV (0.001 mg/kg) at two sample locations (FTA-82-MW04 and FTA-82-MW05). However, both results were "B" flagged and are attributed to laboratory contamination.

Semivolatile Organic Compounds. A total of four SVOCs, including two PAH compounds, were detected in the surface and depositional soil samples: benzo(a)pyrene, benzo(g,h,i)perylene, bis(2-ethylhexyl)phthalate, and phenol. The bis(2-ethylhexyl)phthalate results were flagged with a "B" data qualifier, indicating that this compound was also detected in an associated laboratory or field blank sample. The remaining SVOC results were flagged with a "J" data qualifier, indicating that the concentrations were estimated. SVOC concentrations in surface and depositional soils ranged from 0.04 to 0.1 mg/kg and were all below SSSLs and ESVs.

Pesticides. A total of four pesticides (4,4'-dichlorodiphenyldichloroethene [DDE], 4,4'-dichlorodiphenyltrichloroethane [DDT], delta-hexachlorocyclohexane [BHC], and heptachlor) were detected in three of the surface and depositional soil samples (locations FTA-82-DEP02, FTA-82-MW03, and FTA-82-MW06). All but one of the results were flagged with a "J" data qualifier, indicating that the concentrations were estimated. Pesticide concentrations in surface and depositional soils ranged from 0.00081 to 0.0025 mg/kg and were below SSSLs and ESVs except for 4,4'-DDE (0.0025 mg/kg), which equaled its ESV at sample location FTA-82-DEP02.

Herbicides. Herbicides were not detected in the surface and depositional soil samples.

5.2 Subsurface Soil Analytical Results

Eight subsurface soil samples were collected for chemical analysis at the Stump Dump, Parcel 82(7). Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs and metals background concentrations, as presented in Table 5-2.

Metals. A total of 22 metals were detected in the subsurface soil samples. The concentrations of seven metals (aluminum, arsenic, barium, chromium, iron, manganese, and thallium) exceeded SSSLs. Of these, the following metals also exceeded their respective background values at one sample location each:

- Aluminum (13,700 mg/kg) exceeded its SSSL (7,803 mg/kg) and background (13,591 mg/kg) at sample location FTA-82-MW08.
- Barium (672 mg/kg) exceeded its SSSL (547 mg/kg) and background (234 mg/kg) at sample location FTA-82-MW05.
- Chromium (40.9 mg/kg) exceeded its SSSL (23.2 mg/kg) and background (38.3 mg/kg) at sample location FTA-82-MW06.
- Iron (48,800 mg/kg) exceeded its SSSL (2,345 mg/kg) and background (44,817 mg/kg) at sample location FTA-82-MW02.
- Manganese (2,790 mg/kg) exceeded its SSSL (363 mg/kg) and background (1,355 mg/kg) at sample location FTA-82-MW05.

Volatile Organic Compounds. A total of eight VOCs were detected in the subsurface soil samples: 2-butanone, acetone, bromomethane, ethylbenzene, methylene chloride, n-propylbenzene, trichloroethene, and trichlorofluoromethane. All results except one (ethylbenzene) were flagged with a "B" data qualifier, indicating that these compounds were also detected in an associated laboratory or field blank sample, or a "J" data qualifier, indicating that the concentrations were estimated. All VOC concentrations in subsurface soils were below SSSLs.

Semivolatile Organic Compounds. A total of 13 SVOCs, including 11 PAH compounds, were detected in the subsurface soil samples. The majority of the SVOC results were "J" flagged, indicating that the concentrations were estimated, or "B" flagged, indicating the compounds were also detected in an associated laboratory or field blank sample. The SVOC results were below SSSLs except for benzo(a)pyrene (0.18 mg/kg), which exceeded its SSSL (0.085 mg/kg) at one sample location (FTA-82-MW03).

Pesticides. Pesticides were not detected in the subsurface soil samples.

Herbicides. Herbicides were not detected in the subsurface soil samples.

5.3 Groundwater Analytical Results

Eight groundwater samples were collected at the Stump Dump, Parcel 82(7), at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs and metals background concentrations, as presented in Table 5-3.

Metals. A total of 15 metals were detected in the groundwater samples. The potassium results, thallium results, vanadium results, and four of the chromium results were flagged with a "B" data qualifier, indicating that these metals were also detected in an associated laboratory or field blank sample. The majority of the remaining results were "J" flagged, indicating that the concentrations were estimated. The concentrations of six metals (aluminum, barium, chromium, iron, manganese, and thallium) exceeded SSSLs in one or more samples. Of these, the following metals also exceeded their respective background concentrations (note: a background value was not available for chromium):

- Aluminum (2.58 milligrams per liter [mg/L]) exceeded its SSSL (1.56 mg/L) and background (2.34 mg/L) at sample location FTA-82-MW08.
- Barium (0.169 mg/L) exceeded its SSSL (0.11 mg/L) and background (0.127 mg/L) at sample location FTA-82-MW05.
- Iron (10.3 mg/L) exceeded its SSSL (0.47 mg/L) and background (7.04 mg/L) at sample location FTA-82-MW05.
- Manganese (1.83 and 1.63 mg/L) exceeded its SSSL (0.074 mg/L) and background (0.58 mg/L) at two sample locations (FTA-82-MW03 and FTA-82-MW05).
- Thallium (0.0043 to 0.0053 mg/L) exceeded its SSSL (0.0001 mg/L) and background (0.0015 mg/L) at all sample locations. All of the thallium results were "B" flagged.

Volatile Organic Compounds. A total of nine VOCs were detected in the groundwater samples: 1,2-dimethylbenzene, acetone, benzene, chloroform, chloromethane, ethylbenzene, xylenes, methylene chloride, and toluene. The chloroform results, methylene chloride result, and two of the chloromethane results were flagged with a "B" data qualifier, indicating that these compounds were also detected in an associated laboratory or field blank sample. All but one of the remaining VOC results were flagged with a "J" data qualifier, indicating that the concentrations were estimated. VOC concentrations in groundwater ranged from 0.00019 to 0.093 mg/L and were all below SSSLs.

Semivolatile Organic Compounds. A total of two SVOCs (bis[2-ethylhexyl]phthalate and phenol) were detected in the groundwater samples. All of the phenol results were flagged with a "B" data qualifier, indicating that the compound was also detected in an associated laboratory or field blank sample. SVOC concentrations in groundwater ranged from 0.001 to 0.0011 mg/L and were all below SSSLs.

Pesticides. Pesticides were not detected in the groundwater samples.

Herbicides. Herbicides were not detected in the groundwater samples.

5.4 Surface Water Analytical Results

Five surface water samples were collected for chemical analysis at the Stump Dump, Parcel 82(7), at the locations shown on Figure 3-1. Analytical results were compared to recreational site user human health SSSLs, ESVs, and metals background concentrations, as presented in Table 5-4. It should be noted that the assumptions for recreational site user and residential exposure to surface water are identical.

Metals. A total of 15 metals were detected in the surface water samples. The beryllium, sodium, and thallium results were flagged with a "B" data qualifier, indicating that these metals were also detected in an associated laboratory or field blank sample. The concentrations of three metals (arsenic, iron, and thallium) exceeded their respective SSSLs. Of these, arsenic and thallium also exceeded their respective background concentrations:

- Arsenic (0.0036 mg/L) exceeded its SSSL (0.00073 mg/L) and background (0.0022 mg/L) at sample location FTA-82-SW/SD02.

- Thallium (0.0041 to 0.0068 mg/L) exceeded its SSSL (0.001 mg/L) and background (0.0025 mg/L) at three sample locations (FTA-82-SW/SD01, FTA-82-SW/SD02, and FTA-82-SW/SD04). All of the thallium results were "B" flagged.

The concentrations of seven metals (aluminum, barium, beryllium, iron, lead, manganese, and thallium) exceeded their respective ESVs in one or more samples. Of these, the following metals also exceeded their respective background concentrations:

- Aluminum (6.34 mg/L) exceeded its ESV (0.087 mg/L) and background (5.26 mg/L) at sample location FTA-82-SW/SD04.

- Beryllium (0.00061 and 0.00057 mg/L) exceeded its ESV (0.00053 mg/L) and background (0.00039 mg/L) at two sample locations (FTA-82-SW/SD01 and FTA-82-SW/SD02). Both of the beryllium results were "B" flagged.

- Thallium (0.0041 to 0.0068 mg/L) exceeded its ESV (0.004 mg/L) and background (0.0025 mg/L) at three sample locations (FTA-82-SW/SD01, FTA-82-SW/SD02, and FTA-82-SW/SD04). All of the thallium results were "B" flagged.

Volatile Organic Compounds. Acetone was the only detected VOC in the surface water samples. The acetone results, all of which were "J" flagged, were below its SSSL and ESV.

Semivolatile Organic Compounds. SVOCs were not detected in the surface water samples.

Pesticides. Pesticides were not detected in the surface water samples.

Herbicides. Herbicides were not detected in the surface water samples.

5.5 Sediment Analytical Results

Five sediment samples were collected for chemical and physical analyses at the Stump Dump, Parcel 82(7), at the locations shown on Figure 3-1. Analytical results were compared to recreational site user human health SSSLs, ESVs, and metals background concentrations, as presented in Table 5-5. It should be noted that the assumptions for recreational site user and residential exposure to sediment are identical.

Metals. A total of 19 metals were detected in the sediment samples at concentrations below SSSLs. Only copper (40.6 mg/kg) exceeded its ESV (18.7 mg/kg) at one sample location (FTA-82-SW/SD01). The copper result also exceeded its background concentration (17.1 mg/kg).

Volatile Organic Compounds. A total of three VOCs (acetone, methylene chloride, and trichlorofluoromethane) were detected in the sediment samples. The acetone and methylene chloride results were flagged with a "B" data qualifier, indicating that these compounds were also detected in an associated laboratory or field blank sample. The trichlorofluoromethane results were flagged with a "J" data qualifier, indicating that the compound was detected at estimated concentrations. The VOC concentrations ranged from 0.0039 to 0.021 mg/kg and were all below SSSLs and ESVs except for trichlorofluoromethane, whose concentrations (0.0039 to 0.0069) mg/kg exceeded its ESV (0.0031 mg/kg) in four samples.

Semivolatile Organic Compounds. A total of 14 SVOCs, including 12 PAH compounds, were detected in three of the sediment samples. Twelve of the 14 detected SVOCs were present in the sample collected at FTA-82-SW/SD02. Di-n-butyl phthalate was the only detected SVOC at the other two locations (FTA-82-SW/SD03 and FTA-82-SW/SD04). The di-n-butyl phthalate results were flagged with a "B" data qualifier, indicating that the compound was also detected in an associated laboratory or field blank sample. SVOC concentrations ranged from 0.046 to 1.4 mg/kg and were all below SSSLs. The concentrations of six PAHs (benzo[a]anthracene, benzo[a]pyrene, chrysene, phenanthrene, pyrene, and fluoranthene), 0.49 to 1.4 mg/kg, exceeded their ESVs (0.33 mg/kg for each compound) at sample location FTA-82-SW/SD02.

Pesticides. Three pesticides (4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) were detected in one of the sediment samples (location FTA-82-SW/SD02). The pesticide results were flagged with a "J" data qualifier, indicating that the compounds were detected at estimated concentrations. The pesticide results ranged from 0.001 to 0.0054 mg/kg and were below SSSLs. The 4,4'-DDE and 4,4'-DDT results (0.0054 and 0.0036 mg/kg, respectively), however, marginally exceeded their ESVs (0.0033 mg/kg for each compound).

Herbicides. Herbicides were not detected in the sediment samples.

Total Organic Carbon. The sediment samples were analyzed for TOC content. TOC concentrations ranged from 2,380 mg/kg to 8,190 mg/kg, as summarized in Appendix G.

Grain Size. The results of grain size analysis for the sediment samples are included in Appendix G.

5.6 Fill Material Analytical Results

Two fill material soil samples were collected for chemical analysis at the Stump Dump (IT, 2002). Fill material samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 3-1. The analytical results were compared to background screening values, where available, as presented in Table 5-6.

Metals. Eighteen metals were detected in the fill material samples. The concentrations of eight metals (beryllium, calcium, chromium, lead, magnesium, mercury, nickel, and zinc) exceeded their respective background values in one or both samples.

Volatile Organic Compounds. A total of four VOCs (acetone, carbon disulfide, methylene chloride, and p-cymene) were detected in the fill material samples. VOC concentrations in the samples ranged from 0.001 to 0.042 mg/kg.

Semivolatile Organic Compounds. A total of 17 SVOCs, including 15 PAH compounds, were detected in the fill material samples. SVOC concentrations in the samples ranged from 0.034 to 1.1 mg/kg.

Pesticides. A total of five pesticides (4,4'-DDD, 4,4'-DDE, 4,4'-DDT, chlordane, and endrin) were detected in the fill material samples. The pesticide concentrations ranged from 0.0011 to 0.46 mg/kg.

Herbicides. Herbicides were not detected in the fill material samples.

Explosives. Explosive compounds were not detected in the fill material samples.

PCBs. PCBs were not detected in the fill material samples.

5.7 Statistical and Geochemical Evaluations of Site Metals Data

Site metals data (excluding the fill material soil sample data) were further evaluated using statistical and geochemical methods to determine if the metals are site-related. This multi-tiered approach is described in the technical memorandum "Selecting Site-Related Chemicals for Human Health and Ecological Risk Assessments for FTMC: Revision 2" (Shaw, 2003c). The statistical and geochemical evaluations (Appendix H) determined that the metals detected in site media are present at naturally occurring levels, except for beryllium in one depositional soil sample (location FTA-82-DEP05).

6.0 Summary, Conclusions, and Recommendations

Shaw completed an SI at the Stump Dump, Parcel 82(7), at FTMC in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the site at concentrations that present an unacceptable risk to human health or the environment. SI field activities consisted of the collection and analysis of eight surface soil samples, six depositional soil samples, eight subsurface soil samples, two fill material soil samples, eight groundwater samples, five surface water samples, and five sediment samples. In addition, eight monitoring wells were installed in the residuum groundwater zone to facilitate sample collection and to provide site-specific geological and hydrogeological characterization information. A landfill gas investigation and a wetland determination were also conducted at the site.

Chemical analysis of samples collected at the site indicates that metals, VOCs, SVOCs, and pesticides were detected in site media. To evaluate whether the detected constituents pose an unacceptable risk to human health or the environment, the analytical results were compared to human health SSSLs, ESVs, and background screening values for FTMC. Additionally, site metals data were evaluated using statistical and geochemical methods to determine if the metals detected in site media were naturally occurring.

The results of the landfill gas investigation indicated that the Stump Dump is producing only trace concentrations of landfill gases. Because the fill area has been inactive for approximately 15 years and is producing insignificant emissions, further landfill gas monitoring is not warranted.

The wetland study determined that no wetlands exist within the Parcel 82(7) boundary. However, jurisdictional waters of the U.S. were identified approximately 200 feet southwest of the fill area.

Various metals (aluminum, arsenic, barium, chromium iron, manganese, and thallium) were detected in site media at concentrations exceeding SSSLs and background and, thus, were selected as chemicals of potential concern (COPC). The statistical and geochemical evaluations determined that the metals detected in site media were all naturally occurring except for beryllium in one depositional soil sample. The beryllium result, however, was below its SSSL indicating that it does not pose a threat to human health. In addition to the metals COPCs, the PAH compound benzo(a)pyrene was also identified as a COPC in subsurface soil because it was

detected in one sample at an estimated concentration exceeding its SSSL. Benzo(a)pyrene was not detected in any other soil samples, except for a below-SSSL detection in one surface soil sample. Given its limited spatial distribution in soil and the relatively small amount by which it exceeded its SSSL, it is concluded that benzo(a)pyrene does not pose a threat to human health. This conclusion is consistent with the findings of the SRA completed as part of the EE/CA.

Various metals were detected in site media at concentrations exceeding ESVs and background and, thus, were selected as COPECs. The statistical and geochemical evaluations determined that the metals detected in site media were all naturally occurring except for beryllium in one depositional soil sample. The beryllium result exceeded its ESV. In sediment, two pesticides (4,4'-DDE and 4,4'-DDT), six PAHs (benzo[a]anthracene, benzo[a]pyrene, chrysene, fluoranthene, phenanthrene, and pyrene), and one VOC (trichlorofluoromethane) were also identified as COPECs. The 4,4'-DDE and 4,4'-DDT concentrations (0.0054 and 0.0036 mg/kg) marginally exceeded their ESVs (0.0033 mg/kg for each compound) in only one sample (location FTA-82-SW/SD02). Similarly, the PAHs (0.49 to 1.4 mg/kg) exceeded their ESVs (0.33 mg/kg for each compound) in the same sample. These pesticides and PAHs were not detected in any other sediment samples. Trichlorofluoromethane was detected at estimated concentrations (0.0039 to 0.0069 mg/kg) marginally exceeding its ESV (0.0031 mg/kg) in four samples. It is worth noting that the man-made detention ponds and drainage ditches at the site do not provide habitat suitable for perennial aquatic life; the ponds and ditches are frequently dry during extended portions of the year. Based on the relatively small amounts by which these COPECs exceeded their respective ESVs, their limited distribution in site media, and the very low quality habitat present, it is concluded that the aforementioned COPECs do not pose an unacceptable threat to ecological receptors at this site. This conclusion is consistent with the findings of the SLERA completed as part of the EE/CA.

Based on the results of the SI, past operations at the Stump Dump, Parcel 82(7) have not adversely impacted the environment. The metals and chemical compounds detected in site media do not pose an unacceptable risk to human health and the environment. Therefore, additional investigation or remedial actions under CERCLA are not required at this site. However, Shaw recommends performing certain non-CERCLA actions to promote reuse of the property and minimize safety concerns. These actions will be in accordance with the proposed future land use and may include, but are not limited to, the following: notice of landfill and covenant placed in the transfer documentation for the site; installation of concrete monuments to

delineate site boundaries; and decommissioning of monitoring wells in accordance with ADEM requirements.

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ATTACHMENT 1

LIST OF ABBREVIATIONS AND ACRONYMS

List of Abbreviations and Acronyms

2,4-D	2,4-dichlorophenoxyacetic acid
2,4,5-T	2,4,5-trichlorophenoxyacetic acid
2,4,5-TP	2,4,5-trichlorophenoxypropionic acid
3D	3D International Environmental Group
AB	ambient blank
AbB3	Anniston gravelly clay loam, 2 to 6 percent slopes, severely eroded
AbC3	Anniston gravelly clay loam, 6 to 10 percent slopes, severely eroded
AbD3	Anniston and Allen gravelly clay loams, 10 to 15 percent slopes, eroded
Abs	skin absorption
ABS	dermal absorption factor
AC	hydrogen cyanide
ACAD	AutoCadd
AcB2	Anniston and Allen gravelly loams, 2 to 6 percent slopes, eroded
AcC2	Anniston and Allen gravelly loams, 6 to 10 percent slopes, eroded
AcD2	Anniston and Allen gravelly loams, 10 to 15 percent slopes, eroded
AcE2	Anniston and Allen gravelly loams, 15 to 25 percent slopes, eroded
ACGIH	American Conference of Governmental Industrial Hygienists
AdE	Anniston and Allen stony loam, 10 to 25 percent slope
ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
AEC	U.S. Army Environmental Center
AEDA	ammunition, explosives, and other dangerous articles
AEL	airborne exposure limit
AET	adverse effect threshold
AF	soil-to-skin adherence factor
AHA	ammunition holding area
AL	Alabama
ALARNG	Alabama Army National Guard
ALAD	δ-aminolevulinic acid dehydratase
ALDOT	Alabama Department of Transportation
amb.	amber
amsl	above mean sea level
ANAD	Anniston Army Depot
AOC	area of concern
AP	armor piercing
APEC	areas of potential ecological concern
APT	armor-piercing tracer
AR	analysis request
ARAR	applicable or relevant and appropriate requirement
AREE	area requiring environmental evaluation
AS/SVE	air sparging/soil vapor extraction
ASP	Ammunition Supply Point
ASR	Archives Search Report
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
AT	averaging time
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	all-terrain vehicle
AUF	area use factor
AWARE	Associated Water and Air Resources Engineers, Inc.
AWQC	ambient water quality criteria
AWWSB	Anniston Water Works and Sewer Board
'B'	Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero)
BCF	blank correction factor; bioconcentration factor
BCT	BRAC Cleanup Team
BERA	baseline ecological risk assessment
BEHP	bis(2-ethylhexyl)phthalate
BFB	bromofluorobenzene
BFE	base flood elevation
BG	Bacillus globigii
BGR	Bains Gap Road
bgs	below ground surface
BHC	hexachlorocyclohexane
BHHRA	baseline human health risk assessment
BIRTC	Branch Immaterial Replacement Training Center
bkg	background
bls	below land surface
BOD	biological oxygen demand
Bp	soil-to-plant biotransfer factors
BRAC	Base Realignment and Closure
Braun	Braun Intertec Corporation
BSAF	biota-to-sediment accumulation factors
BSC	background screening criterion
BTAG	Biological Technical Assistance Group
BTEX	benzene, toluene, ethyl benzene, and xylenes
BTOC	below top of casing
BTV	background threshold value
BW	biological warfare; body weight
BZ	breathing zone; 3-quinuclidinyl benzilate
C	ceiling limit value
Ca	carcinogen
$CaCO_3$	calcium carbonate
CAA	Clean Air Act
CAB	chemical warfare agent breakdown products
CACM	Chemical Agent Contaminated Media
CAMU	corrective action management unit
CBR	chemical, biological, and radiological
CCAL	continuing calibration
CCB	continuing calibration blank
CCV	continuing calibration verification
CD	compact disc
CDTF	Chemical Defense Training Facility
CEHNC	U.S. Army Engineering and Support Center, Huntsville
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CF	conversion factor
CFC	chlorofluorocarbon
CFDP	Center for Domestic Preparedness
CFR	Code of Federal Regulations
CG	phosgene (carbonyl chloride)
CGI	combustible gas indicator
ch	inorganic clays of high plasticity
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
CIH	Certified Industrial Hygienist
CK	cyanogen chloride
cl	inorganic clays of low to medium plasticity
Cl	chlorinated
CLP	Contract Laboratory Program
cm	centimeter
CN	chloroacetophenone
CNB	chloroacetophenone, benzene, and carbon tetrachloride
CNS	chloroacetophenone, chloropicrin, and chloroform
CO	carbon monoxide
CO_2	carbon dioxide
Co-60	cobalt-60
CoA	Code of Alabama
COC	chain of custody; chemical of concern
COE	Corps of Engineers
Con	skin or eye contact
COPC	chemical of potential concern
COPEC	constituent of potential ecological concern
CPSS	chemicals present in site samples
CQCSM	Contract Quality Control System Manager
CRDL	contract-required detection limit
CRL	certified reporting limit
CRQL	contract-required quantitation limit
CRZ	contamination reduction zone
Cs-137	cesium-137
CS	ortho-chlorobenzylidene-malononitrile
CSEM	conceptual site exposure model
CSM	conceptual site model
CT	central tendency
ctr.	container
CWA	chemical warfare agent; Clean Water Act
CWM	chemical warfare material; clear, wide mouth
CX	dichloroformoxime
'D'	duplicate; dilution
D&I	detection and identification
DAAMS	depot area agent monitoring station
DAF	dilution-attenuation factor
DANC	decontamination agent, non-corrosive
°C	degrees Celsius

List of Abbreviations and Acronyms (Continued)

°F	degrees Fahrenheit
DCA	dichloroethane
DCE	dichloroethene
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DEH	Directorate of Engineering and Housing
DEP	depositional soil
DFTPP	decafluorotriphenylphosphine
DI	deionized
DID	data item description
DIMP	di-isopropylmethylphosphonate
DM	dry matter; adamsite
DMBA	dimethylbenz(a)anthracene
DMMP	dimethylmethylphosphonate
DO	dissolved oxygen
DOD	U.S. Department of Defense
DOJ	U.S. Department of Justice
DOT	U.S. Department of Transportation
DP	direct-push
DPDO	Defense Property Disposal Office
DPT	direct-push technology
DQO	data quality objective
DRMO	Defense Reutilization and Marketing Office
DRO	diesel range organics
DS	deep (subsurface) soil
DS2	Decontamination Solution Number 2
DSERTS	Defense Site Environmental Restoration Tracking System
DWEL	drinking water equivalent level
E&E	Ecology and Environment, Inc.
EB	equipment blank
EBS	environmental baseline survey
EC_{50}	effects concentration for 50 percent of a population
ECBC	Edgewood Chemical Biological Center
ED	exposure duration
EDD	electronic data deliverable
EF	exposure frequency
EDQL	ecological data quality level
EE/CA	engineering evaluation and cost analysis
Elev.	elevation
EM	electromagnetic
EMI	Environmental Management Inc.
EM31	Geonics Limited EM31 Terrain Conductivity Meter
EM61	Geonics Limited EM61 High-Resolution Metal Detector
EOD	explosive ordnance disposal
EODT	explosive ordnance disposal team
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
EPIC	Environmental Photographic Interpretation Center
EPRI	Electrical Power Research Institute
ER	equipment rinsate
ERA	ecological risk assessment
ER-L	effects range-low
ER-M	effects range-medium
ESE	Environmental Science and Engineering, Inc.
ESMP	Endangered Species Management Plan
ESN	Environmental Services Network, Inc.
ESV	ecological screening value
ET	exposure time
EU	exposure unit
Exp.	explosives
E-W	east to west
EZ	exclusion zone
FAR	Federal Acquisition Regulations
FB	field blank
FD	field duplicate
FDC	Former Decontamination Complex
FDA	U.S. Food and Drug Administration
Fe^{+3}	ferric iron
Fe^{+2}	ferrous iron
FedEx	Federal Express, Inc.
FEMA	Federal Emergency Management Agency
FFCA	Federal Facilities Compliance Act
FFE	field flame expedient
FFS	focused feasibility study
FI	fraction of exposure
Fil	filtered
Flt	filtered
FMDC	Fort McClellan Development Commission
FML	flexible membrane liner
f_{oc}	fraction organic carbon
FOMRA	Former Ordnance Motor Repair Area
FOST	Finding of Suitability to Transfer
Foster Wheeler	Foster Wheeler Environmental Corporation
FR	Federal Register
Frtn	fraction
FS	field split; feasibility study
FSP	field sampling plan
ft	feet
ft/day	feet per day
ft/ft	feet per foot
ft/yr	feet per year
FTA	Fire Training Area
FTMC	Fort McClellan
FTRRA	FTMC Reuse & Redevelopment Authority
g	gram
g/m^3	gram per cubic meter
G-856	Geometrics, Inc. G-856 magnetometer
G-858G	Geometrics, Inc. G-858G magnetic gradiometer
GAF	gastrointestinal absorption factor
gal	gallon
gal/min	gallons per minute
GB	sarin (isopropyl methylphosphonofluoridate)
gc	clay gravels; gravel-sand-clay mixtures
GC	gas chromatograph
GCL	geosynthetic clay liner
GC/MS	gas chromatograph/mass spectrometer
GCR	geosynthetic clay liner
GFAA	graphite furnace atomic absorption
GIS	Geographic Information System
gm	silty gravels; gravel-sand-silt mixtures
gp	poorly graded gravels; gravel-sand mixtures
gpm	gallons per minute
GPR	ground-penetrating radar
GPS	global positioning system
GRA	general response action
GS	ground scar
GSA	General Services Administration; Geologic Survey of Alabama
GSBP	Ground Scar Boiler Plant
GSSI	Geophysical Survey Systems, Inc.
GST	ground stain
GW	groundwater
gw	well-graded gravels; gravel-sand mixtures
H&S	health and safety
HA	hand auger
HC	mixture of hexachloroethane, aluminum powder, and zinc oxide (smoke producer)
HCl	hydrochloric acid
HD	distilled mustard (bis-[dichloroethyl]sulfide)
HDPE	high-density polyethylene
HE	high explosive
HEAST	Health Effects Assessment Summary Tables
Herb.	herbicides
HHRA	human health risk assessment
HI	hazard index
H_2O_2	hydrogen peroxide
HPLC	high-performance liquid chromatography
HNO_3	nitric acid
HQ	hazard quotient
HQ_{screen}	screening-level hazard quotient
hr	hour
HRC	hydrogen releasing compound
HSA	hollow-stem auger
HTRW	hazardous, toxic, and radioactive waste
'I'	out of control, data rejected due to low recovery

List of Abbreviations and Acronyms (Continued)

IASPOW	Impact Area South of POW Training Facility
IATA	International Air Transport Authority
ICAL	initial calibration
ICB	initial calibration blank
ICP	inductively-coupled plasma
ICRP	International Commission on Radiological Protection
ICS	interference check sample
ID	inside diameter
IDL	instrument detection limit
IDLH	immediately dangerous to life or health
IDM	investigative-derived media
IDW	investigation-derived waste
IEUBK	Integrated Exposure Uptake Biokinetic
IF	ingestion factor; inhalation factor
ILCR	incremental lifetime cancer risk
IMPA	isopropylmethyl phosphonic acid
IMR	Iron Mountain Road
in.	inch
Ing	ingestion
Inh	inhalation
IP	ionization potential
IPS	International Pipe Standard
IR	ingestion rate
IRDMIS	Installation Restoration Data Management Information System
IRIS	Integrated Risk Information Service
IRP	Installation Restoration Program
IS	internal standard
ISCP	Installation Spill Contingency Plan
IT	IT Corporation
ITEMS	IT Environmental Management System™
'J'	estimated concentration
JeB2	Jefferson gravelly fine sandy loam, 2 to 6 percent slopes, eroded
JeC2	Jefferson gravelly fine sandy loam, 6 to 10 percent slopes, eroded
JfB	Jefferson stony fine sandy loam, 0 to 10 percent slopes have strong slopes
JPA	Joint Powers Authority
K	conductivity
K_d	soil-water distribution coefficient
kg	kilogram
KeV	kilo electron volt
K_{oc}	organic carbon partioning coefficient
K_{ow}	octonal-water partition coefficient
$KMnO_4$	potassium permanganate
L	liter; Lewisite (dichloro-[2-chloroethyl]sulfide)
L/kg/day	liters per kilogram per day
l	liter
LAW	light anti-tank weapon
lb	pound
LBP	lead-based paint
LC	liquid chromatography
LCS	laboratory control sample
LC_{50}	lethal concentration for 50 percent population tested
LD_{50}	lethal dose for 50 percent population tested
LEL	lower explosive limit
LOAEL	lowest-observed-advserse-effects-level
LRA	land redevelopment authority
LT	less than the certified reporting limit
LUC	land-use control
LUCAP	land-use control assurance plan
LUCIP	land-use control implementation plan
max	maximum
MB	method blank
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MCPA	4-chloro-2-methylphenoxyacetic acid
MCPP	2-(2-methyl-4-chlorophenoxy)propionic acid
MCS	media cleanup standard
MD	matrix duplicate
MDC	maximum detected concentration
MDCC	maximum detected constituent concentration
MDL	method detection limit
mg	milligrams
mg/kg	milligrams per kilogram
mg/kg/day	milligram per kilogram per day
mg/kgbw/day	milligrams per kilogram of body weight per day
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mh	inorganic silts, micaceous or diatomaceous fine, sandy or silt soils
MHz	megahertz
µg/g	micrograms per gram
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
MeV	mega electron volt
min	minimum
MINICAMS	miniature continuous air monitoring system
ml	inorganic silts and very fine sands
mL	milliliter
mm	millimeter
MM	mounded material
MMBtu/hr	million Btu per hour
MNA	monitored natural attenuation
MnO_4-	permanganate ion
MOA	Memorandum of Agreement
MOGAS	motor vehicle gasoline
MOUT	Military Operations in Urban Terrain
MP	Military Police
MPA	methyl phosphonic acid
MPM	most probable munition
MQL	method quantitation limit
MR	molasses residue
MRL	method reporting limit
MS	matrix spike
mS/cm	millisiemens per centimeter
mS/m	millisiemens per meter
MSD	matrix spike duplicate
MTBE	methyl tertiary butyl ether
msl	mean sea level
MtD3	Montevallo shaly, silty clay loam, 10 to 40 percent slopes , severely eroded
mV	millivolts
MW	monitoring well
MWI&MP	Monitoring Well Installation and Management Plan
Na	sodium
NA	not applicable; not available
NAD	North American Datum
NAD83	North American Datum of 1983
$NaMnO_4$	sodium permanganate
NAVD88	North American Vertical Datum of 1988
NAS	National Academy of Sciences
NCEA	National Center for Environmental Assessment
NCP	National Contingency Plan
NCRP	National Council on Radiation Protection and Measurements
ND	not detected
NE	no evidence; northeast
ne	not evaluated
NEW	net explosive weight
NFA	No Further Action
NG	National Guard
NGP	National Guardsperson
ng/L	nanograms per liter
NGVD	National Geodetic Vertical Datum
Ni	nickel
NIC	notice of intended change
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NLM	National Library of Medicine
NO_3^-	nitrate
NPDES	National Pollutant Discharge Elimination System
NPW	net present worth
No.	number
NOAA	National Oceanic and Atmospheric Administration
NOAEL	no-observed-adverse-effects-level
NR	not requested; not recorded; no risk
NRC	National Research Council
NRCC	National Research Council of Canada

List of Abbreviations and Acronyms *(Continued)*

NRHP	National Register of Historic Places
NRT	near real time
ns	nanosecond
N-S	north to south
NS	not surveyed
NSA	New South Associates, Inc.
nT	nanotesla
nT/m	nanoteslas per meter
NTU	nephelometric turbidity unit
nv	not validated
O_2	oxygen
O_3	ozone
O&G	oil and grease
O&M	operation and maintenance
OB/OD	open burning/open detonation
OD	outside diameter
OE	ordnance and explosives
oh	organic clays of medium to high plasticity
OH•	hydroxyl radical
ol	organic silts and organic silty clays of low plasticity
OP	organophosphorus
ORC	Oxygen Releasing Compound
ORP	oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OVM-PID/FID	organic vapor meter-photoionization detector/flame ionization detector
OWS	oil/water separator
oz	ounce
PA	preliminary assessment
PAH	polynuclear aromatic hydrocarbon
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
Parsons	Parsons Engineering Science, Inc.
Pb	lead
PBMS	performance-based measurement system
PC	permeability coefficient
PCB	polychlorinated biphenyl
PCDD	polychlorinated dibenzo-p-dioxins
PCDF	polychlorinated dibenzofurans
PCE	perchloroethene
PCP	pentachlorophenol
PDS	Personnel Decontamination Station
PEF	particulate emission factor
PEL	permissible exposure limit
PERA	preliminary ecological risk assessment
PES	potential explosive site
Pest.	pesticides
PETN	pentaerythritoltetranitrate
PFT	portable flamethrower
PG	professional geologist
PID	photoionization detector
PkA	Philo and Stendal soils local alluvium, 0 to 2 percent slopes
PM	project manager
POC	point of contact
POL	petroleum, oils, and lubricants
POTW	publicly owned treatment works
POW	prisoner of war
PP	peristaltic pump; Proposed Plan
ppb	parts per billion
ppbv	parts per billion by volume
PPE	personal protective equipment
ppm	parts per million
PPMP	Print Plant Motor Pool
ppt	parts per thousand
PR	potential risk
PRA	preliminary risk assessment
PRG	preliminary remediation goal
PS	chloropicrin
PSSC	potential site-specific chemical
pt	peat or other highly organic silts
PVC	polyvinyl chloride
QA	quality assurance
QA/QC	quality assurance/quality control
QAM	quality assurance manual
QAO	quality assurance officer
QAP	installation-wide quality assurance plan
QC	quality control
QST	QST Environmental, Inc.
qty	quantity
Qual	qualifier
R	rejected data; resample; retardation factor
R&A	relevant and appropriate
RA	remedial action
RAO	remedial action objective
RBC	risk-based concentration; red blood cell
RCRA	Resource Conservation and Recovery Act
RCWM	Recovered Chemical Warfare Material
RD	remedial design
RDX	cyclotrimethylenetrinitramine
ReB3	Rarden silty clay loams
REG	regular field sample
REL	recommended exposure limit
RFA	request for analysis
RfC	reference concentration
RfD	reference dose
RGO	remedial goal option
RI	remedial investigation
RL	reporting limit
RME	reasonable maximum exposure
ROD	Record of Decision
RPD	relative percent difference
RR	Range residue
RRF	relative response factor
RSD	relative standard deviation
RTC	Recruiting Training Center
RTECS	Registry of Toxic Effects of Chemical Substances
RTK	real-time kinematic
RWIMR	Ranges West of Iron Mountain Road
SA	exposed skin surface area
SAD	South Atlantic Division
SAE	Society of Automotive Engineers
SAIC	Science Applications International Corporation
SAP	installation-wide sampling and analysis plan
SARA	Superfund Amendments and Reauthorization Act
sc	clayey sands; sand-clay mixtures
Sch.	schedule
SCM	site conceptual model
SD	sediment
SDG	sample delivery group
SDWA	Safe Drinking Water Act
SDZ	safe distance zone; surface danger zone
SEMS	Southern Environmental Management & Specialties, Inc.
SF	cancer slope factor
SFSP	site-specific field sampling plan
SGF	standard grade fuels
Shaw	Shaw Environmental, Inc.
SHP	installation-wide safety and health plan
SI	site investigation
SINA	Special Interest Natural Area
SL	standing liquid
SLERA	screening-level ecological risk assessment
sm	silty sands; sand-silt mixtures
SM	Serratia marcescens
SMDP	Scientific Management Decision Point
s/n	signal-to-noise ratio
SO_4^{-2}	sulfate
SOD	soil oxidant demand
SOP	standard operating procedure
SOPQAM	U.S. EPA's *Standard Operating Procedure/Quality Assurance Manual*
sp	poorly graded sands; gravelly sands
SP	submersible pump
SPCC	system performance calibration compound
SPCS	State Plane Coordinate System
SPM	sample planning module

List of Abbreviations and Acronyms *(Continued)*

SQRT	screening quick reference tables
Sr-90	strontium-90
SRA	streamlined human health risk assessment
SRM	standard reference material
Ss	stony rough land, sandstone series
SS	surface soil
SSC	site-specific chemical
SSHO	site safety and health officer
SSHP	site-specific safety and health plan
SSL	soil screening level
SSSL	site-specific screening level
SSSSL	site-specific soil screening level
STB	supertropical bleach
STC	source-term concentration
STD	standard deviation
STEL	short-term exposure limit
STL	Severn-Trent Laboratories
STOLS	Surface Towed Ordnance Locator System®
Std. units	standard units
SU	standard unit
SUXOS	senior UXO supervisor
SVOC	semivolatile organic compound
SW	surface water
SW-846	U.S. EPA's *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*
SWMU	solid waste management unit
SWPP	storm water pollution prevention plan
SZ	support zone
TAL	target analyte list
TAT	turn around time
TB	trip blank
TBC	to be considered
TCA	trichloroethane
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCDF	tetrachlorodibenzofurans
TCE	trichloroethene
TCL	target compound list
TCLP	toxicity characteristic leaching procedure
TDEC	Tennessee Department of Environment and Conservation
TDGCL	thiodiglycol
TDGCLA	thiodiglycol chloroacetic acid
TEA	triethylaluminum
Tetryl	trinitrophenylmethylnitramine
TERC	Total Environmental Restoration Contract
THI	target hazard index
TIC	tentatively identified compound
TLV	threshold limit value
TN	Tennessee
TNT	trinitrotoluene
TOC	top of casing; total organic carbon
TPH	total petroleum hydrocarbons
TR	target cancer risk
TRADOC	U.S. Army Training and Doctrine Command
TRPH	total recoverable petroleum hydrocarbons
TSCA	Toxic Substances Control Act
TSDF	treatment, storage, and disposal facility
TWA	time-weighted average
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
USATCES	U.S. Army Technical Center for Explosive Safety
USATEU	U.S. Army Technical Escort Unit
USATHAMA	U.S. Army Toxic and Hazardous Material Agency
USC	United States Code
USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UTL	upper tolerance level; upper tolerance limit
UXO	unexploded ordnance
UXOQCS	UXO Quality Control Supervisor
UXOSO	UXO safety officer
V	vanadium
VC	vinyl chloride
VOA	volatile organic analyte
VOC	volatile organic compound
VOH	volatile organic hydrocarbon
VQlfr	validation qualifier
VQual	validation qualifier
VX	nerve agent (O-ethyl-S-[diisopropylaminoethyl]-methylphosphonothiolate)
WAC	Women's Army Corps
Weston	Roy F. Weston, Inc.
WP	installation-wide work plan
WRS	Wilcoxon rank sum
WS	watershed
WSA	Watershed Screening Assessment
WWI	World War I
WWII	World War II
XRF	x-ray fluorescence
yd^3	cubic yards