

Final

**Site Investigation Report
Former Motor Pool Area 600,
Parcels 149(7) and 136(7)**

**Fort McClellan
Calhoun County, Alabama**

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Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Task Order CK05, IT Corporation (IT) completed a site investigation (SI) at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) at Fort McClellan (FTMC) in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) and, if present, whether the concentrations would present an unacceptable risk to human health or the environment. The SI at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) consisted of a geophysical survey and the sampling and analyses of 11 surface soil samples, 13 subsurface soil samples, 7 groundwater samples, 1 depositional soil sample, 5 surface water samples, and 5 sediment samples. In addition, 7 temporary groundwater monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

Two anomalies were found during the geophysical survey conducted at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). According to the criteria established in the site-specific field sampling plan, these anomalies were identified as potential underground storage tank (UST) locations. The anomalies were further investigated by installing trenches as part of the FTMC installation-wide UST investigation conducted by IT in July 2000. It was determined that USTs do not exist at these locations and that the anomalies were attributed to buried rebar and metal debris.

The analytical results from the SI indicate that metals, volatile organic compounds, and semivolatile organic compounds (SVOC) were detected in the environmental media sampled. To evaluate whether the detected constituents present an unacceptable risk to human health or the environment, the analytical results were compared to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values for FTMC.

The potential impact to human receptors is expected to be minimal. In two subsurface soil samples, aluminum and iron exceeded residential human health SSSLs, background screening values, and the range of background concentrations. In groundwater, the concentrations of five metals (aluminum, barium, beryllium, iron and vanadium) exceeded SSSLs and background.

However, these metals were present in two groundwater samples that had elevated turbidity at the time of sample collection, causing the elevated metals results.

Several metals were detected in site media at concentrations exceeding ESVs and background concentrations. In addition, the concentrations of several SVOCs exceeded ESVs. However, the potential impact to ecological receptors is expected to be minimal based on the existing viable habitat. The site is a well-developed area consisting of buildings and paved roads with limited grassed areas. Viable ecological habitat is presently limited and is not expected to increase in the future industrial land-use scenario.

Based on the results of the SI, past operations at Former Motor Pool Area 600, Parcels 149(7) and 136(7), do not appear to have adversely impacted the environment. The metals and organic compounds detected in site media do not pose an unacceptable risk to human health or the environment. Therefore, IT Corporation recommends “No Further Action” and unrestricted land reuse at Former Motor Pool Area 600, Parcels 149(7) and 136(7).

1.0 Introduction

The U.S. Army has selected Fort McClellan (FTMC) located in Calhoun County, Alabama, for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. The 1990 Base Closure Act, Public Law 101-510 established the process by which U.S. Department of Defense (DOD) installations would be closed or realigned. The BRAC environmental restoration program requires investigation and cleanup of federal properties prior to transfer to the public domain. The U.S. Army is conducting environmental studies of the impact of suspected contaminants at parcels at FTMC under the management of the U.S. Army Corps of Engineers, Mobile District (USACE). The USACE contracted with IT Corporation (IT) to perform the site investigation (SI) at the Former Motor Pool Area 600, Parcels 149(7) and 136(7), under Contract No. DACA21-96-D-0018, Task Order CK05.

This SI Report presents specific information and results compiled from the SI, including geophysical survey, field sampling and analysis, and monitoring well installation activities conducted at the Former Motor Pool Area 600, Parcels 149(7) and 136(7).

1.1 Project Description

The Former Motor Pool Area 600, Parcels 149(7) and 136(7) was identified as an area to be investigated prior to property transfer. The Former Motor Pool Area 600, Parcels 149(7) and 136(7), was classified as a Category 7 site in the environmental baseline survey (EBS) (Environmental Science and Engineering, Inc. [ESE], 1998). Category 7 sites are areas that are not evaluated and/or require further evaluation.

A site-specific field sampling plan (SFSP) attachment and a site-specific safety and health plan (SSHP) attachment were finalized in October 1998 (IT, 1998a). The SFSP and SSHP provide technical guidance for sample collection and analysis at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The SFSP was used in conjunction with the SSHP as attachments to the installation-wide work plan (IT, 1998b) and the installation-wide sampling and analysis plan (SAP) (IT, 2000a). The SAP includes the installation-wide safety and health plan and quality assurance plan.

The SI included field work to collect 11 surface soil samples, 13 subsurface soil samples, five surface water samples, five sediment samples, seven groundwater samples, and one depositional

soil sample to determine if potential site-specific chemicals (PSSC) are present at the Former Motor Pool Area 600, Parcels 149(7) and 136(7).

1.2 Purpose and Objectives

The SI program was designed to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical constituents are present at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) at concentrations that would present an unacceptable risk to human health or the environment. The conclusions of the SI in Section 6.0 are based on the comparison of the analytical results to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values for FTMC. The SSSLs and ESVs were developed by IT as part of the human health and ecological risk evaluations associated with SIs being performed under the BRAC Environmental Restoration Program at FTMC. The SSSLs, ESVs, and polynuclear aromatic hydrocarbon (PAH) background screening values are presented in the *Final Human Health and Ecological Screening Values and PAH Background Summary Report* (IT, 2000b). The PAH background screening values were developed by IT at the direction of the BRAC Cleanup Team (BCT) to address the occurrence of PAH compounds in surface soils as a result of anthropogenic activities at FTMC. Background metals screening values are presented in the *Final Background Metals Survey Report, Fort McClellan, Alabama* (Science Applications International Corporation [SAIC], 1998).

Based on the conclusions presented in this report, the BCT will decide to propose “No Further Action” at the site or to conduct additional work at the site.

1.3 Site Description and History

The Former Motor Pool Area 600, Parcels 149(7) and 136(7) is an approximately eight-acre rectangular parcel located across from the Consolidated Maintenance Facility (Building 350) on the Main Post of FTMC (Figure 1-1). The Former Motor Pool Area 600, Parcels 149(7) and 136(7) is located at the intersection of 2nd Avenue and 18th Street (Figure 1-2) and is surrounded by a chainlink fence. It is believed that motor vehicle maintenance was conducted at this site in the past; however, this activity is not currently being conducted in this area. A records search identified that an underground storage tank (UST) may be present in the area. The EBS parcel description states that vehicle maintenance activities and the presence of a washrack and an oil/water separator, are the basis for conducting an SI at the site.

A site walkover revealed evidence of 55-gallon drums (drum saddle and lids) located at the western boundary of the parcel. Evidence of an excavation (presumably to install or replace underground lines) was also noted. The excavation extended from Building T-698 to the area where the drums were observed and to the rear of the adjacent Building T-699. The entire area is paved and gently slopes to the west and northwest.

The elevation of the site ranges from approximately 770 feet above mean sea level (msl) in the northwest corner to approximately 790 feet above msl in the southeast corner. A small stream is located approximately 100 feet west of the parcel and flows north-northwest, approximately 1/2 mile, where it discharges into Cave Creek. A man-made drainage ditch, located east of the parcel, flows northwest and west where it joins Cave Creek north of the parcel.

Parcel 136(7) was a gas station located at former Building 694, midway along the eastern boundary of the parcel. It was a typical post gas station constructed in 1941 with a concrete foundation (9 by 21 feet) and corrugated steel walls. The building and foundation have been removed; however, a pump island is still visible. Two fuel pumps were reportedly located on the pump island directly in front of the building, located approximately 20 feet away. The USTs associated with this gas station were reportedly located in front of the building. Closure reports are not on file at FTMC or ADEM and may not have been required at the time of closure.

2.0 Previous Investigations

An EBS was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with DOD guidance for fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)
2. Areas where only release or disposal of petroleum products has occurred
3. Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response
4. Areas of release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment had been taken
5. Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken
6. Areas where release, disposal, and/or migration of hazardous substances has occurred, but required actions have not yet been implemented
7. Areas that are not evaluated or require additional evaluation.

The EBS was conducted in accordance with CERFA (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of CERCLA-regulated substances, petroleum products, and RCRA-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. The Former Motor Pool Area 600, Parcels 149(7) and 136(7) was identified as a Category 7 CERFA parcel: areas that are not

evaluated or require further evaluation. Previous studies to document site environmental conditions have not been conducted.

3.0 Current Site Investigation Activities

This chapter summarizes SI activities conducted by IT at the Former Motor Pool Area 600, Parcels 149(7) and 136(7), including geophysical survey, environmental sampling and analysis, and monitoring well installation activities.

3.1 Geophysical Survey

A geophysical survey was conducted at the Former Motor Pool 600, Parcels 149(7) and 136(7) to identify buried metal representing potential USTs. The area surveyed was approximately 37,200 square feet (0.85 acres), as shown on the geophysical survey site map (Figure 3-1). A detailed discussion of the geophysical investigation, including theory of operation of the instruments, field procedures, data processing, and interpreted results of the investigation are presented as Appendix A.

The survey was conducted using magnetic, electromagnetic (EM), and ground penetrating radar (GPR) techniques. Initially, a survey grid was established at the site to encompass suspect tank locations. Survey control was accomplished using a survey-grade total station global positioning system (GPS). The GPS survey data were referenced to the U.S. State Plane Coordinate System (Alabama East Zone, North American Datum of 1983 [NAD83]).

A detailed, site map was sketched in the field. The map included any surface cultural features within the survey area, or near its perimeter, that could potentially affect the geophysical data (e.g., vehicles, overhead utilities, and/or manhole covers).

Magnetic and EM data were initially acquired to provide site screening for large, buried metal objects the size of a UST. Preliminary color contour maps of the data were analyzed and compared with the site sketch to differentiate between anomalies caused by surface and subsurface source materials. The locations of magnetic and EM anomalies caused by subsurface features the size of a UST were marked in the field for further characterization with the GPR.

GPR was used to discriminate between EM and magnetic anomalies potentially caused by USTs and those caused by significant buried metallic debris, metal reinforced utility vaults and junction boxes, and localized concentrations of metal along (or very near) utilities. Linear EM anomalies thought to be caused by underground utilities, were verified with an EM utility locator and the locations placed on the field maps.

Based on the criteria established in the SFSP for UST identification, anomalies that are of typical size and in logical areas for USTs (i.e., adjacent to typical FTMC gas station foundations) are identified and labeled as USTs. Anomalies that are either a typical size or in a logical location for a UST are labeled as potential USTs. The results of the geophysical survey are summarized in Section 4.1.

3.2 Environmental Sampling

The environmental sampling performed during the SI at the Former Motor Pool Area 600, Parcels 149(7) and 136(7), included the collection of surface soil samples, subsurface soil samples, surface water samples, sediment samples, groundwater samples, and a depositional soil sample for chemical analyses. The sample locations were determined by observing site physical characteristics noted during a site walk over, geophysical survey activities, and by reviewing historical documents pertaining to activities conducted at the site. The sample locations, media, and rationale are summarized in Table 3-1. Sampling locations are shown on Figure 3-2. Samples were submitted for laboratory analyses of site-related parameters listed in Section 3.4.

3.2.1 Surface and Depositional Soil Sampling

Surface soil samples were collected from 11 locations and a depositional soil sample was collected from one location at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). Soil sampling locations and rationale are presented in Table 3-1. Sampling locations are shown on Figure 3-2. Sample designations and quality assurance/quality control (QA/QC) samples are listed in Table 3-2. Soil sampling locations were determined in the field by the on-site geologist based on the geophysical survey and sampling rationale, presence of surface structures, site topography, and proximity to utilize.

Sample Collection. Surface soil samples were collected from the upper 1 foot of soil with a 3-inch diameter stainless-steel hand auger using the methodology specified in Section 4.9 of the SAP (IT, 2000a). Depositional soil samples were collected from the upper 1 foot of soil with a stainless-steel trowel. Surface and depositional soil samples were collected by first removing surface debris, such as rocks and vegetation, from the immediate sample area. The soil was collected with the sampling device and screened with a photoionization detector (PID) in accordance with Section 4.7.1.1 of the SAP (IT, 2000a). Samples for volatile organic compound (VOC) analyses were collected directly from the sampler with three EnCore[®] samplers. The remaining portion of the sample was transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. The samples were analyzed for the parameters

Table 3-1

**Sampling Locations and Rationale
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
FTA-149-GP01	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil, and groundwater samples were collected for upgradient coverage (northeast corner).
FTA-149-GP02	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil, and groundwater samples were collected for downgradient coverage (northwest corner).
FTA-149-GP03	Surface Soil, Subsurface Soil	Surface soil and subsurface soil samples were collected for coverage between north parcel boundary and potential underground storage tank (UST) location [136(7)].
FTA-149-GP04	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil, and groundwater samples were collected near the west parcel boundary, approximately one-third distance from the north end of the site. This location is the most probable exit of surface water from the site (a lower elevation).
FTA-149-GP05	Subsurface Soil	A subsurface soil sample was collected near the site of the potential UST (Parcel 136[7]), (south) for upgradient coverage.
FTA-149-GP06	Subsurface Soil	A subsurface soil sample was collected near the site of the potential UST (Parcel 136[7]), (east) for coverage near the boundary.
FTA-149-GP07	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil, and groundwater samples were collected downgradient of potential UST and in north-central portion of site.
FTA-149-GP08	Surface Soil, Subsurface Soil	Surface and subsurface soil samples were collected between Buildings 698 and 694.
FTA-149-GP09	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil, and groundwater samples were collected between the west boundary and near the digging for lines and evidence of drums.
FTA-149-GP10	Surface Soil, Subsurface Soil	Surface and subsurface soil samples were collected approximately midway between the parcel front boundary and the potential tank 136(7) location.
FTA-149-GP11	Surface Soil, Subsurface Soil	Surface and subsurface soil samples were collected near the west boundary between the southern parcel boundary and FTA-149-GP09.
FTA-149-GP12	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil, and groundwater samples were collected for coverage upgradient at the southeast parcel corner.
FTA-149-GP13	Surface Soil, Subsurface Soil, Groundwater	Surface soil, subsurface soil, and groundwater samples were collected for coverage downgradient at the southwest parcel corner.
FTA-149-SW/SD01	Surface Water, Sediment	Surface water and sediment samples were collected from the stream that runs along the western parcel boundary, near the southern end of the parcel.
FTA-149-SW/SD02	Surface Water, Sediment	Surface water and sediment samples were collected from the stream that runs parallel to the parcel boundary, near the northern end of the parcel.
FTA-149-DEP01	Depositional Soil	A depositional soil sample was collected adjacent to the west parcel boundary at the most probable point of exit for surface water runoff, near the northern end of the parcel.
WS-149-SW/SD01	Surface Water, Sediment	Surface water and sediment samples were collected in a drainage channel just on the north side of 2nd Avenue. The sample location was selected to provide upstream data representative of baseline conditions upgradient.
WS-149-SW/SD02	Surface Water, Sediment	Surface water and sediment samples were collected downgradient of FTA-149-SW/SD01 in a small drainage tributary flowing along the northern parcel boundary. The sample location was selected to evaluate impacts to that tributary due to runoff as compared to baseline

Table 3-2

**Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Samples
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft. bgs)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-149-GP01	FTA-149-GP01-SS-DG0001-REG	0-1	FTA-149-GP01-SS-DG0002-FD	FTA-149-GP01-SS-DG0003-FS	FTA-149-GP01-SS-DG0001-MS	TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP01-DS-DG0004-REG	4-8			FTA-149-GP01-SS-DG0001-MSD	
FTA-149-GP02	FTA-149-GP02-SS-DG0005-REG	0-1	FTA-149-GP02-SS-DG0006-FD	FTA-149-GP02-SS-DG0007-FS		TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP02-DS-DG0008-REG	8-12				
FTA-149-GP03	FTA-149-GP03-SS-DG0009-REG	0-1	FTA-149-GP03-SS-DG0010-FD	FTA-149-GP03-SS-DG0011-FS		TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP03-DS-DG0012-REG	4-7				
FTA-149-GP04	FTA-149-GP04-SS-DG0013-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP04-DS-DG0014-REG	8-12				
FTA-149-GP05	FTA-149-GP05-DS-DG0015-REG	8-12				TCL VOCs, TCL SVOCs, TAL Metals
FTA-149-GP06	FTA-149-GP06-DS-DG0016-REG	4-8				TCL VOCs, TCL SVOCs, TAL Metals
FTA-149-GP07	FTA-149-GP07-SS-DG0017-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP07-DS-DG0018-REG	1-4				
FTA-149-GP08	FTA-149-GP08-SS-DG0019-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP08-DS-DG0020-REG	4-7				
FTA-149-GP09	FTA-149-GP09-SS-DG0021-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP09-DS-DG0022-REG	8-12				
FTA-149-GP10	FTA-149-GP10-SS-DG0023-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP10-DS-DG0024-REG	4-8				
FTA-149-GP11	FTA-149-GP11-SS-DG0025-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP11-DS-DG0026-REG	4-5				
FTA-149-GP12	FTA-149-GP12-SS-DG0027-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP12-DS-DG0028-REG	8-12				
FTA-149-GP13	FTA-149-GP13-SS-DG0029-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-149-GP13-DS-DG0030-REG	4-8				
FTA-149-DEP01	FTA-149-DEP01-DEP-DG0031-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals

FD - Field duplicate.

FS - Field split.

ft. bgs - feet below ground surface.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Table 3-1

**Sampling Locations and Rationale
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
FTP-77-SW/SD03	Surface Water, Sediment	Surface water and sediment samples results from a nearby parcel were used to further evaluate possible contamination from the parcel.

listed in Table 3-2 using methods outlined in Section 3.4. Sample collection logs are included in Appendix B.

3.2.2 Subsurface Soil Sampling

Subsurface soil samples were collected from 13 soil borings at the Former Motor Pool Area 600, Parcels 149(7) and 136(7), as shown on Figure 3-2. Subsurface sampling locations and rationale are presented in Table 3-1. Subsurface soil sample designations, depths, and QA/QC samples are listed in Table 3-2. Soil boring sampling locations were determined in the field by the on-site geologist based on the geophysical survey, sampling rationale, presence of surface structures, site topography, and proximity to utilities. IT contracted TEG, Inc., a direct-push technology subcontractor, to assist in subsurface soil sample collection.

Sample Collection. Subsurface soil samples were collected from soil borings at a depth greater than 1 foot below ground surface (bgs) in the unsaturated zone. The soil borings were advanced and soil samples collected using the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Sample collection logs are included in Appendix B. The samples were analyzed for the parameters listed in Table 3-2 using methods outlined in Section 3.4.

Subsurface soil samples were collected continuously to 12 feet bgs or until direct-push sampler refusal was encountered. Samples were field screened using a PID in accordance with Section 4.7.1.1 of the SAP (IT, 2000a) to measure for volatile organic vapors. The sample showing the highest reading was selected and sent to the laboratory for analysis; however, at those locations where PID readings were not greater than background, the deepest sample interval above groundwater was submitted for analyses. Samples to be analyzed for VOCs were collected directly from the sampler with three EnCore[®] samplers. The remaining portion of the sample was transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. Samples submitted for laboratory analyses are summarized in Table 3-2. The on-site geologist constructed a detailed lithologic log. The lithological log for each borehole is included in Appendix C.

At the completion of soil sampling, boreholes were abandoned with bentonite chips and hydrated with potable water following borehole abandonment procedures summarized in Appendix B of the SAP (IT, 2000a).

3.2.3 Well Installation

Seven temporary wells were installed in the residuum groundwater zone at the Former Motor Pool Area 600, Parcels 149(7) and 136(7), to collect groundwater samples for laboratory analyses. The well/groundwater sample locations are shown on Figure 3-2. Table 3-3 summarizes construction details of the wells installed at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The well construction logs are included in Appendix C.

One temporary well (FTA-149-GP09) was installed by TEG using direct-push technology. The direct-push temporary well was installed by advancing a 2-inch outside diameter direct-push sampler to 12 feet bgs or until direct-push sampler refusal was encountered. The direct-push sampler was removed from the borehole and a 5-foot length of 1-inch inside diameter (ID), 0.010-inch, factory-slotted Schedule 40 polyvinyl chloride (PVC) screen was placed at the bottom of the borehole and attached to 1-inch ID, flush-threaded Schedule 40 PVC riser. A number 1 filter sand (environmentally safe, clean fine sand, sieve size 20 to 40) was placed in the annular space of the borehole around the screen from the bottom of the borehole to approximately 1 foot above the top of the screen. A bentonite seal, consisting of bentonite chips hydrated with potable water, was placed immediately on top of the sand pack. Following groundwater sampling, the direct-push temporary wells were abandoned by removing the PVC riser and screen from the borehole and adding bentonite chips hydrated with potable water to ground surface. Well abandonment procedures followed guidelines outlined in Appendix C of the SAP (IT, 2000a).

IT contracted Miller Drilling, Inc., to install the remaining temporary wells with a hollow-stem auger rig at the well/groundwater sample locations shown on Figure 3-2. The wells were installed following procedures outlined in Section 4.7 and Appendix C of the SAP (IT, 2000a). The boreholes at these locations were advanced with a 4.25-inch ID hollow-stem auger from ground surface to the first water bearing zone in residuum at the well location. The borehole was augered to the depth of direct-push sampler refusal and samples were collected at the depth of direct-push refusal to the bottom of the borehole. A 2-foot long, 2-inch ID carbon steel split-spoon sampler was driven at 5-foot intervals to collect residuum for observing and describing lithology. Where split-spoon refusal was encountered, the auger was advanced until the first water bearing zone was encountered. The on-site geologist logging the auger boreholes continued the detailed lithological log for each borehole from the depth of split-spoon refusal to the bottom of the auger borehole by logging the auger drill cuttings. The drill cuttings were logged to determine lithologic changes and the approximate depth of groundwater encountered during drilling. This information was used to determine the optimal placement of the monitoring

Table 3-3

**Temporary Well Construction Summary
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Temporary Well	Northing	Easting	Ground Elevation (ft msl)	TOC Elevation (ft msl)	Well Depth (ft bgs)	Screen Length	Screen Interval (ft bgs)	Well Material
FTA-149-GP01	1173453.555	671654.177	772.87	773.58	20.0	15	4.75 - 19.75	2" ID Sch. 40 PVC
FTA-149-GP02	1173276.194	671481.314	770.66	773.28	19.6	15	4.35 - 19.35	2" ID Sch. 40 PVC
FTA-149-GP04	1173029.791	671649.133	773.83	775.68	28.0	15	12.75 - 27.75	2" ID Sch. 40 PVC
FTA-149-GP07	1172986.776	671989.202	781.95	784.41	30.0	15	14.75 - 29.75	2" ID Sch. 40 PVC
FTA-149-GP09*	1172873.071	671805.563	776.44	779.76	12.0	5	7.00 - 12.00	1" ID Sch. 40 PVC
FTA-149-GP12	1172564.122	672356.779	788.04	789.93	29.0	15	13.75 - 28.75	2" ID Sch. 40 PVC
FTA-149-GP13	1172411.917	672158.896	782.32	784.57	27.0	15	11.75 - 26.75	2" ID Sch. 40 PVC

Temporary wells installed using hollow-stem auger, except as noted by *.

* - Well installed using direct-push technology.

Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum, 1983.

Elevations were referenced to the North American Vertical Datum of 1988.

1" ID Sch. 40 PVC - 1-inch inside diameter, Schedule 40, polyvinyl chloride.

2" ID Sch. 40 PVC - 2-inch inside diameter, Schedule 40, polyvinyl chloride.

bgs - Below ground surface.

ft - Feet

msl - Mean sea level.

TOC - Top of casing.

well screen interval and to provide site-specific geologic and hydrogeologic information. The lithological log for each borehole is included in Appendix C.

Upon reaching the target depth, a 15-foot length of 2-inch ID, 0.010-inch factory slotted, Schedule 40 PVC screen with a 3-inch PVC end cap was placed through the auger to the bottom of the borehole. The screen and end cap were attached to 2-inch ID, flush-threaded Schedule 40 PVC riser. A number 1 filter sand (environmentally safe, clean fine sand, sieve size 20 to 40) was tremied around the well screen to approximately 2 feet above the top of the well screen as the augers were removed. The wells were surged approximately 10 minutes using a solid PVC surge block, or until no more settling of the filter sand occurred inside the borehole. A bentonite seal, consisting of approximately 2 feet of bentonite chips was placed immediately on top of the filter sand and hydrated with potable water. If the bentonite seal was installed below the water table surface, the bentonite chips were allowed to hydrate in the groundwater. The bentonite seal placement and hydration followed procedures in Appendix C of the SAP (IT, 2000a). A locking well cap was placed on the PVC well casing. The temporary well surface completion included attaching plastic sheeting around the PVC riser using duct tape. Additionally, sandbags were used to secure the sheeting to the ground surface around the temporary well.

The temporary wells were developed by surging and pumping with a 2-inch diameter submersible pump in accordance with methodology outlined in Section 4.8 and Appendix C of the SAP (IT, 2000a). The submersible pump being used for well development was moved in an up-and-down fashion to encourage any residual well installation materials to enter the well. These materials were then pumped out of the well in order to reestablish the natural hydraulic flow conditions. Development was performed until the water turbidity was less than or equal to 20 nephelometric turbidity units (NTU) or for a maximum of 4 hours. The well development logs are included in Appendix D.

3.2.4 Water Level Measurements

The depth to groundwater was measured in all temporary, permanent, and existing wells installed at FTMC on March 13 and 14, 2000 following procedures outlined in Section 4.18 of the SAP (IT, 2000a). Depth to groundwater was measured with electronic water level meters. Each meter probe and cable were cleaned between use at each well following decontamination methodology presented in Section 4.10 of the SAP (IT, 2000a). Measurements were referenced to the top of each well casing. A summary of groundwater level measurements for the Former Motor Pool Area 600, Parcels 149(7) and 136(7) is presented in Table 3-4.

Table 3-4

**Groundwater Elevations
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Well Location	Date	Depth to Water (ft BTOC)	Top of Casing Elevation (ft msl)	Ground Elevation (ft msl)	Groundwater Elevation (ft msl)
FTA-149-GP01	13-Mar-00	3.39	773.58	772.87	770.19
FTA-149-GP02	13-Mar-00	4.70	773.28	770.66	768.58
FTA-149-GP04	13-Mar-00	4.13	775.68	773.83	771.55
FTA-149-GP07	13-Mar-00	9.69	784.41	781.95	774.72
FTA-149-GP09	NA	NA	NA	776.44	NA
FTA-149-GP12	13-Mar-00	6.25	789.93	788.04	783.68
FTA-149-GP13	13-Mar-00	4.71	784.57	782.32	779.86

Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).

BTOC - Below top of casing

ft - Feet

msl - Mean sea level.

NA - Not applicable. Direct-push well abandoned prior to water elevation measurements.

3.2.5 Groundwater Sampling

Groundwater was sampled from the seven temporary wells at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). Well/groundwater sampling locations are shown on Figure 3-2. The groundwater sampling locations and rationale are listed in Table 3-1. The groundwater sample designations and QA/QC samples are listed in Table 3-5.

Sample Collection. Groundwater sampling was completed at the direct-push temporary well location (FTA-149-GP09) following methodology outlined in Section 4.7 of the SAP (IT, 2000a). At this location, groundwater was sampled using a peristaltic pump equipped with Teflon™ tubing. Groundwater sampling was performed at the remaining temporary well locations following procedures outlined in Section 4.9.1.4 of the SAP (IT 2000a). Groundwater was sampled after purging a minimum of three well volumes and after field parameters, including temperature, pH, specific conductivity, oxidation-reduction potential, and turbidity, stabilized. Purging and sampling were performed with a submersible pump equipped with Teflon™ tubing or a peristaltic pump equipped with Teflon™ tubing. Field parameters were measured using a calibrated water quality meter. Field parameter readings are summarized in Table 3-6. Sample collection logs are included in Appendix B. The samples were analyzed for the parameters listed in Table 3-5 using methods outlined in Section 3.4.

3.2.6 Surface Water Sampling

Five surface water samples were collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) at the locations shown on Figure 3-2. The surface water sampling locations and rationale are listed in Table 3-1. The surface water sample designations and QA/QC samples are listed in Table 3-7. Surface water samples with a “WS” prefix were collected as part of the Watershed Screening Assessment (WSA) conducted at FTMC to characterize the general quality of FTMC surface water bodies and to determine whether they attain State-designated use criteria (IT, 1998c). The sampling locations were determined in the field, based on drainage pathways and actual field observations.

Sample Collection. The surface water samples were collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP (IT, 2000a). The surface water samples were collected by dipping a stainless-steel pitcher in the water and pouring the water into the appropriate sample containers. Surface water samples were collected after field parameters had been measured using a calibrated water quality meter. Surface water field parameters are listed in Table 3-6. Sample collection logs are included in Appendix B. The samples were analyzed for the parameters listed in Table 3-7 using methods outlined in Section 3.4.

Table 3-5

**Groundwater Sample Designations and QA/QC Samples
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Splits	MS/MSD	
FTA-149-GP01	FTA-149-GP01-GW-DG3001-REG			FTA-149-GP01-GW-DG3001-MS FTA-149-GP01-GW-DG3001-MSD	TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP02	FTA-149-GP02-GW-DG3002-REG				TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP04	FTA-149-GP04-GW-DG3003-REG	FTA-149-GP04-GW-DG3004-FD	FTA-149-GP04-GW-DG3005-FS		TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP07	FTA-149-GP07-GW-DG3006-REG				TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP09	FTA-149-GP09-GW-DG3007-REG				TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP12	FTA-149-GP12-GW-DG3008-REG				TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP13	FTA-149-GP13-GW-DG3009-REG				TCL VOCs, TCL SVOCs TAL Metals

Groundwater samples were collected from the approximate midpoint of the saturated screened interval of the monitoring well.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

REG - Field sample.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Table 3-6

**Groundwater and Surface Water Field Parameters
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Date	Media	Specific Conductivity ^a (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Temperature (°C)	Turbidity (NTU)	pH (SU)
FTA-149-GP01	28-JAN-99	GW	2.483	1.70	119.0	18.32	480	6.66
FTA-149-GP02	28-JAN-99	GW	1.708	0.19	44.0	19.29	20.0	6.69
FTA-149-GP04	28-JAN-99	GW	2.696	0.16	-195.0	19.70	31.1	6.68
FTA-149-GP07	28-JAN-99	GW	1.054	0.15	-9.0	21.52	estimated >1000	7.08
FTA-149-GP09	29-OCT-98	GW	5.840	1.87	3.0	25.03	65.1	5.84
FTA-149-GP12	27-JAN-99	GW	1.417	0.39	-90.0	22.25	estimated >1000	7.00
FTA-149-GP13	27-JAN-99	GW	1.900	0.09	-20.0	20.38	1.3	6.71
FTA-149-SW/SD01	28-JAN-99	SW	0.470	4.02	0.0	14.04	4.8	6.90
FTA-149-SW/SD02	11-FEB-99	SW	0.351	7.40	173.7	15.90	9.8	7.60
WS-149-SW/SD01	09-FEB-99	SW	0.444	11.59	245.0	16.88	16.4	6.98
WS-149-SW/SD02	09-FEB-99	SW	0.504	2.79	146.0	13.49	7.6	6.57
FTP-77-SW/SD03	26-JAN-99	SW	0.348	11.20	183.0	12.73	7.3	7.61

^aSpecific conductivity values standardized to millisiemens per centimeter.

°C - Degrees Celsius.

GW - Groundwater.

mS/cm - Millisiemens per centimeter.

mV - Millivolts.

NTU - Nephelometric turbidity unit.

mg/L - Milligrams per liter.

ORP - Oxidation-reduction potential.

SU - Standard unit.

SW - Surface water.

Table 3-7

**Surface Water and Sediment Sample Designations and QA/QC Samples
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft. bgs)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-149-SW/SD01	FTA-149-SW/SD01-SW-DG2001-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size (sediment only)
	FTA-149-SW/SD01-SD-DG1001-REG	0-0.5				
FTA-149-SW/SD02	FTA-149-SW/SD02-SW-DG2002-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size (sediment only)
	FTA-149-SW/SD02-SD-DG1002-REG	0-0.5				
WS-149-SW/SD01	WS-149-SW/SD01-SW-WS2004-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size (sediment only)
	WS-149-SW/SD01-SD-WS1004-REG	0-0.5				
WS-149-SW/SD02	WS-149-SW/SD02-SW-WS2005-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size (sediment only)
	WS-149-SW/SD02-SD-WS1005-REG	0-0.5				
FTP-77-SW/SD03	FTP-77-SW/SD03-SW-HK2003-REG	NA	FTP-77-SW/SD03-SW-HK2004-FD	FTP-77-SW/SD03-SW-HK2005-FS		TCL VOCs, TCL SVOCs, TAL Metals TOC, Grain Size (sediment only)
	FTP-77-SW/SD03-SD-HK1003-REG	0-0.5	FTP-77-SW/SD03-SD-HK1004-FD	FTP-77-SW/SD03-SD-HK1005-FS		

FD - Field duplicate.
 FS - Field split.
 ft. bgs - Feet below ground surface.
 MS/MSD - Matrix spike/matrix spike duplicate.
 QA/QC - Quality assurance/quality control.
 REG - Field sample.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.
 TOC - Total organic carbon.
 VOC - Volatile organic compound.

3.2.7 Sediment Sampling

Five sediment samples were collected at the same locations as the surface water samples, as shown on Figure 3-2. Sediment sampling locations and rationale are presented in Table 3-1. The sediment sample designations and QA/QC samples are listed in Table 3-7. Sediment samples with a “WS” prefix were collected as part of the WSA conducted at FTMC to characterize the general quality of FTMC surface water bodies and to determine whether they attain State designated use criteria (IT, 1998c). The sediment sampling locations were determined in the field, based on drainage pathways and actual field observations.

Sample Collection. Sediment samples were collected in accordance with the procedures outlined in Section 4.9.1.2 of the SAP (IT, 2000a). The sediment samples were collected with a stainless-steel spoon and placed in a stainless-steel bowl. Samples for VOC analyses were then immediately collected from the stainless-steel bowl with three Encore[®] samplers. The remaining portion of the sample was homogenized and placed in the appropriate sample containers. Sample collection logs are included in Appendix B. The sediment samples were analyzed for the parameters listed in Table 3-7 using methods outlined in Section 3.4.

3.3 Surveying of Sample Locations

Sample locations were surveyed using GPS survey techniques described in Section 4.3 of the SAP (IT, 2000a), and conventional civil survey techniques described in Section 4.19 of the SAP (IT, 2000a). Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, NAD83. Elevations were referenced to the North American Vertical Datum of 1988 (NAVD88). Horizontal coordinates and elevations are included in Appendix E.

3.4 Analytical Program

Samples collected during the SI were analyzed for various physical and chemical properties. The specific suite of analyses performed was based on the PSSCs historically at the site and EPA, ADEM, FTMC, and USACE requirements. Samples collected from the Former Motor Pool Area 600, Parcels 149(7) and 136(7) were analyzed for the following parameters:

- Target Compound List (TCL) VOCs - Method 5035/8260B
- TCL Semivolatile Organic Compounds (SVOC) - Method 8270C
- Target Analyte List Metals - Method 6010B/7000
- Total Organic Carbon – Method 9060 (sediment only)
- Grain size – American Society for Testing and Materials D421/D422 (sediment only).

The samples were analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 6-1 in Appendix B of the SAP (IT, 2000a). Data were reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of Appendix B of the SAP [IT, 2000a]). Chemical data were reported via hard copy data packages by the laboratory using Contract Laboratory Program-like forms. These packages were validated in accordance with EPA National Functional Guidelines by Level III criteria. A summary of validated data is included in Appendix F. The Data Validation Summary Report is included as Appendix G.

3.5 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping followed requirements specified in Section 4.13.2 of the SAP (IT, 2000a). Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SI are listed in Section 5.0, Table 5-1, of Appendix B of the SAP (IT, 2000a). Sample documentation and chain-of-custody records were completed as specified in Section 4.13 of the SAP (IT, 2000a).

Completed analysis request and chain-of-custody records (Appendix B) were secured and included with each shipment of sample coolers to Quanterra Environmental Services in Knoxville, Tennessee. Split samples were shipped to USACE South Atlantic Division Laboratory in Marietta, Georgia.

3.6 Investigation-Derived Waste Management and Disposal

Investigation-derived waste (IDW) was managed and disposed as outlined in Appendix D of the SAP (IT, 2000a). The IDW generated from the field sampling at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) was segregated as follows:

- Drill cuttings
- Purge water from well development and sampling activities, and decontamination fluids
- Personal protective equipment (PPE).

Solid IDW was stored inside the fenced area surrounding Buildings 335 and 336 in lined roll-off bins prior to characterization and final disposal. Solid IDW was characterized using toxicity characteristic leaching procedure analyses. Based on the results, drill cuttings and PPE generated

during the SI at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) were disposed as nonregulated waste at the Industrial Waste Landfill on the Main Post of FTMC.

Liquid IDW was contained in the existing 20,000-gallon sump associated with the Building T-338 vehicle wash rack. Liquid IDW was characterized by VOC, SVOC, and metals analyses. Based on the analyses, liquid IDW was discharged as nonregulated waste to the FTMC wastewater treatment plant on the Main Post.

3.7 Variances/Nonconformances

Two variances to the SFSP were recorded during completion of the SI at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The variances did not alter the intent of the investigation or the sampling rationale presented in Table 4-2 of the SFSP (IT, 1998a). The variances to the SFSP are summarized in Table 3-8 and included in Appendix H.

There were not any nonconformances to the SFSP recorded during completion of the SI at the Former Motor Pool Area 600, Parcels 149(7) and 136(7).

3.8 Data Quality

The field sample analytical data are presented in tabular form in Appendix F. The field samples were collected, documented, handled, analyzed, and reported in a manner consistent with the SI work plan; the FTMC SAP and installation-wide quality assurance plan; and standard, accepted methods and procedures. Sample collection logs pertaining to the collection of these samples were reviewed and organized for this report and are included in Appendix B. As discussed in Section 3.7, two variances to the SFSP were recorded. However, these variances did not impact the usability of the data.

Data Validation. A complete (100 percent) Level III data validation effort was performed on the reported analytical data. Appendix G consists of a data validation summary report that was prepared to discuss the results of the validation. Selected results were rejected or otherwise qualified based on the implementation of accepted data validation procedures and practices during the validation effort. These qualified parameters are highlighted in the report. The validation-assigned qualifiers were added to the FTMC IT Environmental Management System™ database for tracking and reporting. The qualified data were used in the comparison to the SSSLs and ESVs developed by IT. Rejected data (assigned an “R” qualifier) were not used in

Table 3-8

**Variations to the Site-Specific Field Sampling Plan
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

Variance to the SFSP	Justification for Variance	Impact to Site Investigation
Two surface water samples and two sediment samples were collected. The site-specific field sampling plan (SFSP) proposed one of each.	FTA-149-SW/SD01 was inadvertently collected from a location approximately 300 yards upstream of the location proposed in the SFSP.	FTA-149-SW/SD02 was collected from the proposed location so data quality objectives could be met. (Surface water/sediment locations WS-149-SW/SD01, WS-149-SW/SD02, and FTP-77-SW/SD03 analytical results were also used to meet data quality objectives for the site investigation. These samples were collected as a part of other site investigations.)
Direct-push temporary wells not installed: FTA-149-GP01, FTA-149-GP02, FTA-149-GP04, FTA-149-GP07, FTA-149-GP12, FTA-149-GP13	Groundwater was not encountered during direct-push drilling.	None. Drilling with hollow-stem auger rig allowed well completion with sufficient water for development and sampling.

the comparison to the SSSLs and ESVs. The data presented in this report, except where qualified, meet the principle data quality objective for this SI.

4.0 Site Characterization

IT utilized the results of the geophysical survey to aid in the placement of subsurface soil and groundwater sampling locations. Subsurface investigations performed at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) provided soil, geologic, and groundwater data. These data were used to characterize the geology and hydrogeology of the site.

4.1 Subsurface Investigation

4.1.1 Results of Geophysical Survey

The geophysical survey results indicated two anomalies exist at the Former Motor Pool 600, Parcels 149(7) and 136(7), that may be caused by USTs. A geophysical interpretation map of the site (Figure 4-1) shows the anomaly locations and contains detailed information on permanent site reference features as well as GPS coordinates to aid in relocating the anomalies. The anomalies shown on Figure 4-1 correspond to those shown in the magnetic and EM data contour maps, and/or GPR data profiles presented in the geophysics report (Appendix A). Each anomaly potentially caused by a UST is indicated by red shading and designated by an alphanumeric symbol with a number in parenthesis.

The number shown in parenthesis on Figure 4-1 (rank) indicates the anomaly type and potential for the source object to be a UST. Geophysical anomalies most likely to be caused by USTs are designated with a (1) in parenthesis. Geophysical anomalies with a ranking of (2) are more uncertain, and those with a ranking of (3) are highly uncertain and generally interpreted to be caused by a metallic source object other than a UST. A detailed discussion of the qualitative numeric ranking system is included in the interpretation chapter of the geophysics report (Chapter A.4.0, Appendix A).

Two Rank (2) anomalies were identified in the geophysical data. According to the criteria established in the SFSP, these anomalies represent USTs.

4.1.2 UST Investigation Results

The two anomalies identified during the geophysical survey were further investigated by installing trenches as part of the FTMC installation-wide UST investigation conducted by IT in July 2000 (IT, 2000c). It was determined that there are no USTs at these locations and

Anomalies A-1(2) and A-2(2) were attributed to buried rebar and metal debris. No samples were collected, nor was an ADEM UST Closure Assessment Form necessary for these locations.

4.2 Regional and Site Geology

4.2.1 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 is comprised 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 (Szabo 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 appear to dominate the unit and consist primarily of coarse-grained, vitreous quartzite, and friable, fine- to coarse-grained, orthoquartzitic sandstone, both of which locally contain conglomerate. The fine-grained facies consist 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. 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 weathers 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 together as undifferentiated at FTMC and 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 (Szabo 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 on the basis of fossil data.

The Jacksonville Thrust Fault is the most significant structural geologic feature in the vicinity 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 comprising 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).

4.2.2 Site Geology

Rarden silty-clay loam, shallow, 2 to 6 percent slopes, severely eroded (ReB3) soils cover the entire parcel. This type of Rarden soil has mild slopes, high erosion, and high runoff. They generally occur in large areas on wide shale ridges. They have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface soil is brown silt loam. The subsoil is yellowish-red clay or silty clay mottled with soil that has a strong brown color. Concretions and fragments of sandstone, up to one-half inch in diameter are commonly on and in the soil. Infiltration is medium, permeability is slow and available moisture capacity is low (U.S. Department of Agriculture, 1961).

The Former Motor Pool Area 600, Parcels 149(7) and 136(7) is situated in the northern portion of the Ordovician window in the uppermost thrust sheet, approximately 2000 feet southwest of the Jacksonville Fault. Bedrock beneath the site is mapped as Ordovician Floyd and Athens Shale undifferentiated.

Based on direct-push and hollow-stem auger boring data collected during the SI, residuum beneath the Former Motor Pool Area 600, Parcels 149(7) and 136(7) consists of predominantly silty to gravelly clay overlying weathered shale. Direct-push refusal was encountered at depths ranging from 7 to 10 feet bgs. The weathered shale was encountered at depths ranging from 10 to 15 feet bgs at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The contact between the residuum and the weathered shale was usually gradational. Hard, competent bedrock was not encountered at the site. A geologic cross section was constructed with boring log data from the Former Motor Pool Area 600, Parcels 149(7) and 136(7) and is presented on Figure 4-2. The geologic cross section location is shown on Figure 3-2.

4.3 Site Hydrology

4.3.1 Surface Hydrology

Precipitation in the form of rainfall averages about 54 inches annually in Anniston, Alabama, with infiltration rates annually exceeding evapotranspiration rates. The major surface water features at 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.

An unnamed tributary of Cave Creek flows to the northwest along the southwestern boundary of the Former Motor Pool Area 600, Parcels 149(7) and 136(7). A man-made drainage ditch extends along the northeast side of 2nd Avenue, across the street from the site. This ditch also flows to the northwest and discharges into the tributary stream. The land surface of the site slopes to the west-northwest toward the tributary. Surface runoff in the vicinity of the site is directed toward the Cave Creek tributary and the drainage ditch by surface grading and storm drains.

4.3.2 Hydrogeology

During boring and well installation activities, groundwater was generally encountered in fracture zones within the weathered shale at depths ranging from 13 to 26 feet bgs. Static groundwater levels were measured in the temporary wells on March 13, 2000. Table 3-4 summarizes measured groundwater elevations at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). Groundwater elevations were calculated by measuring the depth to groundwater relative to the surveyed top-of-casing elevations. A groundwater elevation map constructed from the March 2000 data is shown on Figure 4-3. This figure shows the potentiometric surface generally mimicking the land surface. Groundwater flow at the site is to the northwest with a hydraulic gradient of approximately 0.01 feet per foot. Static groundwater levels summarized in Table 3-4 are at shallower depths than depth to water data from the drilling logs (Appendix C). This is indicative of upward vertical hydraulic head.

5.0 Summary of Analytical Results

The results of the chemical analyses of samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) indicate that metals, VOCs, and SVOCs have been detected in the various site media. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the human health SSSLs and ESVs for FTMC. The SSSLs and ESVs were developed by IT for human health and ecological risk evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC.

Metal concentrations exceeding the SSSLs and ESVs were subsequently compared to background metals screening values (background concentrations) (SAIC, 1998) to determine if the metals concentrations are within natural background concentrations. Summary statistics for background metals samples collected at FTMC (SAIC, 1998) are included in Appendix I. Additionally, SVOC concentrations in surface soils that exceeded the SSSLs and ESVs were compared to PAH background screening values, where available. The PAH background screening values were derived from PAH analytical data from 18 parcels at FTMC that were determined to represent anthropogenic activity (IT, 2000b). PAH background screening values were developed for two categories of surface soils: beneath asphalt and adjacent to asphalt. The PAH background screening values for soils adjacent to asphalt are the more conservative (i.e., lower) of the PAH background values and are the values used herein for comparison.

Six compounds were quantified by both SW-846 Method 8260B (as VOC) and Method 8270C (as SVOC), including 1,2,4-trichlorobenzene, 1,4-dichlorobenzene, 1,3-dichlorobenzene, 1,2-dichlorobenzene, hexachlorobutadiene, and naphthalene. Method 8260B yields a reporting limit (RL) of 0.005 mg/kg, while Method 8270C has a RL of 0.330 mg/kg, which is typical for a soil matrix sample. Because of the direct nature of the Method 8260B analysis and its resulting lower RL, this method should be considered superior to Method 8270C when quantifying low levels (0.005 to 0.330 mg/kg) of these compounds. Method 8270C and its associated methylene chloride extraction step is superior, however when dealing with samples that contain higher concentrations (greater than 0.330 mg/kg) of these compounds. Therefore, all data were considered and none were categorically excluded. Data validation qualifiers were helpful in evaluating the usability of data, especially if calibration, blank contamination, precision, or accuracy indicator anomalies were encountered. The validation qualifiers and concentrations

reported (e.g., whether concentrations were less than or greater than 0.330 mg/kg) were used to determine which analytical method was likely to return the more accurate result.

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

5.1 Surface and Depositional Soil Analytical Results

Eleven surface soil samples and one depositional soil sample were collected for chemical analyses at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). Surface and depositional soil samples were collected from the upper 1-foot of soil at the locations shown on Figure 3-2. Analytical results were compared to residential human health SSSLs, ESVs, and background screening values, as presented in Table 5-1.

Metals. Nineteen metals were detected in surface and depositional soil samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). Aluminum, calcium, chromium, iron, lead, manganese, and zinc were present in each of the samples.

The concentrations of aluminum (nine locations), arsenic (nine locations), chromium (FTA-149-GP03, FTA-149-GP10, and FTA-149-GP11), iron (ten locations), and manganese (FTA-149-GP01 and FTA-149-GP07) exceeded residential human health SSSLs. With the exception of aluminum (two locations) and iron (two locations), the metals concentrations were below their respective background concentration. The aluminum and iron results were within the range of background values determined by SAIC (1998) (Appendix I).

Aluminum (12 locations), chromium (12 locations), copper (FTA-149-GP03), iron (12 locations), lead (FTA-149-GP07), manganese (five locations), nickel (FTA-149-GP03), selenium (FTA-149-DEP01, FTA-149-GP10 and FTA-149-GP11), vanadium (nine locations), and zinc (four locations) concentrations exceeded ESVs. With the exceptions of copper, lead, nickel, and selenium (two locations), the concentrations of these metals were within background screening values or the range of background concentrations.

Volatile Organic Compounds. Thirteen VOCs were detected in surface and depositional soil samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The

Table 5-1

**Surface and Depositional Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)		FTA-149 FTA-149-DEP01 DG0031 11-Nov-98 0- 1					FTA-149 FTA-149-GP01 DG0001 22-Oct-98 0- 1					FTA-149 FTA-149-GP02 DG0005 27-Oct-98 0- 1					FTA-149 FTA-149-GP03 DG0009 22-Oct-98 0- 1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^c	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	3.32E+03				YES	7.87E+03			YES	YES	1.30E+03				YES	1.55E+04			YES	YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	2.00E+00				YES	8.60E+00	J		YES		ND					4.90E+00			YES	YES
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	2.71E+01					5.08E+01					ND					1.47E+02		YES		
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	ND					9.80E-01		YES			ND					1.00E+00		YES		
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					5.60E-01		YES			ND				
Calcium	mg/kg	1.72E+03	NA	NA	1.24E+03					3.16E+04	J	YES			2.82E+03	J	YES			2.52E+03		YES		
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	9.80E+00				YES	1.50E+01				YES	4.10E+00	J			YES	2.75E+01		YES	YES	
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	ND					6.10E+00					ND					7.40E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	7.00E+00					8.30E+00					ND					4.08E+01		YES	YES	
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.02E+04			YES	YES	1.82E+04	J		YES	YES	2.24E+03			YES	YES	3.38E+04	J		YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.70E+01	J				2.55E+01					6.40E+00					1.65E+01				
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	ND					1.24E+04	J	YES			1.43E+03	J	YES			6.05E+03	J	YES		
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	9.32E+01					4.11E+02			YES	YES	5.71E+01	J				5.74E+01				
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	5.20E-02					ND					ND					ND				
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	ND					7.70E+00					ND					3.12E+01		YES	YES	
Potassium	mg/kg	8.00E+02	NA	NA	ND					ND					ND					6.72E+02				
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	8.60E-01		YES		YES	ND					ND					7.50E-01		YES		
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	7.20E+00	B			YES	1.57E+01	J			YES	ND					ND				
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	2.25E+01	J				3.77E+01	J				2.25E+01					7.96E+01	J	YES		YES
VOLATILE ORGANIC COMPOUNDS																								
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND					ND					ND					5.10E-03	J			
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					2.40E-03	J			
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND					ND					ND					ND				
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	5.30E-03	B				ND					4.90E-03	J				ND				
2-Hexanone	mg/kg	NA	3.11E+02	1.26E+01	ND					ND					ND					ND				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	7.50E-02	J				4.50E-02	B				4.00E-02	J				1.90E-02	B			
Bromomethane	mg/kg	NA	1.09E+01	NA	ND					ND					ND					1.20E-03	J			
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	ND					ND					ND					5.00E-03	J			
Ethylbenzene	mg/kg	NA	7.77E+02	5.00E-02	ND					ND					ND					ND				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	3.80E-03	B				5.90E-03	B				5.70E-03	B				7.90E-03	B			
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					ND					6.20E-03	J			
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					ND					ND					3.00E-03	J			
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					5.60E-03	J			

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 600, Parcels 149(7) and 136(7)
 Fort McClellan, Calhoun County, Alabama

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)					FTA-149 FTA-149-DEP01 DG0031 11-Nov-98 0- 1					FTA-149 FTA-149-GP01 DG0001 22-Oct-98 0- 1					FTA-149 FTA-149-GP02 DG0005 27-Oct-98 0- 1					FTA-149 FTA-149-GP03 DG0009 22-Oct-98 0- 1					
Parameter	Units	BKG ^a	SSSL ^b	ESV ^c	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	
SEMIVOLATILE ORGANIC COMPOUNDS																									
2-Methylnaphthalene	mg/kg	NA	1.55E+02	NA	ND					ND					ND					ND					
Acenaphthene	mg/kg	7.02E-01	4.63E+02	2.00E+01	ND					2.60E+00	J	YES			ND					ND					
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	ND					1.80E+00	J	YES			5.00E-01	J				1.50E-01	J				
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	ND					6.50E+00	J	YES		YES	4.60E-01	J			YES	3.30E-01	J				YES
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	ND					2.00E+01	J	YES	YES	YES	2.40E-01	J				7.10E-01	J				
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	ND					2.10E+01	J	YES	YES	YES	8.10E-01			YES	YES	5.90E-01				YES	YES
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	ND					2.80E+01	J	YES	YES		5.60E-01	J				7.20E-01					
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	ND					8.60E+00	J	YES			5.10E-01	J				1.60E-01	J				
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	ND					1.70E+01	J	YES	YES		1.10E+00					5.10E-01					
Carbazole	mg/kg	NA	3.11E+01	NA	ND					3.00E+00	J				ND					1.30E-01	J				
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	ND					2.70E+01	J	YES		YES	4.20E-01	J				7.30E-01					
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	ND					4.70E+00	J	YES	YES		2.50E-01	J		YES		1.10E-01	J			YES	
Dibenzofuran	mg/kg	NA	3.09E+01	NA	ND					1.20E+00	J				ND					ND					
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	ND					5.70E+01	J	YES		YES	3.40E-01	J			YES	1.70E+00					YES
Fluorene	mg/kg	6.67E-01	3.09E+02	1.22E+02	ND					2.00E+00	J	YES			ND					1.30E-01	J				
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	ND					9.40E+00	J	YES	YES		5.00E-01	J				2.00E-01	J				
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					ND					ND					
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	ND					3.20E+01	J	YES		YES	ND					6.30E-01					YES
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	ND					4.20E+01	J	YES		YES	4.40E-01	J			YES	1.30E+00					YES
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	ND					ND					ND					ND					
n-Nitrosodiphenylamine	mg/kg	NA	1.29E+02	2.00E+01	ND					ND					ND					ND					

Table 5-1

**Surface and Depositional Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)		FTA-149 FTA-149-GP04 DG0013 22-Oct-98 0-1					FTA-149 FTA-149-GP07 DG0017 2-Nov-98 0-1					FTA-149 FTA-149-GP08 DG0019 22-Oct-98 0-1					FTA-149 FTA-149-GP09 DG0021 22-Oct-98 0-1							
Parameter	Units	BKG ^a	SSSL ^b	ESV ^c	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	9.97E+03			YES	YES	1.20E+04			YES	YES	2.60E+03				YES	1.04E+04			YES	YES
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	3.90E+00			YES		7.30E+00			YES		ND					2.50E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	5.88E+01					1.19E+02					ND					6.48E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	1.00E+00		YES			9.30E-01		YES			ND					7.70E-01				
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					7.70E-01		YES			ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	7.12E+04		YES			2.73E+04 J		YES			6.55E+03		YES			1.45E+04		YES		
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.65E+01				YES	2.29E+01 J				YES	5.90E+00				YES	2.19E+01				YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	ND					1.16E+01					ND					5.80E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	1.27E+01					2.23E+01		YES			ND					1.29E+01		YES		
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.45E+04 J		YES	YES		3.28E+04			YES	YES	2.05E+03 J				YES	2.02E+04 J			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	3.30E+01					8.81E+01		YES		YES	2.90E+00					1.24E+01				
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	3.22E+04 J		YES			1.68E+04 J		YES			1.87E+03 J		YES			6.23E+03 J		YES		
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	2.33E+02				YES	1.19E+03 J			YES	YES	4.85E+01					1.42E+02				YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND					6.50E-02					ND					ND				
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	8.80E+00					1.98E+01		YES			ND					1.08E+01		YES		
Potassium	mg/kg	8.00E+02	NA	NA	1.01E+03		YES			ND					ND					5.82E+02				
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					7.50E-01		YES			ND					8.00E-01		YES		
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	2.04E+01				YES	1.70E+01				YES	6.30E+00			YES		1.51E+01				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	5.84E+01 J		YES		YES	2.13E+02		YES		YES	4.80E+00 J					2.78E+01 J				
VOLATILE ORGANIC COMPOUNDS																								
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	7.50E-03					2.40E-02 J					2.50E-03 J					ND				
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	7.80E-03					7.10E-03 J					ND					ND				
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND					6.30E-03 J					ND					ND				
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	4.70E-03 J					1.60E-02 J					5.30E-03 J					1.40E-02 J				
2-Hexanone	mg/kg	NA	3.11E+02	1.26E+01	ND					ND					ND					ND				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	5.70E-02 B					1.40E-01 J					4.80E-02 B					1.30E-01 B				
Bromomethane	mg/kg	NA	1.09E+01	NA	2.70E-03 B					ND					ND					ND				
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	3.10E-03 J					2.00E-03 J					1.70E-02					1.10E-02				
Ethylbenzene	mg/kg	NA	7.77E+02	5.00E-02	6.70E-03					5.50E-03 J					ND					ND				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	6.30E-03 B					4.20E-03 B					8.00E-03 B					7.00E-03 B				
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					1.60E-02 J					4.70E-03 J					ND				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	2.30E-02					9.00E-03 J					3.40E-03 J					1.90E-03 J				
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	2.90E-02					2.30E-02 J					ND					ND				

Table 5-1

Surface and Depositional Soil Analytical Results
 Former Motor Pool Area 600, Parcels 149(7) and 136(7)
 Fort McClellan, Calhoun County, Alabama

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)					FTA-149 FTA-149-GP04 DG0013 22-Oct-98 0- 1					FTA-149 FTA-149-GP07 DG0017 2-Nov-98 0- 1					FTA-149 FTA-149-GP08 DG0019 22-Oct-98 0- 1					FTA-149 FTA-149-GP09 DG0021 22-Oct-98 0- 1					
Parameter	Units	BKG ^a	SSSL ^b	ESV ^c	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	
SEMIVOLATILE ORGANIC COMPOUNDS																									
2-Methylnaphthalene	mg/kg	NA	1.55E+02	NA	ND					ND					2.60E-01	J				ND					
Acenaphthene	mg/kg	7.02E-01	4.63E+02	2.00E+01	2.10E-01	J				ND					1.20E+00	J	YES			ND					
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	4.70E-01	J				1.70E+00		YES			3.70E+00		YES			1.20E+00	J	YES			
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	7.80E-01	J			YES	1.50E+00		YES		YES	4.80E+00		YES		YES	1.10E+00	J	YES		YES	
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	9.90E-01	J		YES		2.00E+00		YES	YES		6.20E+00		YES	YES	YES	1.60E+00	J	YES	YES		
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	9.80E-01	J		YES	YES	3.10E+00		YES	YES	YES	8.10E+00		YES	YES	YES	3.30E+00	J	YES	YES	YES	
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	9.10E-01	J		YES		3.60E+00		YES	YES		1.00E+01		YES	YES		2.90E+00	J	YES	YES		
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	2.90E-01	J				1.90E+00		YES			2.00E+00		YES			2.70E+00	J	YES			
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	1.30E+00	J				2.90E+00		YES			8.40E+00		YES			3.00E+00	J	YES			
Carbazole	mg/kg	NA	3.11E+01	NA	4.50E-01	J				2.20E-01	J				1.80E+00	J				ND					
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	9.60E-01	J				2.50E+00		YES			6.90E+00		YES		YES	1.70E+00	J	YES			
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	2.20E-01	J		YES		9.30E-01		YES	YES		1.40E+00	J	YES	YES		1.20E+00	J	YES	YES		
Dibenzofuran	mg/kg	NA	3.09E+01	NA	1.90E-01	J				ND					4.20E-01	J				ND					
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	2.50E+00		YES		YES	2.50E+00		YES		YES	1.80E+01		YES		YES	2.80E+00	J	YES		YES	
Fluorene	mg/kg	6.67E-01	3.09E+02	1.22E+02	5.70E-01	J				ND					1.70E+00	J	YES			ND					
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	3.70E-01	J				1.90E+00		YES	YES		2.70E+00		YES	YES		2.30E+00	J	YES	YES		
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					ND					ND					
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	2.00E+00		YES		YES	2.20E-01	J			YES	6.00E+00		YES		YES	7.90E-01	J			YES	
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	1.90E+00		YES		YES	2.70E+00		YES		YES	1.30E+01		YES		YES	2.40E+00	J	YES		YES	
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	2.20E-01	J				ND					ND					ND					
n-Nitrosodiphenylamine	mg/kg	NA	1.29E+02	2.00E+01	ND					ND					ND					ND					

Table 5-1

**Surface and Depositional Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)		FTA-149 FTA-149-GP10 DG0023 22-Oct-98 0- 1								FTA-149 FTA-149-GP11 DG0025 22-Oct-98 0- 1					FTA-149 FTA-149-GP12 DG0027 22-Oct-98 0- 1					FTA-149 FTA-149-GP13 DG0029 22-Oct-98 0- 1					
Parameter	Units	BKG ^a	SSSL ^b	ESV ^c	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	1.80E+04		YES	YES	YES	1.77E+04		YES	YES	YES	3.77E+03				YES	7.91E+03			YES	YES	
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	4.30E+00			YES		5.20E+00			YES		ND					1.80E+00			YES		
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	9.75E+01					8.52E+01					ND					7.16E+01					
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	7.90E-01					ND					ND					8.90E-01		YES			
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND					ND					
Calcium	mg/kg	1.72E+03	NA	NA	2.54E+03		YES			2.05E+03		YES			4.69E+03		YES			2.33E+04		YES			
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	3.04E+01			YES	YES	3.25E+01			YES	YES	1.25E+01					1.83E+01				YES	
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	ND					ND					ND					ND					
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	3.54E+01		YES			1.77E+01		YES			4.10E+00					1.07E+01					
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	4.67E+04	J	YES	YES	YES	4.46E+04	J	YES	YES	YES	5.98E+03	J		YES	YES	9.71E+03	J		YES	YES	
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.77E+01					1.53E+01					2.70E+00					7.40E+00					
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	4.11E+03	J	YES			1.56E+03	J	YES			2.69E+03	J	YES			6.37E+03	J	YES			
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	3.36E+01					1.02E+01					2.25E+01					2.35E+02				YES	
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	ND					4.50E-02					ND					ND					
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	1.36E+01		YES			ND					6.40E+00					1.25E+01		YES			
Potassium	mg/kg	8.00E+02	NA	NA	ND					ND					ND					8.69E+02		YES			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	2.10E+00		YES		YES	1.60E+00		YES		YES	ND					ND					
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	ND					2.74E+01				YES	5.80E+00			YES		1.18E+01				YES	
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	5.61E+01	J	YES		YES	1.42E+01	J				9.60E+00	J				2.14E+01	J				
VOLATILE ORGANIC COMPOUNDS																									
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	3.30E-03	J				4.70E-03	J				4.50E-03	J				1.70E-02	J				
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					6.80E-03					
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND					ND					3.00E-03	J				8.90E-03	J				
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND					ND					3.70E-03	J				9.90E-03	J				
2-Hexanone	mg/kg	NA	3.11E+02	1.26E+01	ND					ND					6.30E-03	J				6.40E-03	J				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	3.70E-02	B				9.80E-02	B				6.70E-02	B				2.40E-01	J				
Bromomethane	mg/kg	NA	1.09E+01	NA	ND					ND					ND					ND					
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	6.50E-03					1.40E-02					5.20E-03	J				3.70E-02					
Ethylbenzene	mg/kg	NA	7.77E+02	5.00E-02	ND					ND					ND					2.00E-03	J				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	6.70E-03	B				8.80E-03	B				8.80E-03	B				8.50E-03	B				
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					3.50E-03	J				5.80E-02	J	YES			
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					ND					ND					2.10E-03	J				
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					9.50E-03					

Table 5-1

Surface and Depositional Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)					FTA-149 FTA-149-GP10 DG0023 22-Oct-98 0- 1					FTA-149 FTA-149-GP11 DG0025 22-Oct-98 0- 1					FTA-149 FTA-149-GP12 DG0027 22-Oct-98 0- 1					FTA-149 FTA-149-GP13 DG0029 22-Oct-98 0- 1					
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	
SEMIVOLATILE ORGANIC COMPOUNDS																									
2-Methylnaphthalene	mg/kg	NA	1.55E+02	NA	ND					ND					ND					1.30E+00	J				
Acenaphthene	mg/kg	7.02E-01	4.63E+02	2.00E+01	ND					ND					1.40E-01	J				5.00E+00		YES			
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	1.20E-01	J				ND					6.10E-01					7.30E+00		YES			
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	1.60E-01	J			YES	ND					1.00E+00		YES		YES	1.50E+01		YES		YES	
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	5.60E-01					ND					1.70E+00		YES	YES		1.60E+01		YES	YES	YES	
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	5.30E-01			YES	YES	ND					1.60E+00		YES	YES	YES	1.40E+01		YES	YES	YES	
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	5.40E-01					ND					2.00E+00		YES	YES		1.60E+01		YES	YES		
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	1.60E-01	J				ND					3.20E-01	J				2.50E+00		YES			
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	7.80E-01					ND					1.60E+00		YES			1.70E+01		YES	YES		
Carbazole	mg/kg	NA	3.11E+01	NA	1.10E-01	J				ND					4.50E-01	J				4.40E+00	J				
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	6.50E-01					ND					1.70E+00		YES			1.60E+01		YES		YES	
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	1.10E-01	J		YES		ND					2.40E-01	J		YES		2.00E+00		YES	YES		
Dibenzofuran	mg/kg	NA	3.09E+01	NA	ND					ND					9.20E-02	J				3.80E+00					
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	1.20E+00				YES	5.90E-01				YES	4.00E+00		YES		YES	5.30E+01		YES		YES	
Fluorene	mg/kg	6.67E-01	3.09E+02	1.22E+02	4.70E-02	J				ND					3.30E-01	J				1.20E+01		YES			
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	2.00E-01	J				ND					4.10E-01					3.40E+00		YES	YES		
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					ND					3.50E-01	J	YES		YES	
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	3.30E-01	J			YES	ND					1.80E+00		YES		YES	4.10E+01		YES		YES	
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	1.00E+00				YES	6.90E-01				YES	3.00E+00		YES		YES	2.70E+01		YES		YES	
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	5.00E-02	J				ND					ND					ND					
n-Nitrosodiphenylamine	mg/kg	NA	1.29E+02	2.00E+01	ND					ND					ND					4.70E-01	J				

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^aBkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama, July*.

For SVOCs, value listed is the background screening criterion for soils adjacent to asphalt as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama, July*.

^bResidential human health site-specific screening level (SSSL) and ecological screening value (ESV) as given in IT Corporation (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 (and greater than zero).

J - Result is greater than method detection limit but less than or equal to reporting limit.

mg/kg - Milligrams per kilogram

NA - Not available

ND - Not detected

Qual - Data validation qualifier

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)	FTA-149 FTA-149-GP01 DG0004 22-Oct-98 4-8				FTA-149 FTA-149-GP02 DG0008 27-Oct-98 4-8				FTA-149 FTA-149-GP03 DG0012 22-Oct-98 4-7				FTA-149 FTA-149-GP04 DG0014 22-Oct-98 8-12				FTA-149 FTA-149-GP05 DG0015 2-Nov-98 8-12						
	Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG
METALS																							
Aluminum	mg/kg	1.36E+04	7.80E+03	1.58E+04		YES	YES	1.56E+04		YES	YES	1.65E+04		YES	YES	1.49E+04		YES	YES	1.85E+04		YES	YES
Arsenic	mg/kg	1.83E+01	4.26E-01	7.30E+00			YES	6.70E+00			YES	5.70E+00			YES	9.00E+00			YES	4.30E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	8.77E+01				1.06E+02				9.26E+01				2.02E+02				5.44E+01			
Beryllium	mg/kg	8.60E-01	9.60E+00	2.20E+00		YES		1.50E+00		YES		1.20E+00		YES		1.50E+00		YES		1.20E+00		YES	
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				5.60E-01		YES		5.50E-01		YES		8.90E-01		YES		7.20E-01		YES	
Calcium	mg/kg	6.37E+02	NA	2.65E+03		YES		2.44E+03 J		YES		1.88E+03		YES		1.92E+03		YES		2.05E+03 J		YES	
Chromium	mg/kg	3.83E+01	2.32E+01	2.67E+01			YES	2.74E+01 J			YES	2.63E+01			YES	2.49E+01			YES	2.87E+01 J			YES
Cobalt	mg/kg	1.75E+01	4.68E+02	2.68E+01		YES		2.79E+01		YES		2.01E+01		YES		2.97E+01		YES		3.11E+01		YES	
Copper	mg/kg	1.94E+01	3.13E+02	4.56E+01		YES		5.30E+01		YES		5.00E+01		YES		5.73E+01		YES		4.70E+01		YES	
Iron	mg/kg	4.48E+04	2.34E+03	4.86E+04 J		YES	YES	4.27E+04			YES	4.27E+04 J		YES		4.54E+04 J		YES	YES	4.64E+04		YES	YES
Lead	mg/kg	3.85E+01	4.00E+02	2.16E+01				1.96E+01				1.93E+01				3.00E+01				2.50E+01			
Magnesium	mg/kg	7.66E+02	NA	5.81E+03 J		YES		6.84E+03 J		YES		8.30E+03 J		YES		6.37E+03 J		YES		9.86E+03 J		YES	
Manganese	mg/kg	1.36E+03	3.63E+02	4.29E+02			YES	3.73E+02 J			YES	4.45E+02		YES		1.55E+03		YES	YES	3.11E+02 J			
Mercury	mg/kg	7.00E-02	2.33E+00	ND				4.70E-02				3.80E-02				ND				6.60E-02			
Nickel	mg/kg	1.29E+01	1.54E+02	4.84E+01		YES		5.59E+01		YES		5.36E+01		YES		6.46E+01		YES		4.82E+01		YES	
Potassium	mg/kg	7.11E+02	NA	6.82E+02				6.10E+02				8.52E+02		YES		9.11E+02		YES		7.21E+02		YES	
Selenium	mg/kg	4.70E-01	3.91E+01	1.20E+00		YES		1.30E+00		YES		8.90E-01		YES		ND				1.50E+00		YES	
Vanadium	mg/kg	6.49E+01	5.31E+01	ND				ND				ND				ND				ND			
Zinc	mg/kg	3.49E+01	2.34E+03	1.21E+02 J		YES		1.18E+02		YES		1.22E+02 J		YES		1.23E+02 J		YES		1.36E+02		YES	
VOLATILE ORGANIC COMPOUNDS																							
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	ND				ND				4.60E-03 J				ND				2.50E+01			
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	ND				ND				3.90E-03 J				ND				1.60E+00			
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	ND				ND				ND				ND				8.60E+00			
Acetone	mg/kg	NA	7.76E+02	1.90E-02 B				7.60E-03 J				2.10E-02 B				1.30E-02 B				ND			
Benzene	mg/kg	NA	2.17E+01	ND				ND				ND				ND				1.20E-02 J			
Bromomethane	mg/kg	NA	1.09E+01	ND				ND				ND				ND				1.50E-03 J			
Carbon disulfide	mg/kg	NA	7.77E+02	ND				ND				1.10E-02				ND				6.00E-03 J			
Cumene	mg/kg	NA	7.77E+02	ND				ND				ND				ND				2.60E-01 J			
Ethylbenzene	mg/kg	NA	7.77E+02	ND				ND				2.40E-03 J				ND				2.60E+00			
Methylene chloride	mg/kg	NA	8.41E+01	6.60E-03 B				5.30E-03 B				6.20E-03 B				7.50E-03 B				ND			
Naphthalene	mg/kg	NA	1.55E+02	ND				ND				3.40E-03 J				ND				2.00E-01 J			
Toluene	mg/kg	NA	1.55E+03	ND				ND				1.10E-02				ND				1.50E-02 J			
m,p-Xylenes	mg/kg	NA	1.55E+04	ND				ND				1.00E-02				ND				6.00E+00			
n-Butylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND				9.90E-01 J			
n-Propylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND				3.00E+00			
p-Cymene	mg/kg	NA	1.55E+03	ND				ND				ND				ND				1.80E-01 J			
sec-Butylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND				2.50E-01 J			

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)				FTA-149 FTA-149-GP01 DG0004 22-Oct-98 4-8				FTA-149 FTA-149-GP02 DG0008 27-Oct-98 4-8				FTA-149 FTA-149-GP03 DG0012 22-Oct-98 4-7				FTA-149 FTA-149-GP04 DG0014 22-Oct-98 8-12				FTA-149 FTA-149-GP05 DG0015 2-Nov-98 8-12				
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	
SEMIVOLATILE ORGANIC COMPOUNDS																								
2-Methylnaphthalene	mg/kg	NA	1.55E+02	ND				ND				ND				ND				7.10E-01				
Acenaphthene	mg/kg	NA	4.63E+02	ND				ND				ND				ND				ND				
Acenaphthylene	mg/kg	NA	4.63E+02	5.70E-02	J			ND				ND				ND				ND				
Anthracene	mg/kg	NA	2.33E+03	1.20E-01	J			ND				3.00E-02	J			ND				ND				
Benzo(a)anthracene	mg/kg	NA	8.51E-01	3.80E-01				ND				5.50E-02	J			ND				ND				
Benzo(a)pyrene	mg/kg	NA	8.51E-02	3.70E-01	J		YES	ND				4.80E-02	J			ND				ND				
Benzo(b)fluoranthene	mg/kg	NA	8.51E-01	4.30E-01				ND				5.40E-02	J			ND				ND				
Benzo(ghi)perylene	mg/kg	NA	2.32E+02	1.90E-01	J			ND				ND				ND				ND				
Benzo(k)fluoranthene	mg/kg	NA	8.51E+00	3.10E-01	J			ND				4.90E-02	J			ND				ND				
Carbazole	mg/kg	NA	3.11E+01	4.20E-02	J			ND				ND				ND				ND				
Chrysene	mg/kg	NA	8.61E+01	4.30E-01				ND				6.40E-02	J			ND				ND				
Dibenz(a,h)anthracene	mg/kg	NA	8.61E-02	7.70E-02	J			ND				ND				ND				ND				
Fluoranthene	mg/kg	NA	3.09E+02	8.20E-01				ND				1.50E-01	J			ND				ND				
Fluorene	mg/kg	NA	3.09E+02	ND				ND				ND				ND				ND				
Indeno(1,2,3-cd)pyrene	mg/kg	NA	8.51E-01	1.80E-01	J			ND				ND				ND				ND				
Naphthalene	mg/kg	NA	1.55E+02	ND				ND				ND				ND				4.50E-01				
Phenanthrene	mg/kg	NA	2.32E+03	3.80E-01				ND				6.90E-02	J			ND				ND				
Pyrene	mg/kg	NA	2.33E+02	6.50E-01				ND				1.20E-01	J			ND				ND				
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND				1.00E-01	J			ND				ND				ND				

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)	FTA-149 FTA-149-GP06 DG0016 2-Nov-98 4-8				FTA-149 FTA-149-GP07 DG0018 2-Nov-98 1-4				FTA-149 FTA-149-GP08 DG0020 22-Oct-98 4-7				FTA-149 FTA-149-GP09 DG0022 22-Oct-98 8-12						
	Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG
METALS																			
Aluminum	mg/kg	1.36E+04	7.80E+03	1.78E+04		YES	YES	1.13E+04			YES	2.06E+04		YES	YES	1.73E+04		YES	YES
Arsenic	mg/kg	1.83E+01	4.26E-01	4.20E+00			YES	5.00E+00			YES	5.50E+00		YES		5.50E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	6.16E+01				8.00E+01				1.03E+02				1.27E+02			
Beryllium	mg/kg	8.60E-01	9.60E+00	1.10E+00		YES		7.80E-01				1.20E+00		YES		2.10E+00		YES	
Cadmium	mg/kg	2.20E-01	6.25E+00	7.10E-01		YES		9.60E-01		YES		8.60E-01		YES		7.10E-01		YES	
Calcium	mg/kg	6.37E+02	NA	1.93E+03 J		YES		2.26E+04 J		YES		1.92E+03		YES		1.71E+03		YES	
Chromium	mg/kg	3.83E+01	2.32E+01	2.73E+01 J			YES	2.08E+01 J				3.07E+01		YES		2.67E+01			YES
Cobalt	mg/kg	1.75E+01	4.68E+02	1.77E+01		YES		2.13E+01		YES		2.22E+01		YES		2.39E+01		YES	
Copper	mg/kg	1.94E+01	3.13E+02	4.62E+01		YES		2.60E+01		YES		4.76E+01		YES		5.86E+01		YES	
Iron	mg/kg	4.48E+04	2.34E+03	4.29E+04			YES	2.86E+04			YES	4.54E+04 J		YES	YES	4.36E+04 J			YES
Lead	mg/kg	3.85E+01	4.00E+02	1.69E+01				3.36E+01				2.11E+01				2.11E+01			
Magnesium	mg/kg	7.66E+02	NA	9.24E+03 J		YES		1.61E+04 J		YES		1.19E+04 J		YES		7.88E+03 J		YES	
Manganese	mg/kg	1.36E+03	3.63E+02	2.20E+02 J				1.93E+02 J				5.70E+02		YES		2.34E+02			
Mercury	mg/kg	7.00E-02	2.33E+00	6.30E-02				5.50E-02				ND				4.10E-02			
Nickel	mg/kg	1.29E+01	1.54E+02	4.67E+01		YES		3.59E+01		YES		5.40E+01		YES		6.47E+01		YES	
Potassium	mg/kg	7.11E+02	NA	5.93E+02				ND				7.26E+02		YES		9.10E+02		YES	
Selenium	mg/kg	4.70E-01	3.91E+01	1.40E+00		YES		7.50E-01		YES		8.30E-01		YES		8.20E-01		YES	
Vanadium	mg/kg	6.49E+01	5.31E+01	ND				7.10E+00				ND				ND			
Zinc	mg/kg	3.49E+01	2.34E+03	1.25E+02		YES		5.40E+02		YES		1.28E+02 J		YES		1.37E+02 J		YES	
VOLATILE ORGANIC COMPOUNDS																			
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	ND				3.90E-03 J				ND				ND			
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	ND				ND				ND				ND			
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	ND				ND				ND				ND			
Acetone	mg/kg	NA	7.76E+02	1.00E-02 B				6.90E-01 J				9.50E-03 B				8.40E-03 B			
Benzene	mg/kg	NA	2.17E+01	ND				ND				ND				ND			
Bromomethane	mg/kg	NA	1.09E+01	ND				ND				ND				ND			
Carbon disulfide	mg/kg	NA	7.77E+02	ND				7.00E-03				ND				ND			
Cumene	mg/kg	NA	7.77E+02	ND				ND				ND				ND			
Ethylbenzene	mg/kg	NA	7.77E+02	ND				ND				ND				ND			
Methylene chloride	mg/kg	NA	8.41E+01	3.60E-03 B				3.90E-03 B				7.40E-03 B				6.30E-03 B			
Naphthalene	mg/kg	NA	1.55E+02	ND				2.90E-03 J				ND				ND			
Toluene	mg/kg	NA	1.55E+03	ND				ND				ND				ND			
m,p-Xylenes	mg/kg	NA	1.55E+04	ND				ND				ND				ND			
n-Butylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND			
n-Propylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND			
p-Cymene	mg/kg	NA	1.55E+03	ND				ND				ND				ND			
sec-Butylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND			

Table 5-2

**Subsurface Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)				FTA-149 FTA-149-GP06 DG0016 2-Nov-98 4-8				FTA-149 FTA-149-GP07 DG0018 2-Nov-98 1-4				FTA-149 FTA-149-GP08 DG0020 22-Oct-98 4-7				FTA-149 FTA-149-GP09 DG0022 22-Oct-98 8-12			
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																			
2-Methylnaphthalene	mg/kg	NA	1.55E+02	ND				ND				ND				ND			
Acenaphthene	mg/kg	NA	4.63E+02	ND				ND				4.60E-02	J			ND			
Acenaphthylene	mg/kg	NA	4.63E+02	ND				1.60E+00				5.70E-02	J			ND			
Anthracene	mg/kg	NA	2.33E+03	ND				1.40E+00				1.00E-01	J			ND			
Benzo(a)anthracene	mg/kg	NA	8.51E-01	ND				2.30E+00			YES	2.60E-01	J			ND			
Benzo(a)pyrene	mg/kg	NA	8.51E-02	ND				3.10E+00			YES	2.80E-01	J		YES	ND			
Benzo(b)fluoranthene	mg/kg	NA	8.51E-01	ND				2.60E+00			YES	2.40E-01	J			ND			
Benzo(ghi)perylene	mg/kg	NA	2.32E+02	ND				1.70E+00				1.50E-01	J			ND			
Benzo(k)fluoranthene	mg/kg	NA	8.51E+00	ND				3.30E+00				3.30E-01	J			ND			
Carbazole	mg/kg	NA	3.11E+01	ND				1.40E-01	J			8.10E-02	J			ND			
Chrysene	mg/kg	NA	8.61E+01	ND				2.30E+00				3.10E-01	J			ND			
Dibenz(a,h)anthracene	mg/kg	NA	8.61E-02	ND				8.80E-01			YES	8.00E-02	J			ND			
Fluoranthene	mg/kg	NA	3.09E+02	ND				3.50E+00				7.20E-01				ND			
Fluorene	mg/kg	NA	3.09E+02	ND				ND				6.30E-02	J			ND			
Indeno(1,2,3-cd)pyrene	mg/kg	NA	8.51E-01	ND				1.80E+00			YES	1.50E-01	J			ND			
Naphthalene	mg/kg	NA	1.55E+02	ND				ND				ND				ND			
Phenanthrene	mg/kg	NA	2.32E+03	ND				4.00E-01	J			3.10E-01	J			ND			
Pyrene	mg/kg	NA	2.33E+02	ND				3.00E+00				5.20E-01				ND			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND				ND				ND				6.10E-02	J		

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

(Page 5 of 6)

Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)				FTA-149 FTA-149-GP10 DG0024 22-Oct-98 4-8				FTA-149 FTA-149-GP11 DG0026 22-Oct-98 4-5				FTA-149 FTA-149-GP12 DG0028 22-Oct-98 8-12				FTA-149 FTA-149-GP13 DG0030 22-Oct-98 4-8			
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	2.08E+04		YES	YES	2.21E+04		YES	YES	1.88E+04		YES	YES	2.03E+04		YES	YES
Arsenic	mg/kg	1.83E+01	4.26E-01	3.90E+00			YES	4.90E+00			YES	4.30E+00			YES	4.30E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	1.49E+02				1.75E+02				1.28E+02				1.10E+02			
Beryllium	mg/kg	8.60E-01	9.60E+00	2.60E+00		YES		2.40E+00		YES		1.20E+00		YES		1.70E+00		YES	
Cadmium	mg/kg	2.20E-01	6.25E+00	8.00E-01		YES		ND				5.70E-01		YES		6.30E-01		YES	
Calcium	mg/kg	6.37E+02	NA	2.38E+03		YES		1.81E+03		YES		2.13E+03		YES		2.07E+03		YES	
Chromium	mg/kg	3.83E+01	2.32E+01	2.82E+01			YES	3.03E+01			YES	2.79E+01			YES	2.97E+01			YES
Cobalt	mg/kg	1.75E+01	4.68E+02	4.81E+01		YES		2.36E+01		YES		2.28E+01		YES		2.76E+01		YES	
Copper	mg/kg	1.94E+01	3.13E+02	5.00E+01		YES		5.74E+01		YES		4.34E+01		YES		5.18E+01		YES	
Iron	mg/kg	4.48E+04	2.34E+03	4.39E+04	J		YES	4.20E+04	J		YES	4.25E+04	J		YES	4.39E+04	J		YES
Lead	mg/kg	3.85E+01	4.00E+02	1.66E+01				2.40E+01				1.88E+01				1.82E+01			
Magnesium	mg/kg	7.66E+02	NA	1.05E+04	J	YES		7.70E+03	J	YES		1.05E+04	J	YES		9.16E+03	J	YES	
Manganese	mg/kg	1.36E+03	3.63E+02	5.24E+02			YES	1.24E+02				3.70E+02			YES	8.94E+02			YES
Mercury	mg/kg	7.00E-02	2.33E+00	ND				ND				ND				ND			
Nickel	mg/kg	1.29E+01	1.54E+02	8.78E+01		YES		5.44E+01		YES		4.80E+01		YES		6.58E+01		YES	
Potassium	mg/kg	7.11E+02	NA	6.55E+02				7.98E+02		YES		7.31E+02		YES		8.91E+02		YES	
Selenium	mg/kg	4.70E-01	3.91E+01	1.10E+00		YES		9.90E-01		YES		1.00E+00		YES		7.10E-01		YES	
Vanadium	mg/kg	6.49E+01	5.31E+01	ND				ND				ND				ND			
Zinc	mg/kg	3.49E+01	2.34E+03	1.56E+02	J	YES		1.48E+02	J	YES		1.31E+02	J	YES		1.58E+02	J	YES	
VOLATILE ORGANIC COMPOUNDS																			
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	ND				ND				ND				ND			
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	ND				ND				ND				ND			
1,3,5-Trimethylbenzene	mg/kg	NA	3.88E+02	ND				ND				ND				ND			
Acetone	mg/kg	NA	7.76E+02	1.10E-02	B			1.10E-02	B			1.80E-02	B			2.30E-02	B		
Benzene	mg/kg	NA	2.17E+01	ND				ND				ND				ND			
Bromomethane	mg/kg	NA	1.09E+01	ND				ND				ND				ND			
Carbon disulfide	mg/kg	NA	7.77E+02	ND				ND				ND				4.00E-03	J		
Cumene	mg/kg	NA	7.77E+02	ND				ND				ND				ND			
Ethylbenzene	mg/kg	NA	7.77E+02	ND				ND				ND				ND			
Methylene chloride	mg/kg	NA	8.41E+01	7.00E-03	B			7.80E-03	B			7.20E-03	B			7.70E-03	B		
Naphthalene	mg/kg	NA	1.55E+02	ND				ND				ND				2.90E-03	J		
Toluene	mg/kg	NA	1.55E+03	ND				ND				ND				ND			
m,p-Xylenes	mg/kg	NA	1.55E+04	ND				ND				ND				ND			
n-Butylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND			
n-Propylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND			
p-Cymene	mg/kg	NA	1.55E+03	ND				ND				ND				ND			
sec-Butylbenzene	mg/kg	NA	7.77E+01	ND				ND				ND				ND			

Table 5-2

**Subsurface Soil Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)	FTA-149 FTA-149-GP10 DG0024 22-Oct-98 4-8				FTA-149 FTA-149-GP11 DG0026 22-Oct-98 4-5				FTA-149 FTA-149-GP12 DG0028 22-Oct-98 8-12				FTA-149 FTA-149-GP13 DG0030 22-Oct-98 4-8						
	Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG
SEMIVOLATILE ORGANIC COMPOUNDS																			
2-Methylnaphthalene	mg/kg	NA	1.55E+02	ND				ND				ND				ND			
Acenaphthene	mg/kg	NA	4.63E+02	ND				ND				ND				ND			
Acenaphthylene	mg/kg	NA	4.63E+02	ND				ND				ND				ND			
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			
Carbazole	mg/kg	NA	3.11E+01	ND				ND				ND				ND			
Chrysene	mg/kg	NA	8.61E+01	ND				ND				ND				ND			
Dibenz(a,h)anthracene	mg/kg	NA	8.61E-02	ND				ND				ND				ND			
Fluoranthene	mg/kg	NA	3.09E+02	ND				ND				ND				ND			
Fluorene	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			
Naphthalene	mg/kg	NA	1.55E+02	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			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND				ND				ND				4.40E-02	J		

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^aBkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

^bResidential human health site-specific screening level (SSSL) as given in IT Corporation (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 (and greater than zero).

J - Result is greater than method detection limit but less than or equal to reporting limit.

mg/kg - Milligrams per kilogram.

NA - Not available.

ND - Not detected.

Qual - Data validation qualifier.

Table 5-3

Groundwater Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 2)

Parcel Sample Location Sample Number Sample Date				FTA-149 FTA-149-GP01 DG3001 28-Jan-99				FTA-149 FTA-149-GP02 DG3002 28-Jan-99				FTA-149 FTA-149-GP04 DG3003 28-Jan-99				FTA-149 FTA-149-GP07 DG3006 28-Jan-99			
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL												
METALS																			
Aluminum	mg/L	2.34E+00	1.56E+00	7.95E+00	J	YES	YES	1.35E+00	J			2.11E-01	J			2.01E+01	J	YES	YES
Arsenic	mg/L	1.78E-02	4.00E-05	ND				ND				ND				3.00E-03	J		YES
Barium	mg/L	1.27E-01	1.10E-01	7.46E-02	J			3.33E-02	J			3.25E-02	J			2.05E-01		YES	YES
Beryllium	mg/L	1.24E-03	3.12E-03	ND				ND				ND				1.00E-03	B		
Calcium	mg/L	5.65E+01	NA	2.90E+02		YES		2.00E+02		YES		3.23E+02		YES		1.33E+02		YES	
Chromium	mg/L	NA	4.69E-03	1.43E-02			YES	ND				ND				3.45E-02			YES
Cobalt	mg/L	2.34E-02	9.39E-02	1.10E-02	J			ND				ND				1.29E-02	J		
Copper	mg/L	2.55E-02	6.26E-02	1.14E-02	B			ND				ND				2.04E-02	J		
Iron	mg/L	7.04E+00	4.69E-01	1.20E+01		YES	YES	1.31E+00			YES	8.71E-01		YES		2.91E+01		YES	YES
Lead	mg/L	7.99E-03	1.50E-02	5.20E-03				ND				ND				1.38E-02		YES	
Magnesium	mg/L	2.13E+01	NA	1.41E+02		YES		9.57E+01		YES		1.83E+02		YES		8.61E+01		YES	
Manganese	mg/L	5.81E-01	7.35E-02	7.32E-01		YES	YES	2.20E-01			YES	6.45E-01		YES	YES	5.10E-01			YES
Mercury	mg/L	NA	4.60E-04	1.70E-04	J			ND				ND				8.70E-05	J		
Nickel	mg/L	NA	3.13E-02	2.57E-02	J			ND				ND				3.86E-02	J		YES
Potassium	mg/L	7.20E+00	NA	5.92E+00	J			1.79E+00	J			5.07E+00	J			1.58E+01	J	YES	
Sodium	mg/L	1.48E+01	NA	2.06E+02		YES		1.26E+02		YES		2.06E+02		YES		8.99E+01		YES	
Vanadium	mg/L	1.70E-02	1.10E-02	1.59E-02	J		YES	ND				ND				3.47E-02	J	YES	YES
Zinc	mg/L	2.20E-01	4.69E-01	5.92E-02	J			9.80E-03	J			ND				5.93E-02	J		
VOLATILE ORGANIC COMPOUNDS																			
2-Butanone	mg/L	NA	7.14E-01	ND															
Acetone	mg/L	NA	1.56E-01	ND				ND				ND				2.40E-03	J		
Bromomethane	mg/L	NA	2.17E-03	1.10E-04	J			ND				ND				ND			
Carbon disulfide	mg/L	NA	1.51E-01	ND				ND				ND				2.00E-04	J		
Hexachlorobutadiene	mg/L	NA	8.30E-04	2.40E-04	B			ND				ND				ND			
Toluene	mg/L	NA	2.59E-01	ND															
SEMIVOLATILE ORGANIC COMPOUNDS																			
Phenol	mg/L	NA	9.31E-01	ND				ND				1.00E-03	J			ND			

Table 5-3

Groundwater Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

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Parcel Sample Location Sample Number Sample Date				FTA-149 FTA-149-GP09 DG3007 29-Oct-98				FTA-149 FTA-149-GP12 DG3008 27-Jan-99				FTA-149 FTA-149-GP13 DG3009 27-Jan-99			
Parameter	Units	BKG ^a	SSSL ^b	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
METALS															
Aluminum	mg/L	2.34E+00	1.56E+00	9.87E+00	J	YES	YES	6.41E+01	J	YES	YES	2.66E-01	B		
Arsenic	mg/L	1.78E-02	4.00E-05	ND				1.14E-02			YES	ND			
Barium	mg/L	1.27E-01	1.10E-01	ND				5.21E-01		YES	YES	1.57E-02	J		
Beryllium	mg/L	1.24E-03	3.12E-03	ND				3.70E-03	J	YES	YES	ND			
Calcium	mg/L	5.65E+01	NA	8.44E+01		YES		1.86E+02		YES		2.60E+02		YES	
Chromium	mg/L	NA	4.69E-03	2.01E-02			YES	1.53E-01			YES	ND			
Cobalt	mg/L	2.34E-02	9.39E-02	ND				4.08E-02	J	YES		ND			
Copper	mg/L	2.55E-02	6.26E-02	3.42E-02		YES		9.78E-02		YES	YES	ND			
Iron	mg/L	7.04E+00	4.69E-01	2.15E+01		YES	YES	1.09E+02		YES	YES	9.16E-01			YES
Lead	mg/L	7.99E-03	1.50E-02	7.20E-03				4.26E-02		YES	YES	ND			
Magnesium	mg/L	2.13E+01	NA	6.14E+01		YES		1.32E+02		YES		1.31E+02		YES	
Manganese	mg/L	5.81E-01	7.35E-02	5.38E-01			YES	1.33E+00		YES	YES	3.77E-01			YES
Mercury	mg/L	NA	4.60E-04	ND				1.30E-04	J			ND			
Nickel	mg/L	NA	3.13E-02	6.80E-02			YES	1.54E-01			YES	ND			
Potassium	mg/L	7.20E+00	NA	ND				2.04E+01	J	YES		3.28E+00	J		
Sodium	mg/L	1.48E+01	NA	9.74E+01		YES		9.45E+01		YES		1.02E+02		YES	
Vanadium	mg/L	1.70E-02	1.10E-02	ND				1.11E-01		YES	YES	ND			
Zinc	mg/L	2.20E-01	4.69E-01	4.11E-02	B			2.67E-01	J	YES		ND			
VOLATILE ORGANIC COMPOUNDS															
2-Butanone	mg/L	NA	7.14E-01	1.40E-03	J			ND				ND			
Acetone	mg/L	NA	1.56E-01	1.00E-02	B			1.30E-03	J			ND			
Bromomethane	mg/L	NA	2.17E-03	ND				ND				ND			
Carbon disulfide	mg/L	NA	1.51E-01	2.20E-04	J			ND				ND			
Hexachlorobutadiene	mg/L	NA	8.30E-04	ND				ND				ND			
Toluene	mg/L	NA	2.59E-01	1.40E-04	J			ND				ND			
SEMIVOLATILE ORGANIC COMPOUNDS															
Phenol	mg/L	NA	9.31E-01	6.10E-03	B			ND				ND			

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^a Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama*, July.

^b Residential human health site-specific screening level (SSSL) as given in IT Corporation (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 (and greater than zero).

J - Result is greater than stated method detection limit but less than or equal to specified reporting limit.

mg/L - Milligrams per liter

NA - Not available

ND - Not detected

Qual - Data validation qualifier

Table 5-4

Surface Water Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 3)

Parcel Sample Location Sample Number Sample Date					FTA-149 FTA-149-SW/SD01 DG2001 28-Jan-99					FTA-149 FTA-149-SW/SD02 DG2002 11-Feb-99					FTP-77 FTP-77-SW/SD03 HK2003 26-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/L	5.26E+00	1.53E+01	8.70E-02	1.13E-01	B			YES	3.21E-01				YES	2.95E-01				YES
Barium	mg/L	7.53E-02	1.10E+00	3.90E-03	3.94E-02	J			YES	3.93E-02	J			YES	3.89E-02	J			YES
Calcium	mg/L	2.52E+01	NA	1.16E+02	5.06E+01		YES			4.06E+01		YES			4.53E+01		YES		
Iron	mg/L	1.96E+01	4.70E+00	1.00E+00	1.16E-01					4.00E-01					3.41E-01				
Magnesium	mg/L	1.10E+01	NA	8.20E+01	2.02E+01		YES			1.55E+01		YES			1.83E+01		YES		
Manganese	mg/L	5.65E-01	6.40E-01	8.00E-02	9.40E-03	J				3.40E-02					1.36E-02	J			
Mercury	mg/L	NA	4.25E-03	1.00E-05	ND					4.80E-05	J			YES	ND				
Potassium	mg/L	2.56E+00	NA	5.30E+01	1.83E+00	J				1.54E+00	B				1.50E+00	B			
Selenium	mg/L	NA	7.82E-02	5.00E-03	ND					ND					2.60E-03	B			
Sodium	mg/L	3.44E+00	NA	6.80E+02	9.73E+00		YES			8.01E+00		YES			8.17E+00		YES		
Zinc	mg/L	4.03E-02	4.65E+00	5.89E-02	ND					ND					1.53E-02	J			
VOLATILE ORGANIC COMPOUNDS																			
Acetone	mg/L	NA	1.57E+00	7.80E+01	ND					1.80E-03	B				ND				
Toluene	mg/L	NA	2.32E+00	1.75E-01	ND					3.90E-04	J				ND				
m,p-Xylenes	mg/L	NA	1.93E+01	1.17E-01	ND					2.40E-04	J				ND				
SEMIVOLATILE ORGANIC COMPOUNDS																			
bis(2-Ethylhexyl)phthalate	mg/L	NA	5.17E-02	3.00E-04	ND					ND					4.80E-03	B			YES

Table 5-4

**Surface Water Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 3)

Parcel Sample Location Sample Number Sample Date					WATERSHED WS149-SW/SD01 WS2004 9-Feb-99					WATERSHED WS149-SW/SD02 WS2005 9-Feb-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	1.80E-01	J			YES	7.10E-02	B			
Barium	mg/L	7.53E-02	1.10E+00	3.90E-03	4.09E-02	J			YES	5.86E-02	J			YES
Calcium	mg/L	2.52E+01	NA	1.16E+02	4.50E+01		YES			5.48E+01		YES		
Iron	mg/L	1.96E+01	4.70E+00	1.00E+00	1.37E-01	B				1.08E-01	B			
Magnesium	mg/L	1.10E+01	NA	8.20E+01	2.02E+01		YES			2.29E+01		YES		
Manganese	mg/L	5.65E-01	6.40E-01	8.00E-02	3.50E-03	J				6.90E-02				
Mercury	mg/L	NA	4.25E-03	1.00E-05	ND					5.80E-05	J			YES
Potassium	mg/L	2.56E+00	NA	5.30E+01	2.14E+00	J				2.13E+00	J			
Selenium	mg/L	NA	7.82E-02	5.00E-03	ND					ND				
Sodium	mg/L	3.44E+00	NA	6.80E+02	1.64E+01		YES			1.52E+01		YES		
Zinc	mg/L	4.03E-02	4.65E+00	5.89E-02	ND					ND				
VOLATILE ORGANIC COMPOUNDS														
Acetone	mg/L	NA	1.57E+00	7.80E+01	1.40E-03	J				1.10E-03	J			
Toluene	mg/L	NA	2.32E+00	1.75E-01	ND					ND				
m,p-Xylenes	mg/L	NA	1.93E+01	1.17E-01	ND					ND				
SEMIVOLATILE ORGANIC COMPOUNDS														
bis(2-Ethylhexyl)phthalate	mg/L	NA	5.17E-02	3.00E-04	ND					ND				

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^a Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (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 Corporation (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 (and greater than zero).

J - Result is greater than stated method detection limit but less than or equal to specified reporting limit.

mg/L - Milligrams per liter

NA - Not available

ND - Not detected

Qual - Data validation qualifier

Table 5-4

**Surface Water Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 3)

Parcel Sample Location Sample Number Sample Date				
Parameter	Units	BKG ^a	SSSL ^b	ESV ^b
METALS				
Aluminum	mg/L	5.26E+00	1.53E+01	8.70E-02
Barium	mg/L	7.53E-02	1.10E+00	3.90E-03
Calcium	mg/L	2.52E+01	NA	1.16E+02
Iron	mg/L	1.96E+01	4.70E+00	1.00E+00
Magnesium	mg/L	1.10E+01	NA	8.20E+01
Manganese	mg/L	5.65E-01	6.40E-01	8.00E-02
Mercury	mg/L	NA	4.25E-03	1.00E-05
Potassium	mg/L	2.56E+00	NA	5.30E+01
Selenium	mg/L	NA	7.82E-02	5.00E-03
Sodium	mg/L	3.44E+00	NA	6.80E+02
Zinc	mg/L	4.03E-02	4.65E+00	5.89E-02
VOLATILE ORGANIC COMPOUNDS				
Acetone	mg/L	NA	1.57E+00	7.80E+01
Toluene	mg/L	NA	2.32E+00	1.75E-01
m,p-Xylenes	mg/L	NA	1.93E+01	1.17E-01
SEMIVOLATILE ORGANIC COMPOUNDS				
bis(2-Ethylhexyl)phthalate	mg/L	NA	5.17E-02	3.00E-04

Table 5-5

Sediment Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

(Page 1 of 3)

Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)					FTA-149 FTA-149-SW/SD01 DG1001 28-Jan-99 0- .5					FTA-149 FTA-149-SW/SD02 DG1002 11-Feb-99 0- .5					FTP-77 FTP-77-SW/SD03 HK1003 26-Jan-99 0- .5				
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/kg	8.59E+03	1.15E+06	NA	6.57E+03					3.59E+03					5.94E+03				
Antimony	mg/kg	7.30E-01	4.22E+02	1.20E+01	ND					ND					6.40E-01	J			
Arsenic	mg/kg	1.13E+01	5.58E+01	7.24E+00	3.10E+00					3.50E+00					6.00E+00	J			
Barium	mg/kg	9.89E+01	8.36E+04	NA	6.93E+01					3.60E+01					2.89E+01	J			
Beryllium	mg/kg	9.70E-01	1.50E+02	NA	6.70E-01					4.40E-01	J				7.40E-01				
Cadmium	mg/kg	4.30E-01	1.71E+02	1.00E+00	ND					ND					1.00E+00	J	YES		YES
Calcium	mg/kg	1.11E+03	NA	NA	6.65E+03		YES			2.42E+04		YES			1.99E+04	J	YES		
Chromium	mg/kg	3.12E+01	2.79E+03	5.23E+01	1.17E+01					9.30E+00					1.57E+01	J			
Cobalt	mg/kg	1.10E+01	6.72E+04	5.00E+01	8.00E+00					5.40E+00	J				1.05E+01	J			
Copper	mg/kg	1.71E+01	4.74E+04	1.87E+01	2.13E+01		YES	YES		1.03E+01					1.84E+01	J	YES		
Iron	mg/kg	3.53E+04	3.59E+05	NA	1.56E+04					1.27E+04					2.44E+04	J			
Lead	mg/kg	3.78E+01	4.00E+02	3.02E+01	4.79E+01		YES	YES		4.28E+01		YES		YES	1.66E+01	J			
Magnesium	mg/kg	9.06E+02	NA	NA	3.85E+03		YES			1.36E+04		YES			1.31E+04	J	YES		
Manganese	mg/kg	7.12E+02	4.38E+04	NA	9.49E+01					3.03E+02					3.49E+02	J			
Mercury	mg/kg	1.10E-01	2.99E+02	1.30E-01	5.20E-02					2.80E-02	J				ND				
Nickel	mg/kg	1.30E+01	1.76E+04	1.59E+01	8.70E+00					6.90E+00					1.47E+01		YES		
Potassium	mg/kg	1.01E+03	NA	NA	4.58E+02	J				3.06E+02	J				2.54E+02	J			
Selenium	mg/kg	7.20E-01	5.96E+03	NA	1.00E+00		YES			7.60E-01		YES			8.00E-01	J	YES		
Sodium	mg/kg	6.92E+02	NA	NA	8.89E+01	B				1.20E+02	B				4.64E+01	B			
Vanadium	mg/kg	4.09E+01	4.83E+03	NA	1.72E+01					1.19E+01					1.87E+01				
Zinc	mg/kg	5.27E+01	3.44E+05	1.24E+02	7.06E+01		YES			6.78E+01		YES			1.60E+02	J	YES		YES
VOLATILE ORGANIC COMPOUNDS																			
Acetone	mg/kg	NA	1.03E+05	4.53E-01	9.40E-03	J				7.90E-03	B				ND				
Methylene chloride	mg/kg	NA	9.84E+03	1.26E+00	3.70E-03	B				2.90E-03	B				3.10E-03	B			
SEMIVOLATILE ORGANIC COMPOUNDS																			
Acenaphthylene	mg/kg	NA	5.59E+04	3.30E-01	2.70E-01	J				ND					ND				
Anthracene	mg/kg	NA	2.99E+05	3.30E-01	2.10E-01	J				ND					ND				
Benzo(a)anthracene	mg/kg	NA	8.93E+01	3.30E-01	3.70E-01	J				ND		YES			8.80E-02	J			
Benzo(a)pyrene	mg/kg	NA	8.93E+00	3.30E-01	5.90E-01					6.10E-02	J				6.90E-02	J			
Benzo(b)fluoranthene	mg/kg	NA	8.93E+01	6.55E-01	5.00E-01					ND					9.70E-02	J			
Benzo(ghi)perylene	mg/kg	NA	2.79E+04	6.55E-01	3.80E-01	J				9.90E-02	J				ND				
Benzo(k)fluoranthene	mg/kg	NA	8.93E+02	6.55E-01	7.20E-01					ND		YES			ND				
Carbazole	mg/kg	NA	3.26E+03	NA	5.40E-02	J				ND					ND				
Chrysene	mg/kg	NA	9.79E+03	3.30E-01	4.20E-01	J				8.20E-02	J			YES	1.00E-01	J			
Dibenz(a,h)anthracene	mg/kg	NA	9.79E+00	3.30E-01	1.80E-01	J				ND					ND				
Fluoranthene	mg/kg	NA	3.73E+04	3.30E-01	6.50E-01					1.20E-01	J			YES	2.20E-01	J			
Fluorene	mg/kg	NA	3.73E+04	3.30E-01	ND					ND					4.80E-02	J			
Indeno(1,2,3-cd)pyrene	mg/kg	NA	8.93E+01	6.55E-01	4.00E-01	J				ND					ND				
Phenanthrene	mg/kg	NA	2.79E+05	3.30E-01	1.60E-01	J				9.70E-02	J				2.40E-01	J			
Pyrene	mg/kg	NA	3.06E+04	3.30E-01	4.70E-01					9.40E-02	J			YES	1.80E-01	J			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	5.41E+03	1.82E-01	ND					8.20E-02	J				1.00E-01	B			

Table 5-5

Sediment Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama

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Parcel Sample Location Sample Number Sample Date Sample Depth (Feet)					WATERSHED WS149-SW/SD01 WS1004 9-Feb-99 0- .5					WATERSHED WS149-SW/SD02 WS1005 9-Feb-99 0- .5				
Parameter	Units	BKG ^a	SSSL ^o	ESV ^p	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS														
Aluminum	mg/kg	8.59E+03	1.15E+06	NA	8.42E+03					6.88E+03				
Antimony	mg/kg	7.30E-01	4.22E+02	1.20E+01	ND					ND				
Arsenic	mg/kg	1.13E+01	5.58E+01	7.24E+00	4.60E+00					4.30E+00				
Barium	mg/kg	9.89E+01	8.36E+04	NA	7.03E+01					6.08E+01				
Beryllium	mg/kg	9.70E-01	1.50E+02	NA	8.30E-01					5.10E-01	J			
Cadmium	mg/kg	4.30E-01	1.71E+02	1.00E+00	ND					5.70E-01	J	YES		
Calcium	mg/kg	1.11E+03	NA	NA	2.87E+03		YES			3.34E+03		YES		
Chromium	mg/kg	3.12E+01	2.79E+03	5.23E+01	1.50E+01					1.24E+01				
Cobalt	mg/kg	1.10E+01	6.72E+04	5.00E+01	1.04E+01					6.60E+00	J			
Copper	mg/kg	1.71E+01	4.74E+04	1.87E+01	2.53E+01		YES		YES	2.12E+01		YES		YES
Iron	mg/kg	3.53E+04	3.59E+05	NA	2.57E+04					1.76E+04				
Lead	mg/kg	3.78E+01	4.00E+02	3.02E+01	2.21E+01					6.39E+01		YES		YES
Magnesium	mg/kg	9.06E+02	NA	NA	3.47E+03		YES			1.57E+03		YES		
Manganese	mg/kg	7.12E+02	4.38E+04	NA	3.66E+02					2.60E+02				
Mercury	mg/kg	1.10E-01	2.99E+02	1.30E-01	3.80E-02	J				1.00E-01				
Nickel	mg/kg	1.30E+01	1.76E+04	1.59E+01	2.39E+01		YES		YES	1.11E+01				
Potassium	mg/kg	1.01E+03	NA	NA	6.55E+02	J				4.85E+02	J			
Selenium	mg/kg	7.20E-01	5.96E+03	NA	1.50E+00		YES			1.00E+00		YES		
Sodium	mg/kg	6.92E+02	NA	NA	1.43E+02	B				1.59E+02	B			
Vanadium	mg/kg	4.09E+01	4.83E+03	NA	2.02E+01					1.95E+01				
Zinc	mg/kg	5.27E+01	3.44E+05	1.24E+02	1.04E+02		YES			1.24E+02		YES		YES
VOLATILE ORGANIC COMPOUNDS														
Acetone	mg/kg	NA	1.03E+05	4.53E-01	1.30E-02	B				ND				
Methylene chloride	mg/kg	NA	9.84E+03	1.26E+00	2.70E-02	B				2.90E-02	B			
SEMIVOLATILE ORGANIC COMPOUNDS														
Acenaphthylene	mg/kg	NA	5.59E+04	3.30E-01	ND					ND				
Anthracene	mg/kg	NA	2.99E+05	3.30E-01	ND					4.70E-02	J			
Benzo(a)anthracene	mg/kg	NA	8.93E+01	3.30E-01	5.10E-02	J				1.30E-01	J			
Benzo(a)pyrene	mg/kg	NA	8.93E+00	3.30E-01	7.50E-02	J				2.10E-01	J			
Benzo(b)fluoranthene	mg/kg	NA	8.93E+01	6.55E-01	6.60E-02	J				2.00E-01	J			
Benzo(ghi)perylene	mg/kg	NA	2.79E+04	6.55E-01	5.90E-02	J				1.60E-01	J			
Benzo(k)fluoranthene	mg/kg	NA	8.93E+02	6.55E-01	9.70E-02	J				2.70E-01	J			
Carbazole	mg/kg	NA	3.26E+03	NA	ND					ND				
Chrysene	mg/kg	NA	9.79E+03	3.30E-01	7.90E-02	J				2.10E-01	J			
Dibenz(a,h)anthracene	mg/kg	NA	9.79E+00	3.30E-01	ND					7.70E-02	J			
Fluoranthene	mg/kg	NA	3.73E+04	3.30E-01	1.20E-01	J				2.50E-01	J			
Fluorene	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	5.70E-02	J				1.40E-01	J			
Phenanthrene	mg/kg	NA	2.79E+05	3.30E-01	ND					8.50E-02	J			
Pyrene	mg/kg	NA	3.06E+04	3.30E-01	9.60E-02	J				2.40E-01	J			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	5.41E+03	1.82E-01	ND					7.30E-02	B			

Table 5-5

**Sediment Analytical Results
Former Motor Pool Area 600, Parcels 149(7) and 136(7)
Fort McClellan, Calhoun County, Alabama**

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Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

^a Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (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 Corporation (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 (and greater than zero).

J - Result is greater than stated method detection limit but less than or equal to specified reporting limit.

mg/kg - Milligrams per kilogram

NA - Not available

ND - Not detected

Qual - Data validation qualifier

methylene chloride results and eight of the acetone results were flagged with a "B" data qualifier signifying that these compounds were also detected in an associated laboratory or field blank sample. Sample locations FTA-149-GP13 and FTA-149-GP07 contained 12 and 11 VOCs, respectively, of the 13 detected VOCs. However, none of the detected VOCs was present at a concentration exceeding residential human health SSSLs or ESVs.

Semivolatile Organic Compounds. Twenty-one SVOCs, including sixteen PAH compounds and five non-PAH compounds, were detected in surface and depositional soil samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). SVOCs were not detected in the soils collected from sample location FTA-149-DEP01 and only two SVOCs were detected in the sample collected from FTA-149-GP11. Sample location FTA-149-GP13 contained 20 of the 21 detected SVOCs and two other locations (FTA-149-GP04 and FTA-149-GP08) each contained 18 of the 21 detected SVOCs.

The concentrations of six PAH compounds (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) exceeded SSSLs and PAH background screening values at six sample locations (FTA-149-GP01, FTA-149-GP07, FTA-149-GP08, FTA-149-GP09, FTA-149-GP12, and FTA-149-GP13). Because these samples were collected from beneath asphalt, the SVOC results exceeding SSSLs and PAH background screening values for soils adjacent to asphalt were subsequently compared to the PAH background values for soils beneath asphalt. The results indicate that, with a few exceptions, the SVOC concentrations also exceeded the beneath asphalt PAH background values. The concentrations of the six SVOCs exceeding SSSLs and PAH background values ranged from 0.24 mg/kg to 28 mg/kg.

The concentrations of anthracene (six locations), benzo(a)anthracene (three locations), benzo(a)pyrene (six locations), chrysene (three locations), fluoranthene (seven locations), phenanthrene (five locations), pyrene (seven locations), and naphthalene (one location) exceeded ESVs and PAH background screening values. However, because these samples were collected from beneath asphalt, these concentrations were also compared to PAH background screening values for soils beneath asphalt. Most of the concentrations were below the screening values for soils beneath asphalt.

5.2 Subsurface Soil Analytical Results

Thirteen subsurface soil samples were collected for chemical analyses at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). Subsurface soil samples were collected at depths greater than 1-foot bgs at the locations shown on Figure 3-2. Analytical results were compared to residential human health SSSLs and background screening values, as presented in Table 5-2.

Metals. Nineteen metals were detected in subsurface soil samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The concentrations of five metals (aluminum, arsenic, chromium, iron, and manganese) exceeded residential human health SSSLs. However, with the exceptions of aluminum (12 locations), iron (4 locations), and manganese (one location), the concentrations of these metals were below their respective background concentration. The aluminum and manganese concentrations were within the range of background values (Appendix I).

Volatile Organic Compounds. Seventeen VOCs were detected in subsurface soil samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The methylene chloride analytical results and all but two of the acetone results were flagged with a “B” data qualifier signifying that these compounds were also detected in an associated laboratory or field blank sample. In addition, acetone and methylene chlorides were the only detected VOCs at nine of the 13 sample locations. Sample location FTA-149-GP05 contained 15 of the 17 detected VOCs. None of the detected VOCs was present at a concentration exceeding residential human health SSSLs.

Semivolatile Organic Compounds. Nineteen SVOCs, including sixteen PAH compounds and three non-PAH compounds, were detected in subsurface soil samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). SVOCs were not detected at five sample locations (FTA-149-GP04, FTA-149-GP06, FTA-149-GP10, FTA-149-GP11, and FTA-149-GP12). The soil samples from locations FTA-149-GP02, FTA-149-GP09, and FTA-149-GP13 each contained only one of the 19 detected SVOCs. Sample locations FTA-149-GP07 and FTA-149-GP08 contained 14 and 16 SVOCs, respectively, of the 19 detected SVOCs.

Five PAH compounds (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) were detected at one sample location (FTA-149-GP07) at concentrations exceeding SSSLs. Benzo(a)pyrene concentrations also exceeded the SSSL at two additional sample locations (FTA-149-GP01 and FTA-149-GP08).

5.3 Groundwater Analytical Results

Seven temporary monitoring wells were sampled at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) at the sample locations shown on Figure 3-2. Analytical results were compared to residential human health SSSLs and background screening values, as presented in Table 5-3.

Metals. Eighteen metals, including aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, sodium, vanadium, and zinc, were detected in groundwater samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). Sample locations FTA-149-GP07 and FTA-149-GP12 each contained all of the detected metals and sample location FTA-149-GP01 contained 16 of the 18 detected metals.

The concentrations of 11 metals exceeded residential human health SSSLs in the groundwater samples. However, with the exceptions of aluminum (FTA-149-GP07 and FTA-149-GP12), barium (FTA-149-GP12), beryllium (FTA-149-GP12), iron (FTA-149-GP12), and vanadium (FTA-149-GP07 and FTA-149-GP12), the concentrations of these metals were below their background concentration or within the range of background values (Appendix I). The metals concentrations exceeding residential human health SSSLs, background concentrations, and the range of background values were present in the samples collected at FTA-149-GP07 and FTA-149-GP12. As shown in Table 3-6 and in the purge records in Appendix B, the samples from FTA-149-GP07 and FTA-149-GP12 had a high turbidity at the time of sample collection. The elevated turbidity was the result of suspended particulates from the groundwater-saturated formation. This correlation indicates that the suspended particulates contributed to the total concentration of metals detected in the groundwater samples from FTA-149-GP07 and FTA-149-GP12 and explains why the samples collected from FTA-149-GP07 and FTA-149-GP12 had a greater number of detected metals at higher concentrations.

IT conducted a groundwater resampling effort in July 2000 to evaluate the effects of turbidity on metals concentrations in groundwater. Based on the results of this groundwater resampling effort, high turbidity at the time of sample collection results in elevated metals concentrations (IT, 2000d). The resampling effort demonstrated that the concentrations of most metals in the lower turbidity samples were significantly lower than in the higher turbidity samples. The details of this resampling effort are included in the referenced letter report, which is included as Appendix J to this report.

Volatile Organic Compounds. Six VOCs, including acetone, 2-butanone, bromomethane, carbon disulfide, hexachlorobutadiene, and toluene, were detected in groundwater samples. The hexachlorobutadiene and one of the acetone results were flagged with a “B” data qualifier signifying that these compounds were also detected in an associated laboratory or field blank sample. VOC concentrations were below residential human health SSSLs.

Semivolatile Organic Compounds. Phenol was detected in two of the groundwater samples (FTA-149-GP04 and FTA-149-GP09). The phenol results from FTA-149-GP09 were flagged with a “B” data qualifier signifying that this compound was also detected in an associated laboratory or field blank sample. The phenol concentrations were below the residential human health SSSL.

5.4 Surface Water Analytical Results

Five surface water samples were collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) at the sample locations shown on Figure 3-2. Analytical results were compared to recreational site user human health SSSLs, ESVs, and background concentrations, as presented in Table 5-4.

Metals. Eleven metals were detected in surface water samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7).

None of the detected metals concentrations exceeded residential human health SSSLs. Aluminum (four locations), barium (five locations), and mercury (FTA-149-SW/SD02 and WS-149-SW/SD02) concentrations exceeded ESVs. With the exception of the mercury results, for which a background value was not available, these metals concentrations were below their respective background concentration.

Volatile Organic Compounds. Acetone, toluene, and m,p-xylenes were detected in surface water samples. Each of the detected VOCs was present in the sample collected at FTA-149-SW/SD02. None of the remaining sample locations contained more than one of the detected VOCs. However, none of the VOC concentrations exceeded SSSLs or ESVs.

Semivolatile Organic Compounds. Bis(2-ethylhexyl)phthalate was detected in one of the surface water samples (FTP-77-SW/SD03) at a concentration exceeding the ESV but below the

SSSL. However, the bis(2-ethylhexyl)phthalate result was flagged with a “B” data qualifier signifying that this compound was also detected in an associated laboratory or field blank sample.

5.5 Sediment Analytical Results

Five sediment samples were collected for chemical and physical analyses at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) at the locations shown on Figure 3-2. Analytical results were compared to recreational site-user human health SSSLs, ESVs, and background concentrations, as presented in Table 5-5.

Metals. Twenty-one metals were detected in sediment samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The samples collected from FTP-77-SW/SD03 and WS-149-SW/SD02 each contained 20 of the 21 detected metals. None of the metals was detected at a concentration exceeding recreational site-user human health SSSLs. Cadmium (FTP-77-SW/SD03), copper (FTA-149-SW/SD01, WS-149-SW/SD01, and WS-149-SW/SD02), lead (FTA-149-SW/SD01, FTA-149-SW/SD02, and WS-149-SW/SD02), nickel (WS-149-SW/SD01), and zinc (FTP-77-SW/SD03 and WS-149-SW/SD02) concentrations exceeded the ESVs but were below the respective background concentration or within the range of background concentrations.

Volatile Organic Compounds. Acetone and methylene chloride were detected in sediment samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). The methylene chloride results and two of the three acetone results were flagged with a “B” data qualifier signifying that these compounds were also detected in an associated laboratory or field blank sample. The acetone and methylene chloride concentrations were below SSSLs and ESVs.

Semivolatile Organic Compounds. Sixteen SVOCs, including fourteen PAH compounds and two non-PAH compounds, were detected in sediment samples collected at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). Sample location FTA-149-SW/SD01 contained 14 of the 16 detected SVOCs. None of the detected SVOCs was present at a concentration exceeding SSSLs. At sample location FTA-149-SW/SD01, the concentration of six PAH compounds (benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, chrysene, fluoranthene, and pyrene) exceeded ESVs.

Total Organic Carbon. The sediment samples were analyzed for TOC content. TOC

concentrations ranged from 5,930 mg/kg to 35,400 mg/kg. The TOC results are summarized in Appendix F.

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

6.0 Summary and Conclusions and Recommendations

IT, under contract with USACE, completed an SI at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) at FTMC in Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) and, if present, whether the concentrations would present an unacceptable risk to human health or the environment. The SI at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) consisted of a geophysical survey and the sampling and analyses of 11 surface soil samples, 13 subsurface soil samples, seven groundwater samples, five surface water samples, five sediment samples and one depositional soil sample. In addition, seven temporary monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

Two anomalies were found during the geophysical survey conducted at the Former Motor Pool Area 600, Parcels 149(7) and 136(7). According to the criteria established in the site-specific field sampling plan, these anomalies were identified as potential underground storage tank (UST) locations. The anomalies were further investigated by installing trenches as part of the FTMC installation-wide UST investigation conducted by IT in July 2000. It was determined that USTs do not exist at these locations and that the anomalies were attributed to buried rebar and metal debris.

The analytical results from the SI indicate that metals, VOCs, and SVOCs were detected in the environmental media sampled. To evaluate whether the detected constituents present 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. The SSSLs and ESVs were developed by IT for human health and ecological risk evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. Additionally, metals results exceeding the SSSLs and ESVs were compared to media-specific background concentrations (SAIC, 1998), and SVOC concentrations exceeding SSSLs and ESVs in surface and depositional soils were compared to PAH background screening values (IT, 2000b).

The potential impact to human receptors is expected to be minimal. In two subsurface soil samples, aluminum and iron exceeded residential human health SSSLs, background screening

values, and the range of background concentrations. In groundwater, the concentrations of five metals (aluminum, barium, beryllium, iron and vanadium) exceeded SSSLs and background. However, these metals were present in two groundwater samples that had elevated turbidity at the time of sample collection, causing the elevated metals results.

The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected in several surface soil samples at concentrations exceeding residential human health SSSLs and PAH background screening values for soils beneath asphalt. In addition, five of these SVOCs (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) exceeded SSSLs at one subsurface soil sample location. However, these sample locations are all located directly beneath asphalt. In the industrial land use scenario, the potential threat to human health is expected to be negligible.

Several metals were detected in site media at concentrations exceeding ESVs and background concentrations. In addition, the concentrations of several SVOCs exceeded ESVs. However, the potential impact to ecological receptors is expected to be minimal based on the existing viable habitat. The site is a well-developed area consisting of buildings and paved roads with limited grassed areas. Viable ecological habitat is presently limited and is not expected to increase in the future industrial land-use scenario.

Based on the results of the SI, past operations at Former Motor Pool Area 600, Parcels 149(7) and 136(7), do not appear to have adversely impacted the environment. The metals and organic compounds detected in site media do not pose an unacceptable risk to human health or the environment. Therefore, IT Corporation recommends “No Further Action” and unrestricted land reuse at Former Motor Pool Area 600, Parcels 149(7) and 136(7).

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APPENDIX A
GEOPHYSICAL SURVEY REPORT

APPENDIX B

SAMPLE COLLECTION LOGS AND ANALYSIS REQUEST/CHAIN-OF-CUSTODY RECORDS

APPENDIX C
BORING LOGS AND WELL LOGS

APPENDIX D
WELL DEVELOPMENT LOGS

APPENDIX E
SURVEY DATA

APPENDIX F

SUMMARY OF VALIDATED ANALYTICAL DATA

APPENDIX G
DATA VALIDATION SUMMARY REPORT

APPENDIX H
VARIANCES

APPENDIX I

SUMMARY STATISTICS FOR BACKGROUND MEDIA, FORT McCLELLAN, ALABAMA

APPENDIX J

GROUNDWATER RESAMPLING RESULTS