



December 2, 1998

IT-MC-CK05-0071
Project No. 774645

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Contract: Contract No. DACA21-96-0018/CK05
Ft. McClellan, Alabama

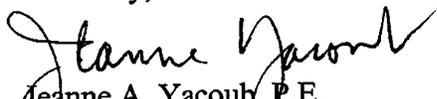
Subject: Final Site-Specific Work Plans for Ft. McClellan

Dear Mr. Pope:

I am enclosing three copies of the final work plans for package 12 for your records. These plans incorporate the review comments we discussed and resolved during our October meeting at Orange Beach. This package describes the activities we will conduct at the former Print Plant Building 144 (EBS Parcel 171), the Print Plant Building 143 Basement (EBS Parcel 138), the Print Plant Building 3183 (EBS Parcel 162), the Personnel Decontamination Station Building 3185 (EBS Parcel 179), the former Fog Oil Storage Area West of Skeet Range (EBS Parcel 122), and the Trenches West of Remount (EBS Parcel 228).

I have distributed copies of this document according to the distribution list indicated below. If you have questions, or need further information, please contact me at (303) 793-5250.

Sincerely,


Jeanne A. Yacoub, P.E.
Project Manager

Attachments

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**Final
Site Investigations
Site-Specific Field Sampling Plan and
Site-Specific Safety and Health Plan Attachments
Former Printing Plant, Building 144 (Parcel 171);
Former Printing Plant, Building 143 Basement (Parcel 138);
Printing Plant, Building 3183 (Parcel 162);
Former Personnel Decontamination Station
at Building 3185 (Parcel 179);
Former Fog Oil Drum Storage Area
West of the Skeet Range (Parcel 122);
Trenches West of Remount Creek (Parcel 228)**

**Fort McClellan
Calhoun County, Alabama**

**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

December 1998

Site-Specific Field Sampling Plans

Former Printing Plant, Building 144 (Parcel 171)

Former Printing Plant, Building 143 Basement (Parcel 138)

Printing Plant, Building 3183 (Parcel 162)

Former Personnel Decontamination Station at Building 3185 (Parcel 179)

Former Fog Oil Drum Storage Area West of the Skeet Range (Parcel 122)

Trenches West of Remount Creek (Parcel 228)

Site Investigation

Final

**Site-Specific Field Sampling Plan Attachment
for Former Printing Plant, Building 144, Parcel 171(7)**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

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Prepared by:

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**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

December 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
bgs	below ground surface
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
NGVD	National Geodetic Vertical Datum
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Former Printing Plant, Building 144, Parcel 171(7) at Fort McClellan, Calhoun County, Alabama to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Former Printing Plant, Building 144.

Specifically, IT will collect three surface soil samples, three subsurface soil samples, and three groundwater samples. Potential contaminant sources at the site include petroleum hydrocarbon printing fluids, solvents such as perchloroethylene, or petroleum naphtha, solvents, metals, and inks, which were stored, possibly released, and disposed of at this site. Therefore, chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Former Printing Plant, Building 144, Parcel 171(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Printing Plant, Building 144, Parcel 171(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Former Printing Plant, Building 144, Parcel 171(7). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Printing Plant, Building 144 site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

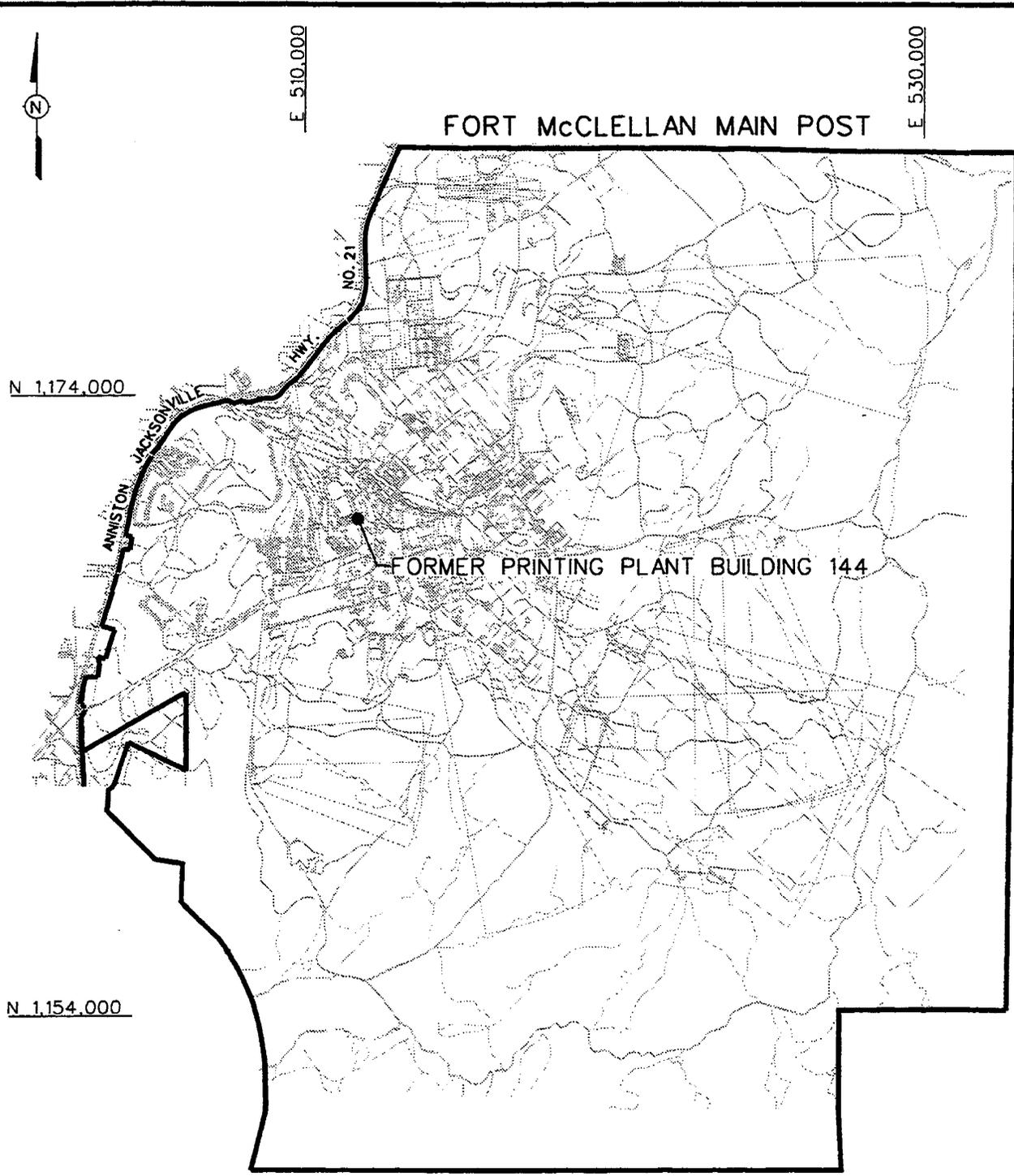
FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The Main Post installation is bounded on the south and west by the City of Anniston, and on the northwest by the City of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The Former Printing Plant, Building 144 is located in the central part of the Main Post (Figure 1-1). An information processing center is currently operated in Building 144. The study area in and around Building 144 covers slightly less than 1 acre. The site and the area around the site is well developed and occupied; the Post Headquarters, Military Police Station, Personnel Office, and other Administration Buildings surround the study site. The printing operations in Building 144, Parcel 171(7) were conducted from 1969 to 1974. Operations were conducted on the first floor. There is not any evidence remaining of the former printing operations at this location. In 1974, printing operations were moved from Building 144 to Building 2051. Potential printing materials used at this facility may include petroleum hydrocarbons, printing fluids, solvents including perchloroethylene and petroleum naphtha, metals, and inks. Currently, the site has unrestricted access.

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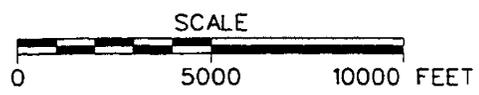
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LEGEND:

 FORT McCLELLAN BOUNDARY

FIGURE 1-1
SITE LOCATION MAP
FORMER PRINTING PLANT
BUILDING 144
PARCEL 171(7)
 U. S. ARMY CORPS OF ENGINEERS
 MOBILE DISTRICT
 FORT McCLELLAN
 CALHOUN COUNTY, ALABAMA
 Contract No. DACA21-96-D-0018



The South Branch of Cane Creek is at least 600 feet northeast of the site, while Remount Creek is at least 1,250 feet west of the site. Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation is approximately 790 to 795 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map showing Building 144, topographic features, and site boundaries.

The soil type at the Former Printing Plant, Building 144 is Montevallo. Montevallo soils are severely eroded, shaly silty clay soils. These soils are formed either by erosional forces, surface runoff, or natural reworking processes. Colors are typically yellowish-brown. The depth to bedrock is usually 1.5 feet or greater, while the depth to groundwater is typically 20 feet or greater. The high erosion hazard, low capacity for available moisture, and thin root zone make this soil unsuited for cultivation (U.S. Department of Agriculture, 1961).

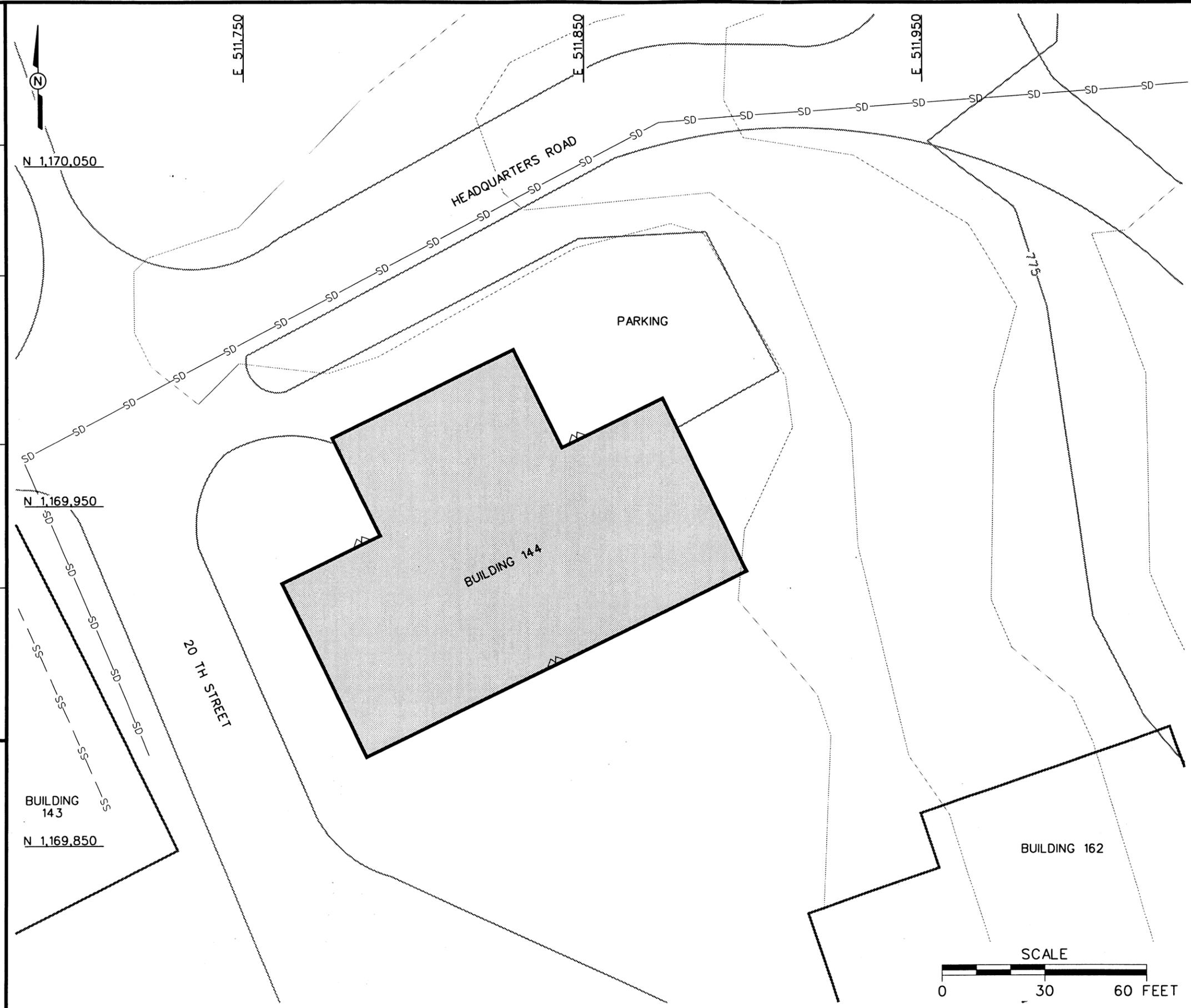
1.3 Scope of Work

The scope of work for activities associated with the SI at Former Printing Plant, Building 144 as specified in the statement of work (USACE, 1998) includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect three surface soil samples, three subsurface soil samples, and three groundwater samples to determine whether potential site-specific chemicals (PSSC) are present at Former Printing Plant, Building 144 and to provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.

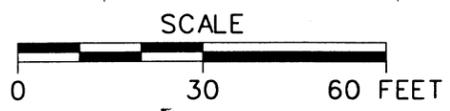
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - EXISTING DOORWAYS
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 1-2
 SITE MAP
 FORMER PRINTING PLANT
 BUILDING 144
 PARCEL 171(7)

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



2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on 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 (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (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, Alabama Department of Environmental Management (ADEM), U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-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. There is not any information found to indicate that previous investigations were performed at this site.

The Former Printing Plant, Building 144, is identified as a Category 7 CERFA site, where hazardous substances were possibly stored, released, or disposed, and/or the migration of

hazardous substances is suspected, but the site is either not evaluated or requires additional evaluation to determine the environmental condition of the site.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action for the Former Printing Plant, Building 144. The chapter incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Former Printing Plant, Building 144 is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the site investigation and establish a basis for future action at the site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with USACE-Corps of Engineers South Atlantic Savannah District (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Former Printing Plant, Building 144 are presented in Table 3-1 and have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health,

Table 3-1

**Summary of Data Quality Objectives
Former Printing Plant, Building 144, Parcel 171(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity		
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	Historical data. No previous sampling or investigation.	<u>Contaminant Source</u> Fuels and fuel components Waste oils, Metals <u>Migration Pathways</u> Infiltration and leaching to subsurface soil and groundwater. Dust emissions and volatilization from soil to air. Volatilization from groundwater to air. <u>Potential Receptors</u> Groundskeeper (current and future) Construction worker (future) Resident (future) <u>PSSCs</u> Petroleum hydrocarbons Solvents (printing fluids) Inks Metals	Surface Soil	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present. Obtain sufficient data to support as appropriate the following: <ul style="list-style-type: none"> • Implementing an immediate response. • No further action. • Proceeding with an RI. 	<u>Surface Soil</u> TCL-VOCs TCL-SVOCs TAL-Metals	Definitive data in CESAS Level B data packages	3 direct-push surface soil samples + QC		
			Subsurface Soil		<u>Subsurface Soil</u> TCL-VOCs TCL-SVOCs TAL-Metals			Definitive data in CESAS Level B data packages	3 direct-push subsurface soil samples + QC
			Groundwater		<u>Groundwater</u> TCL-VOCs TCL-SVOCs TAL-Metals				

ADEM - Alabama Department of Environmental Management.
 CESAS - Corps of Engineers South Atlantic Savannah.
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.
 PSSC - Potential site-specific chemical.

SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.
 USACE - U.S. Army Corps of Engineers.
 VOC - Volatile organic compound.

and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at Former Printing Plant, Building 144, is due to the use of solvents, petroleum hydrocarbon printing fluids, solvents such as perchloroethylene or petroleum naphtha, and inks, and metals, which were possibly stored at this site. The Former Printing Plant, Building 144, is located in the Central Main Post and is surrounded by other administrative buildings. Currently, there is unrestricted access to the location. It is assumed that releases of any potential contaminants were restricted to surface soil and subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil, dust emissions and volatilization from groundwater and soil to ambient air, and infiltration and leaching to groundwater. There are no surface water bodies or streams within several hundred feet of the site.

Current site usage is best described as administrative office buildings. The only receptor considered plausible under current site use is the groundskeeper. Workers currently maintain the site. Other potential receptors considered, but not included under current site use, are:

- Resident: The site is not currently used for residential purposes.
- Recreational site user: The site is less than 1 acre, well developed, occupied, and does not offer recreational opportunities.
- Construction worker: The site is currently not under construction.

As described in the FTMC Comprehensive Reuse Plan, future plans call for this site to become Parcel 1 of the Retirement and Town Center (FTMC, 1997). The most plausible receptors for the future site-use scenario include residents, groundskeepers, and construction workers.

Also considered as a receptor, but not included under the future scenario, is the recreational site user, for the reasons previously described.

Contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Former Printing Plant, Building 144. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

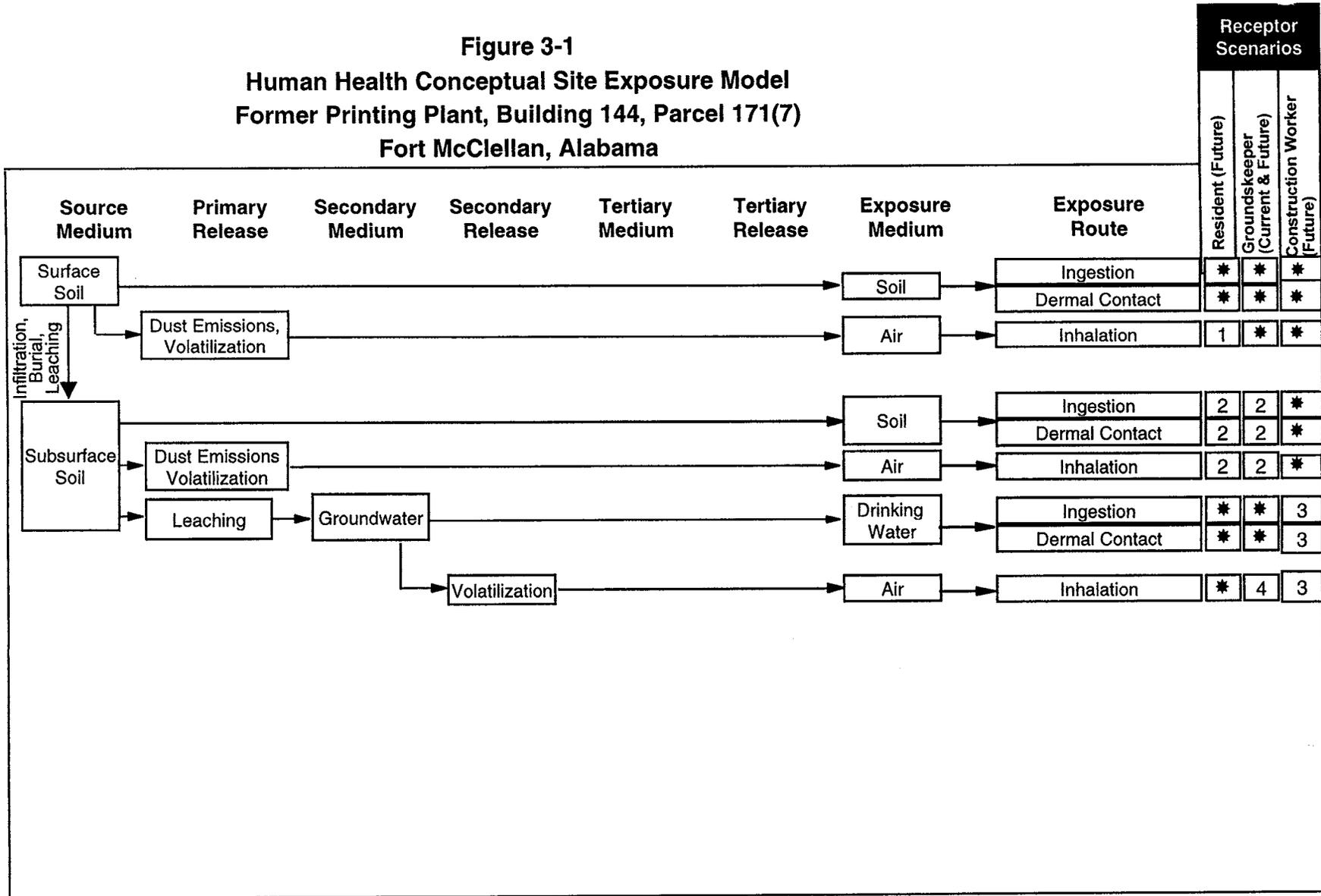
Confirmation of contamination at the Former Printing Plant, Building 144 will be based upon a comparison of detected site contaminants to the site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the installation-wide work plan.

3.4.2 Data Types and Quality

To meet the objectives of the SI at the Former Printing Plant, Building 144, it will be necessary to sample and analyze surface and subsurface soils and groundwater samples. As described in Chapter 4 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1
Human Health Conceptual Site Exposure Model
Former Printing Plant, Building 144, Parcel 171(7)
Fort McClellan, Alabama



Note: Although surface and subsurface soil are the only media of concern, exposure to GW under the future site use scenarios is plausible.

* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

4 = Although theoretically complete, this pathway is judged to be insignificant.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP (IT, 1998a). The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the Former Printing Plant, Building 144, includes the collection of surface and subsurface soil samples and groundwater samples for chemical analysis.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected at the locations described in the following subsections.

4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. Three surface soil samples will be collected at the Former Printing Plant, Building 144. The proposed surface soil sampling locations are presented on Figure 4-1.

Surface soil samples will be collected from the upper 1 foot of soil at each sampling location. Surface soil samples collected at the three locations will be submitted for laboratory analyses of target compound list (TCL) volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and target analyte list (TAL) metals.

4.2.1.2 Sample Collection

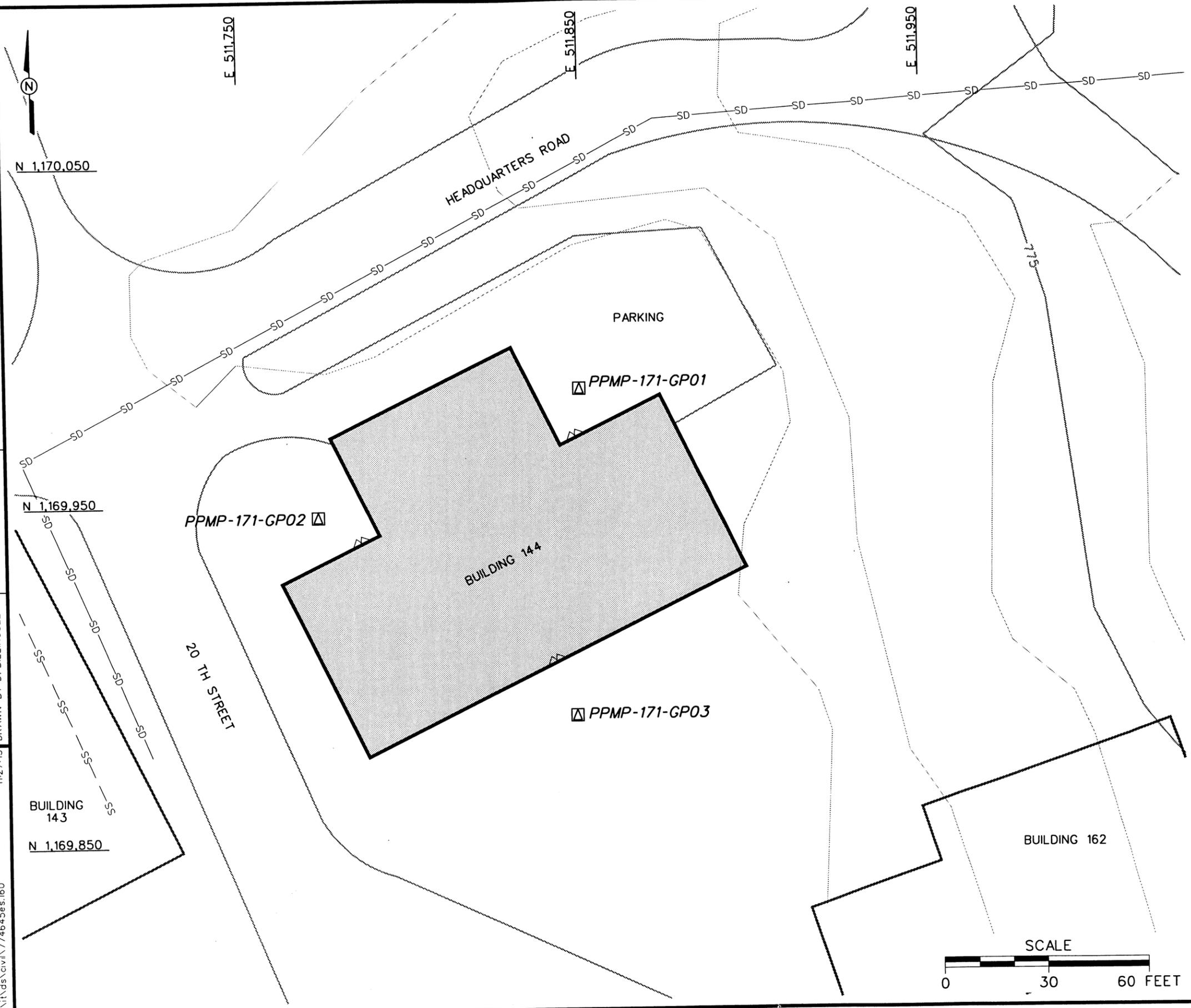
Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Three surface soil samples will be collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a). Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Table 4-1

**Sample Location and Rationale
Former Printing Plant, Building 144, Parcel 171(7)
Fort McClellan, Calhoun County, Alabama**

Sample Designation	Media Sampled	Sampling Location Rationale
PPMP-171-GP01	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected at the northeast door of Building 144 to determine if potential site-specific chemicals (PSSC) are present. Sample location represents an exit point (via foot traffic, etc.) for PSSCs to be deposited onto surface or subsurface soil and groundwater.
PPMP-171-GP02	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected at the northwest door of Building 144 to determine if PSSCs are present. Sample location represents an exit point (via foot traffic, etc.) for PSSCs to be deposited onto surface or subsurface soil and groundwater.
PPMP-171-GP03	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected at the south door of Building 144 to determine if PSSCs are present. Sample location represents an exit point (via foot traffic, etc.) for PSSCs to be deposited onto surface or subsurface soil and groundwater.

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LEGEND

	UNIMPROVED ROADS AND PARKING
	PAVED ROADS AND PARKING
	BUILDING
	TOPOGRAPHIC CONTOURS
	PARCEL BOUNDARY
	EXISTING DOORWAYS
	SANITARY SEWER LINE
	STORM DRAINAGE LINE
	PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
FORMER PRINTING PLANT
BUILDING 144
PARCEL 171(7)

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

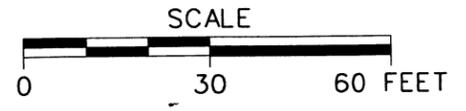


Table 4-2

**Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Former Printing Plant, Building 144, Parcel 171(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-171-GP01	PPMP-171-GP01-SS-KD0001-REG	0-1			PPMP-171-GP01-SS-KD0001-MS	TCL VOCs, TCL SVOCs TAL Metals
	PPMP-171-GP01-DS-KD0002-REG	a			PPMP-171-GP01-SS-KD0001-MSD	
PPMP-171-GP02	PPMP-171-GP02-SS-KD0003-REG	0-1				TCL VOCs, TCL SVOCs TAL Metals
	PPMP-171-GP02-DS-KD0004-REG	a				
PPMP-171-GP03	PPMP-171-GP03-SS-KD0005-REG	0-1	PPMP-171-GP03-SS-KD0006-FD	PPMP-171-GP03-SS-KD0007-FS		TCL VOCs, TCL SVOCs TAL Metals
	PPMP-171-GP03-DS-KD0008-REG	a				

^a Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

MS/MSD - Matrix spike/matrix spike duplicate

QA/QC - Quality assurance/quality control

SVOC - Semivolatile organic compound

TAL - Target analyte list

TCL - Target compound list

VOC - Volatile organic compound

4.2.2 Subsurface Soil Sampling

Three subsurface soil samples will be collected from the same locations as the surface soil samples described in Section 4.2.1.

4.2.2.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. Three subsurface soil samples will be collected from the Former Printing Plant, Building 144. The proposed subsurface soil sampling locations are presented on Figure 4-1.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a).

Subsurface soil samples will be continuously collected from 1 foot to 12 feet below land surface or until either refusal or groundwater is encountered. Each sample interval collected from the boring will be field-screened using a photoionization detector (PID) to measure levels above background (ambient air). Samples will be collected for headspace screening as specified in Section 4.13 of the SAP. The soil sample from each boring exhibiting the highest reading on a PID (above background) will be sent to the laboratory for analysis. If none of the sample intervals indicate readings above background on the PID, the deepest interval from each boring will be submitted for laboratory analyses. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Groundwater Sampling

Three groundwater samples will be collected from temporary wells installed at the site. Temporary wells will be installed by direct-push method. If no groundwater is encountered in wells installed by direct-push, temporary wells will be installed with conventional drilling methods.

4.2.3.1 Sample Locations and Rationale

The groundwater samples will be collected from the temporary well locations shown on Figure 4-1. Groundwater sampling rationale is presented in Table 4-1. The groundwater sample designation and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.3.2 Sample Collection

The groundwater samples will be collected in accordance with the procedures specified in Section 4.9.1.4 of the SAP. The temporary well installed at the locations will be completed at the water table surface (to a depth where sufficient water is encountered) to collect groundwater samples.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Former Printing Plant, Building 144, Parcel 171(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-171-GP01	PPMP-171-GP01-GW-RG3001-REG	a			PPMP-171-GP01-GW-RG3001-MS PPMP-171-GP01-GW-RG3001-MSD	TCL VOCs, TCL SVOCs TAL Metals
PPMP-171-GP02	PPMP-171-GP02-GW-RG0002-REG	a				TCL VOCs, TCL SVOCs TAL Metals
PPMP-171-GP03	PPMP-171-GP03-GW-RG0003-REG	a	PPMP-171-GP03-GW-RG3004-FA	PPMP-171-GP03-GW-RG3005-FD		TCL VOCs, TCL SVOCs TAL Metals

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

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil sample locations will be recorded using a GPS to provide accuracy within 1 meter. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Printing Plant, Building 144, site consist of the following analytical suites:

- TCL VOCs - Method 5035/8260B
- TCL SVOCs - Method 8270C
- TAL Metals - Method 6010B/7000.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 of this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.11.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Table 4-4

**Analytical Samples
Former Printing Plant, Building 144, Parcel 171(7)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Former Printing Plant, Building 144 - Parcel 171(7): 6 soil matrix: 3 surface, 3 subsurface; 3 water matrix: 3 groundwater													
TCL VOCs	8260B	soil	normal	6	1	6	1	1	1		1	10	1
TCL SVOCs	8270C	soil	normal	6	1	6	1	1	1		1	10	1
TAL Metals	6010B/7000	soil	normal	6	1	6	1	1	1		1	10	1
TCL VOCs	8260B	water	normal	3	1	3	1	1	1	1	1	8	1
TCL SVOCs	8270C	water	normal	3	1	3	1	1	1		1	7	1
TAL Metals	6010B/7000	water	normal	3	1	3	1	1	1		1	7	1
Former Printing Plant, Building 144 Subtotal:				27			6	6	6	1	6	52	6

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

Ship samples to:	Quanterra Environmental Services 5815 Middlebrook Pike Knoxville, Tennessee 37921 Attn: John Reynolds Tel: 423-588-6401 Fax: 423-584-4315	USACE laboratory split samples are shipped to:	USACE South Atlantic Division Laboratory Attn: Sample Receiving 611 South Cobb Drive Marietta, Georgia 30060-3112 Tel: 770-919-5270
------------------	--	---	---

MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.

Split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia
30060-3112
Telephone: (770) 919-5270.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.10 and Appendix D of the SAP. The IDW expected to be generated at the Former Printing Plant, Building 144 will include decontamination fluids and disposable personal protective equipment. The IDW will be staged inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

5.0 Project Schedule

The project schedule for the site investigation activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998c, Letter to Ellis Pope from Jeanne Yacoub, "Procedures for Temporary Residuum Monitoring Well Installation, Conversion, and Abandonment," November, 1998.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribes), and Removal of Indoor Firing Ranges*, May.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture (USDA), 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

Site Investigation

**Final
Site-Specific Field Sampling Plan Attachment
for Former Printing Plant, Building 143 Basement
Parcel 138(7)**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

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

Prepared by:

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

**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

December 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
bgs	below ground surface
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
NGVD	National Geodetic Vertical Datum
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
UST	underground storage tank
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Former Printing Plant, Building 143 Basement, Parcel 138(7) at Fort McClellan, Calhoun County, Alabama to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Former Printing Plant, Building 143 Basement, Parcel 138(7).

Specifically, IT will collect four surface soil samples, four subsurface soil samples, and two groundwater samples at this site. Potential contaminant sources at the site include petroleum hydrocarbons, solvents, metals, and inks. Therefore, chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for Former Printing Plant, Building 143 Basement, Parcel 138(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Printing Plant, Building 143 Basement, Parcel 138(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at Former Printing Plant, Building 143 Basement, Parcel 138(7) (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Printing Plant, Building 143 Basement, Parcel 138(7) site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

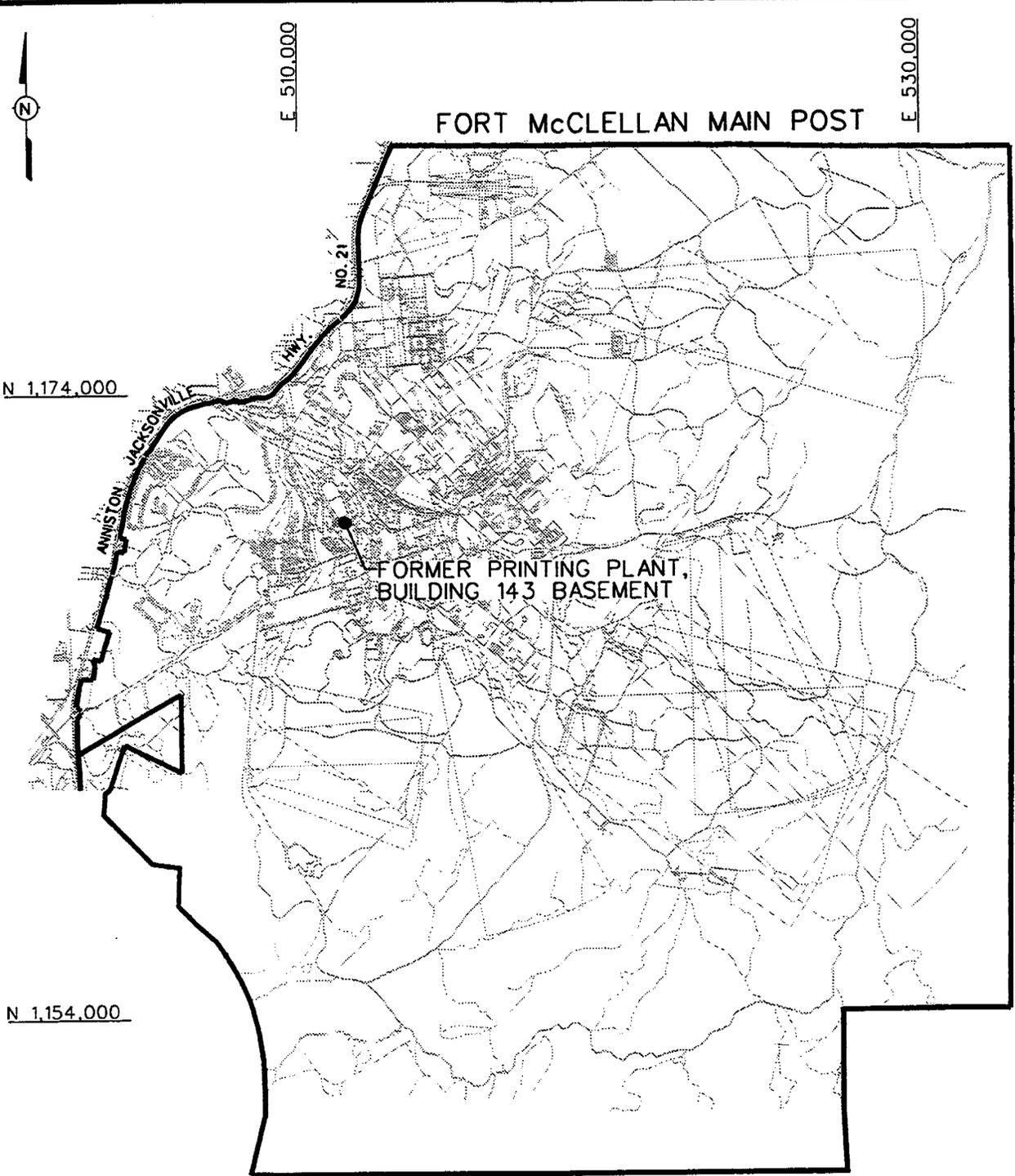
FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The Main Post installation is bounded on the south and west by the City of Anniston, and on the northwest by the City of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The Former Printing Plant, Building 143 Basement, is located in the central part of the Main Post (Figure 1-1). Printing operations began at an unknown time and ended in 1969. No evidence remains of printing operations at this location (ESE, 1998). There are no sinks and/or floor drains in the basement. Potential printing materials used at the facility may have included petroleum hydrocarbons, printing fluids, solvents including perchloroethylene, petroleum naphtha, metals, and inks. The study area in and around Building 143 covers approximately 1 acre. The site and the area around the site is well developed and occupied; the Post Headquarters, Military Police Station, Personnel Office, and other administration buildings surround the study site. The South Branch of Cane Creek is at least 600 feet to the northeast of the site, while Remount Creek is at least 1,250 feet west of the site. Shallow groundwater at the site is probably controlled by

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PROJ. NO.: 774645	PROJ. MGR.: J. YACOUB
DRAFT. CHCK. BY:	ENGR. CHCK. BY: A. MAYILA
STARTING DATE: 07/22/98	DATE LAST REV.:
DRAWN BY: D. BILLINGSLEY	DRAWN BY:

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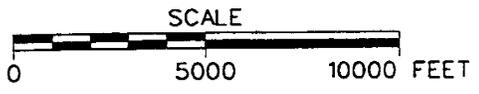
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LEGEND:

 FORT McCLELLAN BOUNDARY

FIGURE 1-1
SITE LOCATION MAP
FORMER PRINTING PLANT,
BUILDING 143 BASEMENT
PARCEL 138(7)



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



surface drainage and/or topography. However, there are numerous subsurface structures, such as sanitary or storm sewers, adjacent to Building 143. There is also a vaulted 4,000 gallon heating oil underground storage tank (UST) abutting Building 143. The UST was installed in 1996 to replace a UST which was removed at that time (IT, 1998c). Two monitoring wells are located adjacent to the UST. The purpose of the wells is unknown, but may likely be for leak detection monitoring. Well construction details for the two monitoring wells are not available; records for the two wells were not found at FTMC.

Site elevation is approximately 790 to 795 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map showing subsurface features, topographic features, and site boundaries.

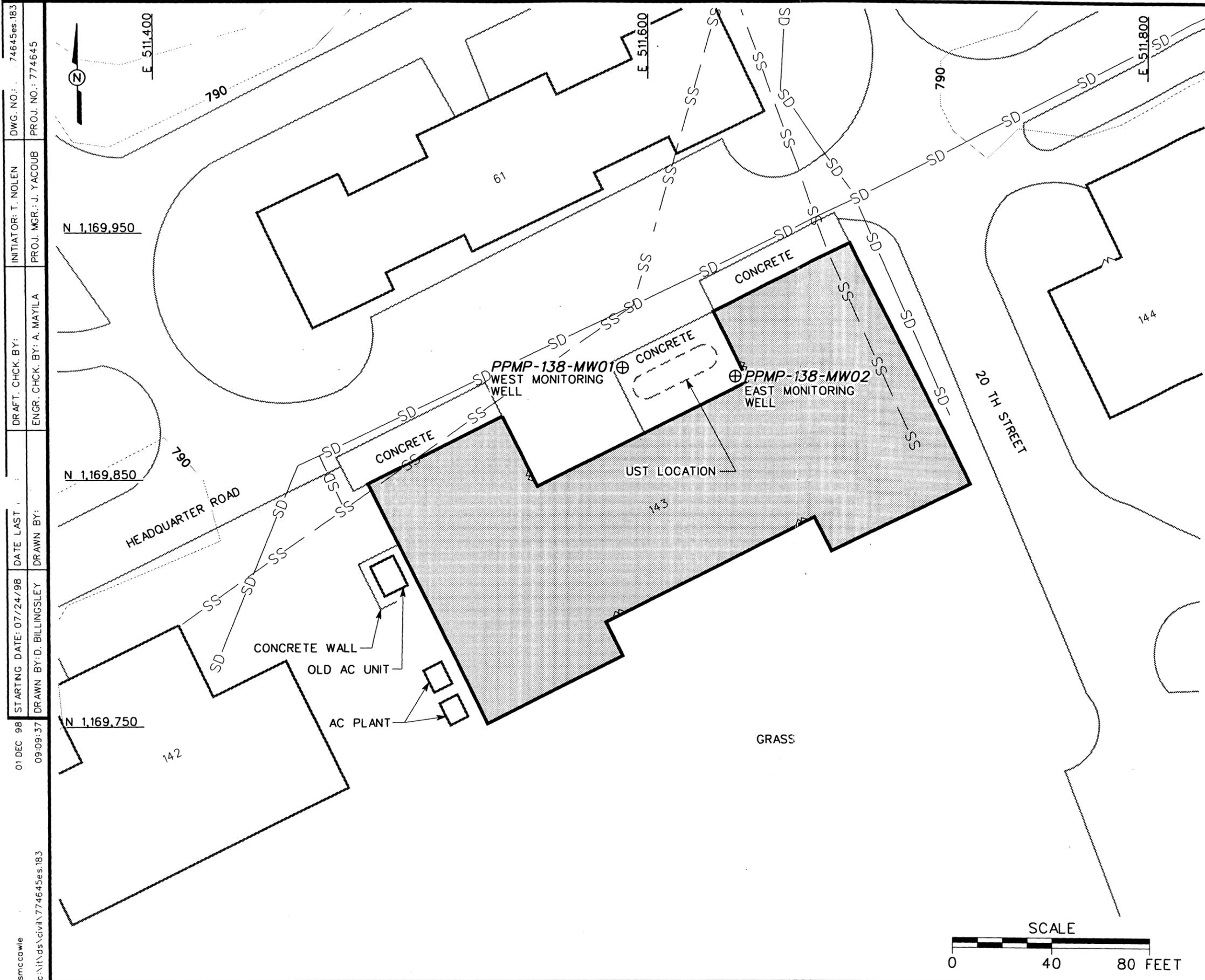
The soil type at the Former Printing Plant, Building 143 Basement, is Montevallo. Montevallo soils are severely eroded, shaly silty clay soils. These soils are formed either by erosional forces, surface runoff, or natural reworking processes. Colors are typically yellowish-brown. The depth to bedrock is usually 1.5 feet or greater, while the depth to groundwater is typically 20 feet or greater. The high erosion hazard, low capacity for available moisture, and thin root zone make this soil unsuited for cultivation (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Former Printing Plant, Building 143 Basement, as specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect four surface soil, four subsurface soil, and two groundwater samples to determine whether potential site-specific contaminants (PSSC) are present at the Former Printing Plant, Building 143 Basement, and to provide data to determine future planned corrective measures and closure activities. Groundwater samples will be collected from two existing monitoring wells adjacent to an existing heating oil UST.

Upon completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSC at this site, and to recommend further actions, if appropriate.



LEGEND	
	UNIMPROVED ROADS AND PARKING
	PAVED ROADS AND PARKING
	BUILDING
	TOPOGRAPHIC CONTOURS
	PARCEL BOUNDARY
	EXISTING DOORWAYS
	SANITARY SEWER LINE
	STORM DRAINAGE LINE
	EXISTING RESIDUUM MONITORING WELL

FIGURE 1-2
SITE MAP
 FORMER PRINTING, PLANT
 BUILDING 143 BASEMENT
 PARCEL 138(7)

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



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 STARTING DATE: 07/24/98
 DRAWN BY: D. BILLINGSLEY
 DATE LAST: [blank]
 DRAFT. CHCK. BY: [blank]
 ENGR. CHCK. BY: A. MAYILA
 INITIATOR: T. NOLEN
 PROJ. MGR.: J. YACOUB
 DWG. NO.: 74645es.183
 PROJ. NO.: 774645
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2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on 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 (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (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, Alabama Department of Environmental Management (ADEM), U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-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 Printing Plant, Building 143 Basement, consists of one site only. The site was identified as a CERFA site, where hazardous substances were possibly stored, released, or disposed of and/or the migration of hazardous substances is suspected, but the site is either not evaluated or requires additional evaluation to determine the environmental condition of the site.

The printing operations in Building 143 Basement, Parcel 138(7) began at an unknown date and ended in 1969. Presently, there is not any evidence of printing operations at this location. Currently, the site has unrestricted access. A former heating oil UST adjacent to Building 143 Basement Parcel 138(7) was removed and replaced in 1996. Soil samples were field screened during replacement, and no evidence of soil contamination was observed (IT, 1998c). No soil or groundwater samples were collected for analyses. Surface soil, subsurface soil, and groundwater are the media of potential concern.

This CERFA parcel is classified as a Category 7 site because various types of materials, equipment, vehicles, hazardous materials, and hazardous wastes have been stored, and some of these materials may possibly have been released onto the site or to the environment, and/or were disposed of on site property. The Former Printing Plant, Building 143 Basement, site lacks adequate documentation and, therefore, requires additional evaluation to determine the environmental condition of the parcel.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action for the Former Printing Plant, Building 143 Basement. The section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund*, Interim Final Guidance (EPA, 1993). The DQO process as applied to the Former Printing Plant, Building 143 Basement is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the SI and establish a basis for future action at the site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Former Printing Plant, Building 143 Basement are presented in Table 3-1 and have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

3.3 Conceptual Site Exposure Model - Human Health Evaluation

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health,

Table 3-1

**Summary of Data Quality Objectives
Former Printing Plant, Building 143 Basement, Parcel 138(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	Historical data only. (EBS) Soils were screened with a PID during UST closure activities; no samples were collected for analyses. Two monitoring wells exist; no groundwater analytical data is available	<u>Contaminant Source</u> Petroleum hydrocarbons, solvents, inks, metals, UST.	Surface Soil	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present. Obtain sufficient data to support as appropriate the following: <ul style="list-style-type: none"> Implementing an immediate response. No further action. Proceeding with a RI. 	<u>Surface soil</u> TCL-VOCs TCL-SVOCs TAL-metals	Definitive data in CESAS Level B data packages	4 direct-push samples +QC
		<u>Migration Pathways</u> Infiltration and leaching to soil and groundwater, volatilization and dust emissions from soil to air, volatilization from groundwater to air.	Subsurface Soil		<u>Subsurface Soil</u> TCL-VOCs TCL-SVOCs TAL-metals	Definitive data in CESAS Level B data packages	4 direct-push samples + QC
		<u>Potential Receptors</u> Groundskeeper (current and future) Construction worker (future) Resident (future) <u>PSSCs</u> Petroleum hydrocarbons Solvents Inks Metals	Groundwater		<u>Groundwater</u> TCL-VOCs TCL-SVOCs TAL-metals	Definitive data in CESAS Level B data packages	2 samples +QC

ADEM - Alabama Department of Environmental Management.
 CESAS - Corps of Engineers South Atlantic Savannah.
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.
 PSSC - Potential site-specific chemical.
 QC - Quality control.
 SI - Site investigation.

RI - Remedial investigation.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.
 USACE - U.S. Army Corps of Engineers.
 UST - Underground storage tank.
 VOC - Volatile organic compound.

and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at Former Printing Plant, Building 143 Basement would be due to the use of solvents, petroleum hydrocarbons, and inks. Former Printing Plant, Building 143 Basement, is located in the Central Main Post and is surrounded by other administrative buildings. Currently, there is unrestricted access to the location. It is assumed that releases of any potential contaminants were restricted to surface soil and subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil, dust emissions and volatilization from soil to ambient air, infiltration and leaching to groundwater, and volatilization from groundwater to air. The south branch of Cane Creek is at least 600 feet northeast of the site, while Remount Creek is at least 1,250 feet west of the site.

Current site use is best described as administrative office buildings. Plausible receptors considered under current site use are limited to the groundskeeper. The site is developed and workers currently maintain the site. Other potential receptors considered but not included under the current site-use scenario are:

- Resident: The site is not currently used for, but is scheduled for eventual residential development.
- Recreational site user: The site is approximately 1 acre, well developed, and does not offer recreational opportunities.
- Venison and Fish Consumer: The site does not support fishing or hunting.

As described in Table 2-1 of the FTMC Comprehensive Reuse Plan, future plans call for this site to become Parcel 1 of the Retirement and Town Center (FTMC, 1997). The most plausible receptors for the future site-use scenario include the resident, groundskeeper, and construction worker. Other receptors considered, but not included under the future scenario, are the recreational site user and venison and fish consumption.

The contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Former Printing Plant, Building 143 Basement. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Former Printing Plant, Building 143 Basement, will be based upon a comparison of detected site contaminants to the site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the installation-wide work plan.

3.4.2 Data Types and Quality

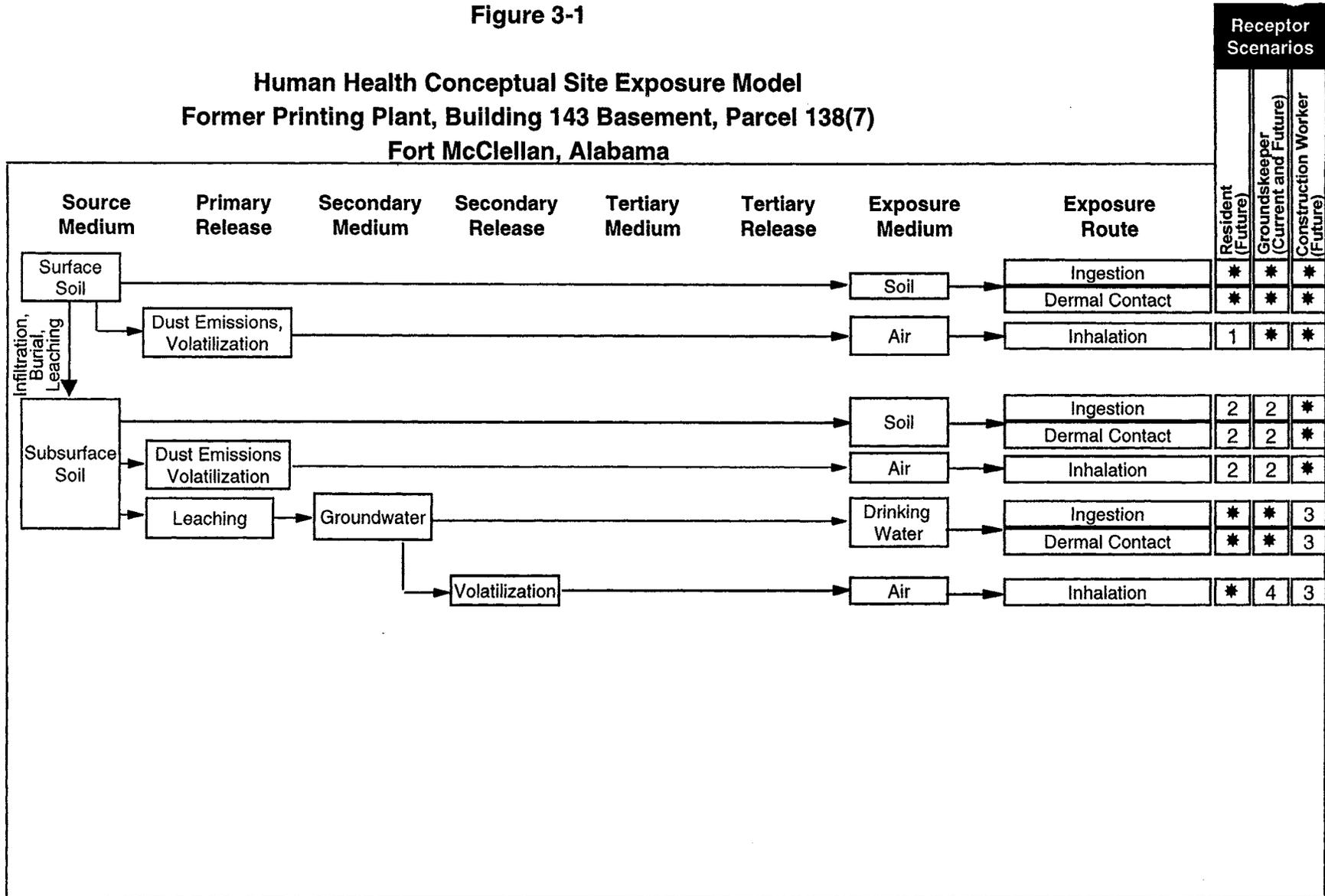
To meet the objectives of the SI at the Former Printing Plant, Building 143 Basement, it will be necessary to sample and analyze surface soils, subsurface soils, and groundwater. As described in Chapter 4.0 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

Figure 3-1

**Human Health Conceptual Site Exposure Model
Former Printing Plant, Building 143 Basement, Parcel 138(7)
Fort McClellan, Alabama**



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

4 = Although theoretically complete, this pathway is judged to be insignificant.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the Former Printing Plant, Building 143 Basement, includes the collection of surface soil, subsurface soil, and groundwater samples for chemical analysis.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected at the locations described in the following subsections.

4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. Four surface soil samples will be collected at the Former Printing Plant, Building 143 Basement. The proposed surface soil sampling locations are presented on Figure 4-1.

Surface soil samples will be collected from the upper 1 foot of soil at each sampling location. Surface soil samples collected at the four locations will be submitted for laboratory analyses of target compound list (TCL) volatile organic compound (VOC), semivolatile organic compound (SVOC), and target analyte list (TAL) metals.

4.2.1.2 Sample Collection

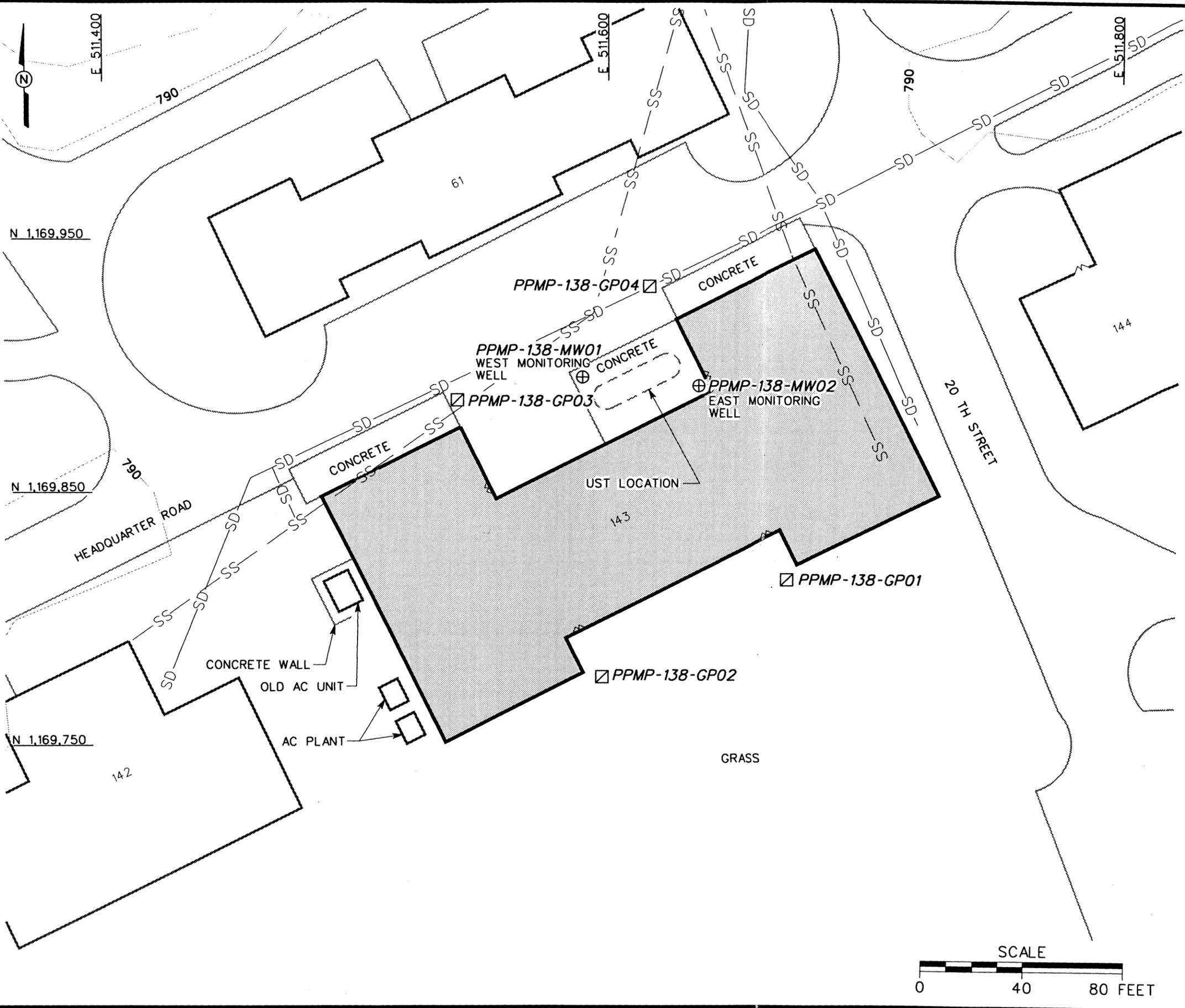
Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Four surface soil samples will be collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.11 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Table 4-1

**Sample Locations and Rationale
Former Printing Plant, Building 143 Basement, Parcel 138(7)
Fort McClellan, Calhoun County, Alabama**

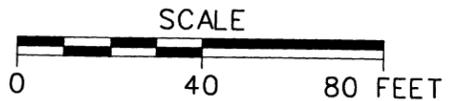
Sample Designation	Media Sampled	Location, Description, and Rationale
PPMP-138-GP01	Surface Soil Subsurface Soil	Direct-push samples will be collected near the southeast door of Building 143 to determine if potential site-specific chemicals (PSSC) are present. Sample location represents an exit point (via foot traffic) for PSSCs to be deposited onto surface or subsurface soil.
PPMP-138-GP02	Surface Soil Subsurface Soil	Direct-push samples will be collected near the southwest corner of Building 143 to determine if PSSCs are present. Sample location represents an exit point (via foot traffic) for PSSCs to be deposited onto surface or subsurface soil.
PPMP-138-GP03	Surface Soil Subsurface Soil	Direct-push samples will be collected near the northwest corner of Building 143 to determine if PSSCs are present. Sample location represents an exit point (via foot traffic) for PSSCs to be deposited onto surface or subsurface soil. Sample location is near underground structures, foundations, or water/sewer lines that may encourage infiltration of contaminant runoff into the subsurface soil.
PPMP-138-GP04	Surface Soil Subsurface Soil	Direct-push samples will be collected near the northeast corner of Building 143 to determine if PSSCs are present. Sample location represents an exit point (via foot traffic) for PSSCs to be deposited onto surface or subsurface soil. Sample location is near probable underground structures, foundations, tanks, or water/sewer lines that may encourage infiltration of contaminant runoff into the subsurface soil.
PPMP-138-MW01	Groundwater	Groundwater sample will be collected from existing monitoring well located on the west side of the existing heating oil underground storage tank.
PPMP-138-MW02	Groundwater	Groundwater sample will be collected from existing monitoring well located on the east side of the existing heating oil underground storage tank.

DWG. NO.: /74645es.184
 PROJ. NO.: 774645
 INITIATOR: T. NOLEN
 PROJ. MGR.: J. YACOB
 DRAFT. CHCK. BY: A. MAYILA
 ENGR. CHCK. BY: A. MAYILA
 STARTING DATE: 07/24/98
 DATE LAST: 08:49:45
 DRAWN BY: D. BILLINGSLEY
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - EXISTING DOORWAYS
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE
 - EXISTING RESIDUUM MONITORING WELL
 - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
FORMER PRINTING, PLANT
BUILDING 143 BASEMENT
PARCEL 138(7)



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



Table 4-2

**Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Former Printing Plant, Building 143 Basement, Parcel 138(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-138-GP01	PPMP-138-GP01-SS-KE0001-REG	0-1			PPMP-138-GP01-SS-KE0001-MS	TCL VOCs, TCL SVOCs TAL Metals
	PPMP-138-GP01-DS-KE0002-REG	a			PPMP-138-GP01-SS-KE0001-MSD	
PPMP-138-GP02	PPMP-138-GP02-SS-KE0003-REG	0-1				TCL VOCs, TCL SVOCs TAL Metals
	PPMP-138-GP02-DS-KE0004-REG	a				
PPMP-138-GP03	PPMP-138-GP03-SS-KE0005-REG	0-1	PPMP-138-GP03-DS-KE0007-FD	PPMP-138-GP03-DS-KE0008-FS		TCL VOCs, TCL SVOCs TAL Metals
	PPMP-138-GP03-DS-KE0006-REG	a				
PPMP-138-GP04	PPMP-138-GP04-SS-KE0009-REG	0-1				TCL VOCs, TCL SVOCs TAL Metals
	PPMP-138-GP04-DS-KE0010-REG	a				

^a Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

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

4.2.2 Subsurface Soil Sampling

Four subsurface soil samples will be collected from the same locations as the surface soil samples described in Section 4.2.1.

4.2.2.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. Four subsurface soil samples will be collected from the Former Printing Plant, Building 143 Basement. The proposed subsurface soil sampling locations are presented on Figure 4-1.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected using the direct-push sampling procedures specified in Sections 4.7.1.1 of the SAP.

Subsurface soil samples will be continuously collected from 1 foot to 12 feet below land surface until refusal or groundwater is encountered. Each sample interval collected from the boring will be field screened using a photoionization detector (PID) to measure levels above background (ambient air). Samples will be collected for headspace screening as specified in Section 4.13 of the SAP. The soil sample from each boring exhibiting the highest reading on a PID (above background) will be sent to the laboratory for analysis. If none of the sample intervals indicate elevated PID readings, the deepest sample interval will be submitted to the laboratory.

Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Groundwater Sampling

Groundwater samples will be collected from the two existing monitoring wells MW01 and MW02 near the UST described in Section 1.2.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998d).

4.2.3.1 Sample Locations and Rationale

The groundwater sampling rationale is presented in Table 4-1. Two groundwater samples will be collected from existing monitoring wells at the Former Printing Plant, Building 143 Basement.

4.2.3.2 Sample Collection

The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. Groundwater samples from existing monitoring wells will be collected in accordance with the procedures and methods specified in Section 4.9.1.4 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil sampling locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to determine well casing elevations to determine water levels, a higher level of accuracy is required. Monitoring wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and to an accuracy of 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Former Printing Plant, Building 143 Basement, Parcel 138(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-138-MW01	PPMP-138-MW01-GW-KE3001-REG	a			PPMP-138-MW01-GW-KE3001-MS PPMP-138-MW01-GW-KE3001-MSD	TCL VOCs, TCL SVOCs Total TAL Metals
PPMP-138-MW02	PPMP-138-MW02-GW-KE3002-REG	a	PPMP-138-MW02-GW-KE3003-FD	PPMP-138-MW02-KE3004-FS		TCL VOCs, TCL SVOCs Total TAL Metals

^a Screen depth is unknown; however, it is assumed that the well screen in each well bridges the water table.

FD - Field duplicate.

FS - Field split.

MS/MSD - Matrix spike/matrix spike duplicate

NA - Not available.

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

4.5 Analytical Program

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Printing Plant, Building 143 Basement, site consist of the following analytical suite:

- TCL VOCs - Method 5035/8260B
- TCL SVOCs - Method 8270C
- TAL Metals - Method 6010B/7000.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 of this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia
30060-3112
Telephone: (770) 919-5270.

Table 4-4

**Analytical Samples
Former Printing Plant, Building 143 Basement, Parcel 138(7)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Former Printing Plant, Building 143 Basement - Parcel 138(7): 2 water matrix samples (2 groundwater samples); 8 soil matrix (4 surface soil samples and 4 subsurface soil samples)													
TCL VOCs	8260B	water	normal	2	1	2	1	1	1	1	1	7	1
TCL SVOCs	8270C	water	normal	2	1	2	1	1	1	1	6	1	
Tot TAL Metals	6010B/7000	water	normal	2	1	2	1	1	1	1	6	1	
TCL VOCs	8260B	soil	normal	8	1	8	1	1	1	1	12	1	
TCL SVOCs	8270C	soil	normal	8	1	8	1	1	1	1	12	1	
TAL Metals	6010B/7000	soil	normal	8	1	8	1	1	1	1	12	1	
Former Printing Plant, Building 143 Basement Subtotal:				30			6	6	6	1	6	55	6

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

Ship samples to: Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Tel: 770-919-5270

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
TAL - Target analyte list.
TCL - Target compound list.
SVOC - Semivolatile organic compound.
VOC - Volatile organic compound.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Printing Plant, Building 143 Basement, will include decontamination fluids and disposable personal protective equipment. The IDW will be staged at an accessible point within the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

5.0 Project Schedule

The project schedule for the site investigation activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

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U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribes), and Removal of Indoor Firing Ranges*, May.

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Site Investigation

Final Site-Specific Field Sampling Plan Attachment for Printing Plant, Building 3183, Parcel 162(7)

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

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

Prepared by:

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**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

December 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
NGVD	National Geodetic Vertical Datum
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Printing Plant, Building 3183, Parcel 162(7), at Fort McClellan, Alabama, to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Printing Plant, Building 3183, which is located in the south-central part of the Main Post.

The Printing Plant, Building 3183 is located in the south-central part of the Main Post (Figure 1-1). The study area in and around Building 3183 covers approximately 1 acre. The site and the area around the site is well developed and occupied; the U.S. Army Military Police School (USAMPS) Museum, a General Purpose Storage Installation (Building 3170), and a Battalion Headquarters (Building 3160) are to the southeast, west, and northwest of Building 3183. These buildings are not listed in the Community Environmental Response Facilitation Act (CERFA) parcel list as needing investigation. Buildings 3192, 3182, 3181, and 3180 are all to the east and northeast of Building 3183.

Building 3183 is the location of the current printing plant at FTMC. Built in 1955, this building has only been used for printing operations. Prior to 1994, the printing operation used and stored solvents, petroleum hydrocarbons, and inks. These potential substances include perchloroethylene, petroleum naphtha, and potassium ferrocyanide (ESE, 1998). These solvents were stored in 55-gallon drums in a chemical storage area that is bermed with concrete. In 1994, the printing process changed to a less hazardous dry process. Printing wastes from the old process was stored in this building until 1995. It is believed that wastes have since been disposed of (ESE, 1998). A floor drain is not present in the chemical storage area and the concrete berm is approximately 6 inches high at the doorstep (ESE, 1998). This area is now used to store containers of waste oil. During the June 1998 IT site visit, a steam tank was observed on the north side of the building (Figure 1-2). The steam tank appears to be part of the building heating system and does not appear related to the printing operations.

Specifically, IT will collect four surface soil samples, four subsurface soil samples, and three groundwater samples at this site. Potential contaminant sources at the site include petroleum hydrocarbons, solvents, metals, and inks. These potential substances include perchloroethene, petroleum naphtha (3 percent nitric acid), and potassium ferrocyanide. Therefore, chemical analyses of the samples collected during the field program will include volatile organic

compounds, semivolatile organic compounds, metals, and cyanide. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Printing Plant, Building 3183, Parcel 162(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Printing Plant, Building 3183, Parcel 162(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Printing Plant, Building 3183. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Printing Plant, Building 3183 site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The Main Post installation is bounded on the south and west by the City of Anniston, and on the northwest by the City of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

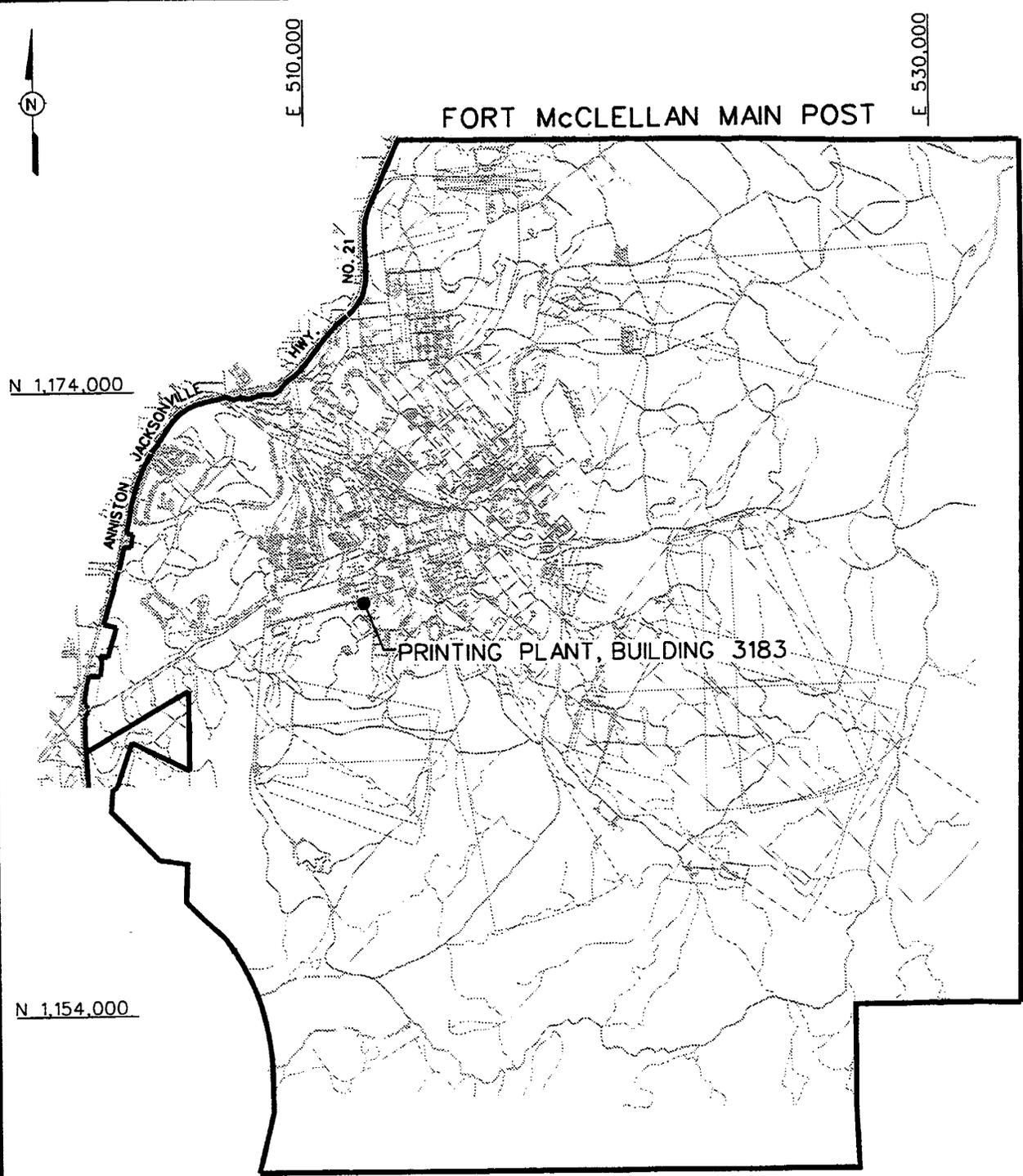
The Printing Plant, Building 3183 is located in the south-central part of the Main Post (Figure 1-1). The study area in and around Building 3183 covers approximately 1 acre. The site and the area around the site is well developed and occupied; the U.S. Army Military Police School (USAMPS) Museum, a General Purpose Storage Installation (Building 3170), and a Battalion Headquarters (Building 3160) are to the southeast, west, and northwest of Building 3183. These buildings are not listed in the Community Environmental Response Facilitation Act (CERFA) parcel list as needing investigation. Buildings 3192, 3182, 3181, and 3180 are all to the east and northeast of Building 3183.

Building 3183 is the location of the current printing plant at FTMC. Built in 1955, this building has only been used for printing operations. Prior to 1994, the printing operation used and stored

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PROJ. NO.: 774645	PROJ. MGR.: J. YACOUB
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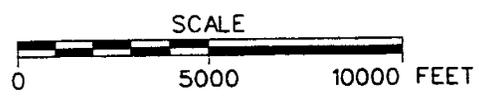
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LEGEND:

 FORT McCLELLAN BOUNDARY

FIGURE 1-1
SITE LOCATION MAP
PRINTING PLANT, BUILDING 3183
PARCEL 162(7)



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



solvents, petroleum hydrocarbons, and inks. These potential substances include perchloroethylene, petroleum naphtha, and potassium ferrocyanide (ESE, 1998). These solvents were stored in 55-gallon drums in a chemical storage area that is bermed with concrete. In 1994, the printing process changed to a less hazardous dry process. Printing wastes from the old process was stored in this building until 1995. It is believed that all waste have been disposed of (ESE, 1998). A floor drain is not present in the chemical storage area and the concrete berm is approximately six inches high at the doorstep (ESE, 1998). This area is now used to store containers of waste oil. During the June 1998, IT site visit, a steam tank was observed on the north side of the building (Figure 1-2). The steam tank appears to be part of the building heating system. It does not appear related to the former printing operations.

Surface drainage features in the vicinity of the site drain towards the north to Remount Creek. The South Branch of Cane Creek is 900 feet east-southeast of the site. An interfluvial divide separates this drainage area from the drainage area of Building 3183. An aqueduct traverses the Main Post from southwest to northeast and is 800 feet north-northwest of Building 3183 at its closest point. Shallow groundwater at the site is probably controlled by surface drainage and/or topography and likely flow north or northeast. Site elevation ranges from 795 to 805 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map showing topographic features and site boundaries.

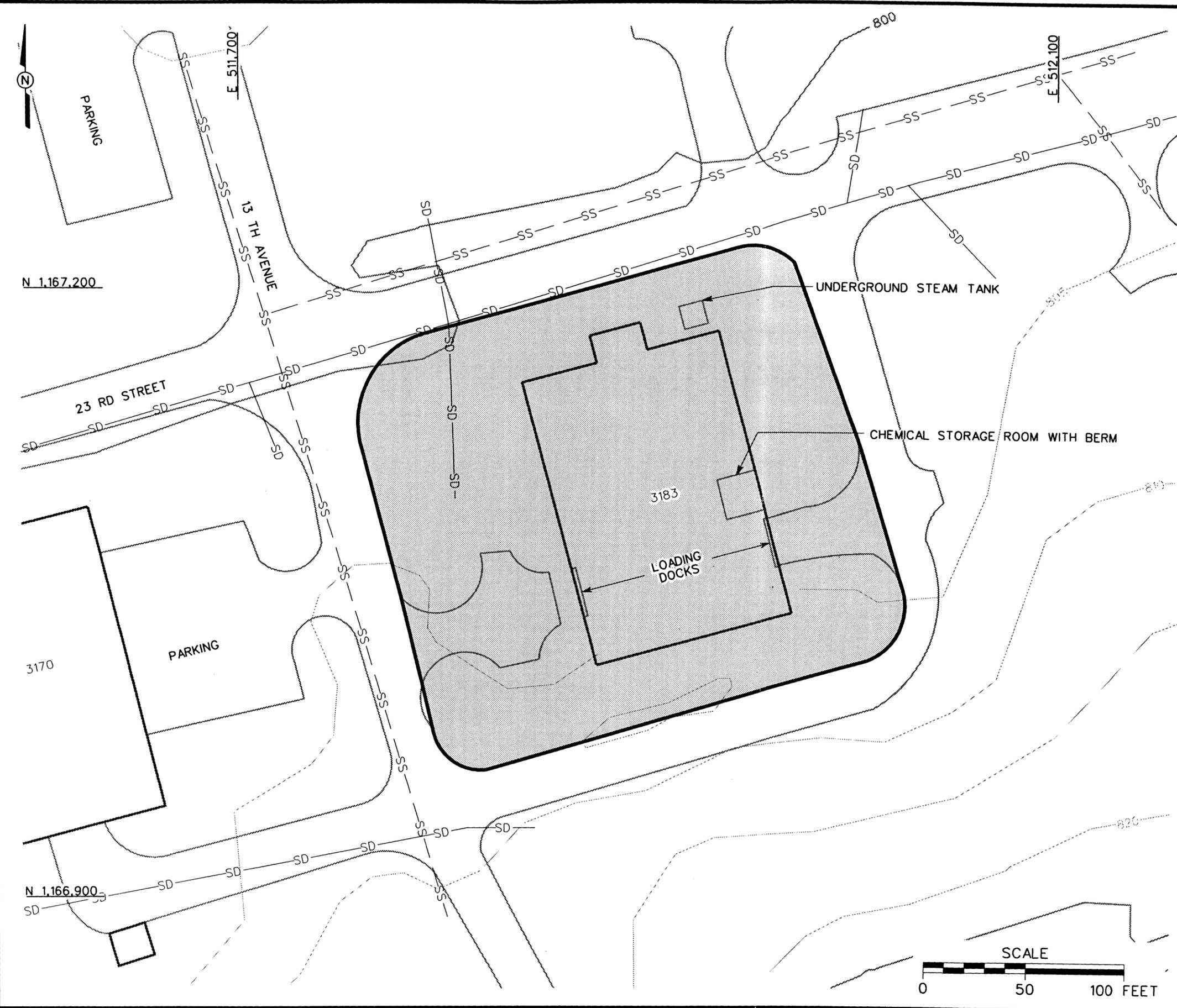
The soil type at the Printing Plant, Building 3183 is the Anniston and Allen gravelly loam, which is a friable, deep, strongly acid, well-drained soil that has developed in old local alluvium. This soil is formed either by erosional forces, surface runoff, or naturally reworking processes. The surface horizon is usually a very dark brown loam or dark grayish-brown sandy loam, while the subsoil is a dark red sandy clay loam. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil. The depth to bedrock is typically from 2 feet below ground surface (bgs) to greater than 10 feet bgs. The depth to groundwater is typically greater than 20 feet bgs. Although erosion is a problem, this soil type can be productive in areas with little or no slope (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Printing Plant, Building 3183, as specified in the statement of work (USACE, 1998) includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.

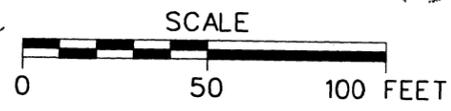
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 STARTING DATE: 08/03/98
 DRAWN BY: D. BILLINGSLEY
 DATE LAST: 13.4.98
 DRAWN BY:
 DRAFT. CHCK. BY: A. MAYILA
 ENGR. CHCK. BY: J. YACOUB
 INITIATOR: T. NOLEN
 PROJ. MGR.: J. YACOUB
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - FENCE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
PRINTING PLANT, BUILDING 3183
PARCEL 162(7)

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



- Collect four surface soil, four subsurface soil, and three groundwater samples to determine whether potential site-specific chemicals (PSSC) are present at the Printing Plant, Building 3183, and to provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on 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 (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the 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, Alabama Department of Environmental Management (ADEM), U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-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 Printing Plant, Building 3183 consists of one site only. This parcel was identified as a CERFA Category 7 site, where hazardous substances were possibly stored, released, or disposed of, and/or the migration of hazardous substances is suspected. Category 7 sites are either not evaluated or require additional evaluation to determine the environmental condition of the site.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action for the Printing Plant, Building 3183. The section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Printing Plant, Building 3183 is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the SI and establish a basis for future action at the site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Printing Plant, Building 3183 are presented in Table 3-1 and have been used to formulate a site-specific conceptual site exposure model (CSEM) presented in Section 3.3. This CSEM was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual chemical contamination in site media.

Table 3-1

**Summary of Data Quality Objectives
Printing Plant, Building 3183, Parcel 162(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None No previous sampling or investigation.	<u>Contaminant Source</u> Petroleum hydrocarbons, solvents, inks, metals from printing operations <u>Migration Pathways</u> Infiltration and leaching to subsurface soil and groundwater, dust emissions and volatilization from soil to air. Drainage discharge to soil, surface water, and groundwater. <u>Potential Receptors</u> Groundskeeper (current and future) Construction worker (future) Resident (future) <u>PSSC</u> Petroleum hydrocarbons Solvents Metals Cyanide	Surface Soils	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present. Obtain sufficient data to support as appropriate the following: • Implementing an immediate response. • No further action. • Proceeding with a RI.	<u>Surface soil</u> TCL-VOCs TCL-SVOCs TAL-metals Cyanide	Definitive data in CESAS Level B data packages	4 direct-push + QC
			Subsurface Soils		<u>Subsurface Soil</u> TCL-VOCs TCL-SVOCs TAL-metals Cyanide		4 direct-push + QC
			Groundwater		<u>Groundwater</u> TCL-VOCs TCL-SVOCs TAL-metals Cyanide		3 samples + QC

ADEM - Alabama Department of Environmental Management.
 CESAS - Corps of Engineers South Atlantic Savannah.
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.
 PSSC - Potential site-specific chemical.
 QC - Quality control.

SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.
 USACE - U.S. Army Corps of Engineers.
 VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The CSEM provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential for contamination at the Printing Plant, Building 3183, is attributable to the use of solvents, petroleum hydrocarbons, and inks. These were stored at this site. Building 3183, is located in the Central Main Post and is surrounded by administrative buildings, and the U.S. Army Military Police School Museum. Currently, access to the location is unrestricted. An aqueduct is also located approximately 800 feet from the building. It is assumed that releases of any potential contaminants were restricted to surface soil and subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil, dust emissions and volatilization from soil to ambient air, infiltration and leaching to groundwater, and volatilization from groundwater to air.

The site is developed, and workers currently maintain the site as a technical process (printing) building. The only plausible receptors considered under current site usage is the groundskeeper. Other potential receptors considered but not included under current site usage are:

- Resident: The site is not currently used for residential development.
- Recreational site user: The site is approximately 1 acre, well developed and occupied, and therefore does not offer recreational opportunities.
- Venison and fish consumption: The site does not support either fishing or hunting.
- Construction worker: The site is currently not under construction.

As described in Table 2-1 of the FTMC Comprehensive Reuse Plan, future plans call for this site to become part of the Ayres State Education Consortium (FTMC, 1997). The most plausible receptors for the future site use scenario include groundskeepers and construction workers. Although current plans are to use this site for educational purposes, a resident scenario is included for purposes of conservatism. Other receptors considered, but not excluded under the future scenario are the recreational site user, and fish and venison consumer. Contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Printing Plant, Building 3183. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

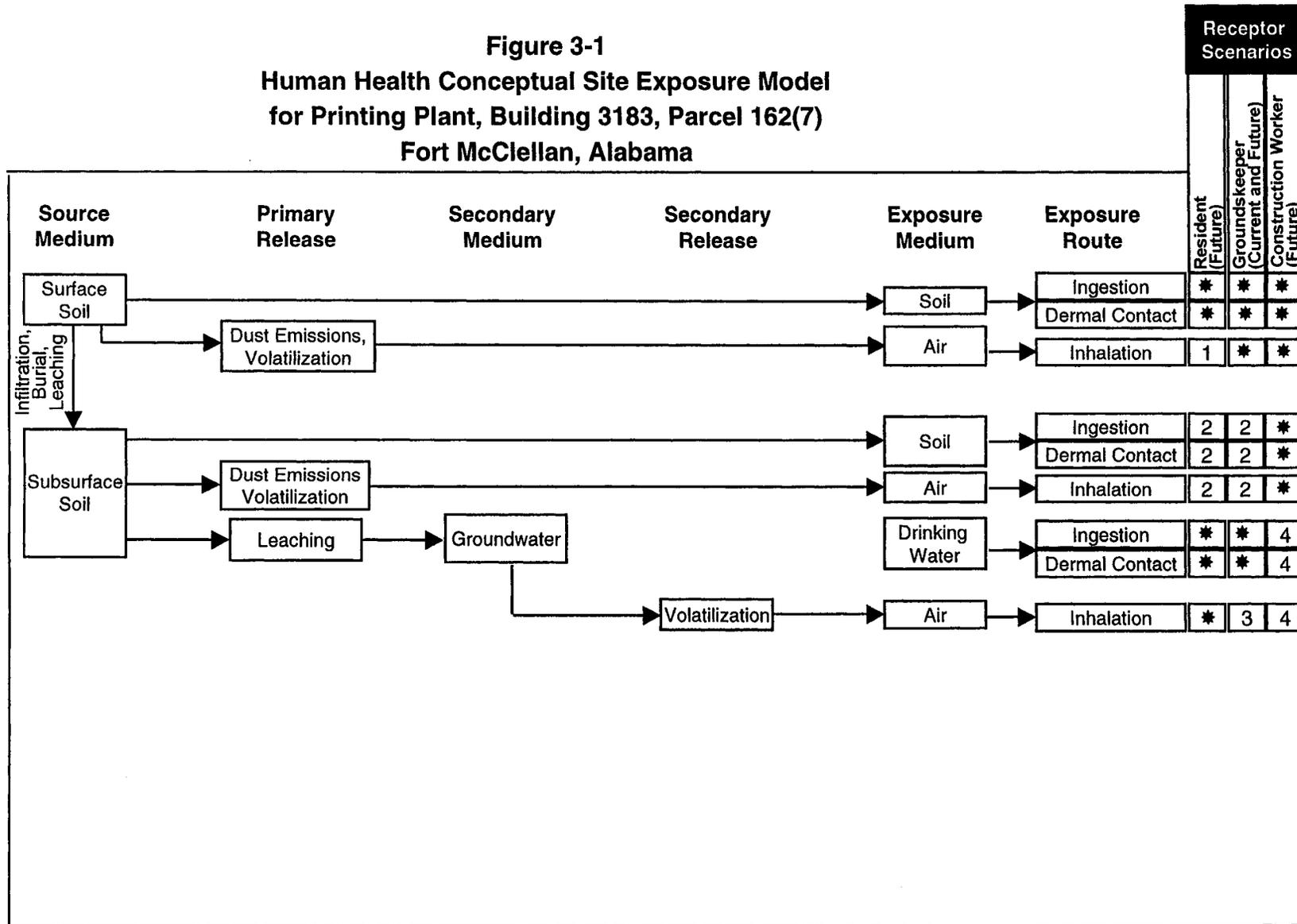
Confirmation of contamination at the Printing Plant, Building 3183, will be based upon a comparison of detected site contaminants to the site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the installation-wide work plan.

3.4.2 Data Types and Quality

To meet the objectives of the SI at the Printing Plant, Building 3183, it will be necessary to sample and analyze surface soils, subsurface soils, and groundwater. As described in Chapter 4.0 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1
Human Health Conceptual Site Exposure Model
for Printing Plant, Building 3183, Parcel 162(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the Printing Plant, Building 3183 includes the collection of surface soil, subsurface soil, and groundwater samples for chemical analysis.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected at the locations described in the following subsections.

4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. Four surface soil samples will be collected at the Printing Plant, Building 3183. The proposed surface soil sampling locations are presented on Figure 4-1.

Surface soil samples will be collected from the upper 1 foot of soil at each sampling location. Surface soil samples collected at the four locations will be submitted for laboratory analyses of target compound list (TCL) volatile organic compounds (VOC), semivolatile organic compounds (SVOC), target analyte list (TAL) metals, and cyanide.

4.2.1.2 Sample Collection

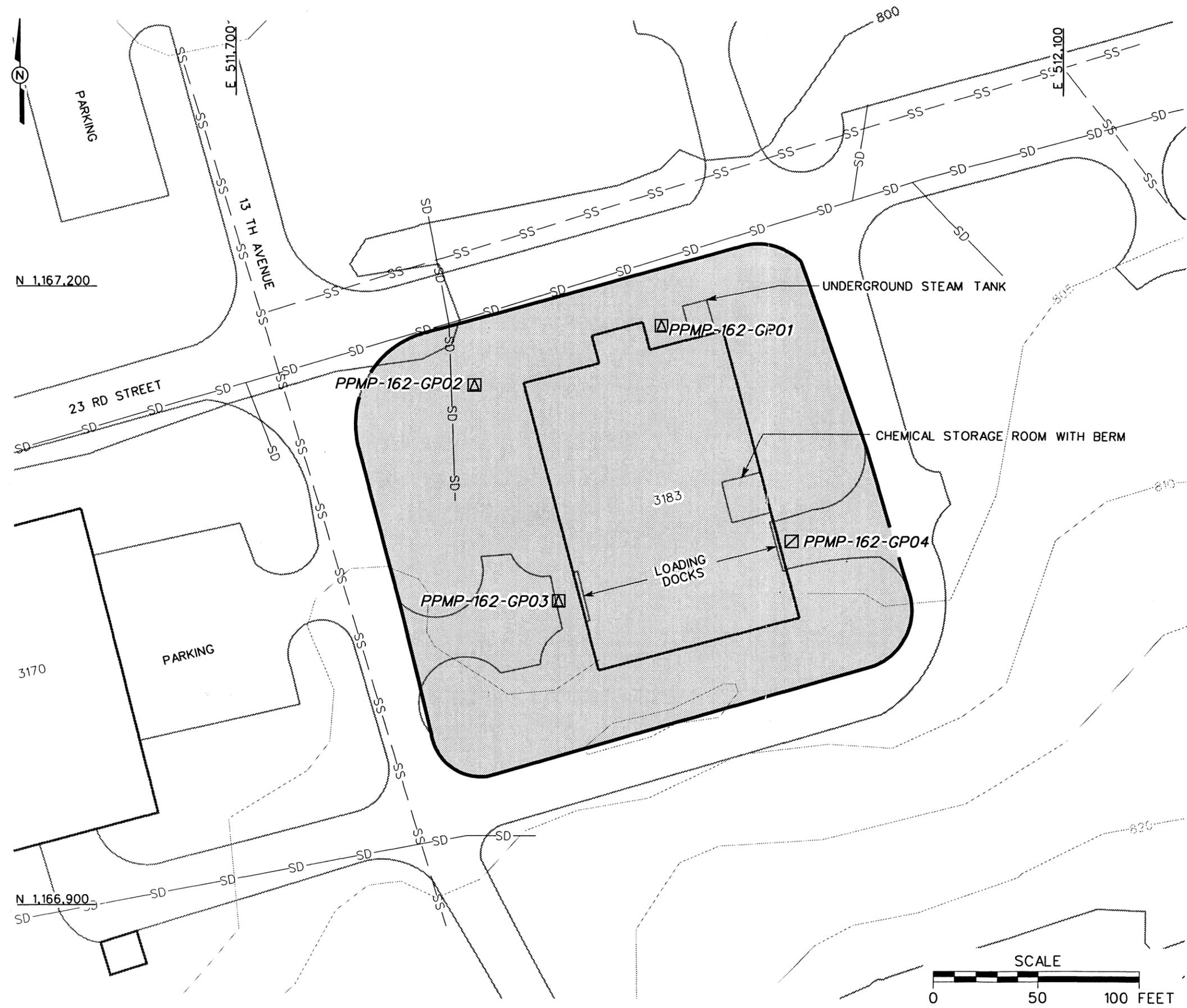
Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Four surface soil samples will be collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Table 4-1

**Sample Locations and Rationale
Printing Plant, Building 3183, Parcel 162(7)
Fort McClellan, Calhoun County, Alabama**

Sample Designation	Media Sampled	Location, Description, and Rationale
PPMP-162-GP01	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected at the northeast corner of the study parcel. Due to the proximity of underground utilities and the underground steam tank, this sampling location represents a potential location for contaminant infiltration to the subsoil or groundwater.
PPMP-162-GP02	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected at the northwest corner of the study parcel. This sampling location represents a likely point for the collection and infiltration of runoff at the site due to the proximity of sewer lines and underground utilities.
PPMP-162-GP03	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected at the southwest corner of the study parcel, near the west loading dock. This sampling location represents a likely point for the collection and infiltration of contaminants at the site.
PPMP-162-GP04	Surface Soil Subsurface Soil	Direct-push samples will be collected at the southeast corner of the study parcel, near the east loading dock. This sampling location represents a likely point for the collection and infiltration of contaminants at the site.

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 INITIATOR: T. NOLEN
 PROJ. MGR.: J. YACOB
 DRAFT. CHCK. BY:
 ENGR. CHCK. BY: A. MAYLA
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - FENCE
 - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
 - SS-- SANITARY SEWER LINE
 - SD— STORM DRAINAGE LINE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
PRINTING PLANT, BUILDING 3183
PARCEL 162(7)

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



Table 4-2

**Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Printing Plant, Building 3183 Area, Parcel 162(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-162-GP01	PPMP-162-GP01-SS-KG0001-REG PPMP-162-GP01-DS-KG0002-REG	0-1.0 a			PPMP-162-GP01-SS-KG0001-MS PPMP-162-GP01-SS-KG0001-MSD	TCL VOCs, TCL SVOCs, TAL Metals, Cyanide
PPMP-162-GP02	PPMP-162-GP02-SS-KG0003-REG PPMP-162-GP02-DS-KG0004-REG	0-1.0 a				TCL VOCs, TCL SVOCs, TAL Metals, Cyanide
PPMP-162-GP03	PPMP-162-GP03-SS-KG0005-REG PPMP-162-GP03-DS-KG0006-REG	0-1.0 a				TCL VOCs, TCL SVOCs, TAL Metals, Cyanide
PPMP-162-GP04	PPMP-162-GP04-SS-KG0007-REG PPMP-162-GP04-DS-KG0010-REG	0-1.0 a	PPMP-162-GP04-SS-KG0008-FD	PPMP-162-GP04-SS-KG0009-FS		TCL VOCs, TCL SVOCs, TAL Metals, Cyanide

^a Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

4.2.2 Subsurface Soil Sampling

Four subsurface soil samples will be collected from the same locations as the surface soil samples described in Section 4.2.1.

4.2.2.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. Four subsurface soil samples will be collected from the Printing Plant, Building 3183. The proposed subsurface soil sampling locations are presented on Figure 4-1.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and the soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 of the SAP (IT, 1998a).

Subsurface soil samples will be continuously collected from 1 foot to 12 feet below land surface or until either refusal or groundwater is encountered. Each sample interval collected from the boring will be field-screened using a photoionization detector (PID) to measure sample headspace above background (ambient air). Samples will be collected for headspace screening as specified in Section 4.15 of the SAP. The soil sample from each boring exhibiting the highest reading on a PID will be sent to the laboratory for analysis. If none of the sample intervals indicate elevated PID readings (above background), the deepest sample interval will be submitted to the laboratory. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Groundwater Sampling

Groundwater samples will be collected from temporary wells completed in three of the soil boring sample locations described in Sections 4.2.1 and 4.2.2.

4.2.3.1 Sample Locations and Rationale

Groundwater sampling rationale is presented in Table 4-1. Three groundwater samples will be collected from the Printing Plant, Building 3183, site.

4.2.3.2 Sample Collection

Groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. Groundwater samples will be collected in accordance with the procedures and methods specified in Section 4.7.1.1 of the SAP. Direct-push temporary wells will be completed in these soil borings and advanced into the water table (to a depth where sufficient water is encountered) to collect a groundwater sample. The direct-push temporary wells will be completed in the soil borings described in Sections 4.2.1 and 4.2.2.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil sampling locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Printing Plant, Building 3183, Parcel 162(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-162-GP01	PPMP-162-GP01-GW-KG3001-REG	a	PPMP-162-GP01-GW-KG3002-FD	PPMP-162-GP01-GW-KG3003-FS		TCL VOCs, TCL SVOCs, TAL metals, Cyanide
PPMP-162-GP02	PPMP-162-GP02-GW-KG3004-REG	a				TCL VOCs, TCL SVOCs, TAL metals, Cyanide
PPMP-162-GP03	PPMP-162-GP03-GW-KG3005-REG	a			PPMP-162-GP03-GW-KG3005-MS PPMP-162-GP03-GW-KG3005-MSD	TCL VOCs, TCL SVOCs, TAL metals, Cyanide

^a Actual groundwater sample depth will depend on where sufficient first groundwater is encountered to collect a sample.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

higher level of accuracy is required. Direct-push temporary wells and permanent monitoring wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 feet for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Printing Plant, Building 3183, site consist of the following analytical suite:

- TCL VOCs - Method 5035/8260B
- TCL SVOCs - Method 8270C
- TAL Metals - Method 6010B/7000
- Total and Amenable Cyanide - Method 9010B.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 of this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401

Table 4-4

**Analytical Samples
Printing Plant, Building 3183, Parcel 162(7)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Printing Plant, Building 3183 - Parcel 162(7): 3 water matrix (groundwater samples), 8 soil matrix (4 surface soil samples, 4 subsurface soil samples)													
TCL VOCs	8260B	water	normal	3	1	3	1	1	1	1	1	8	1
TCL SVOCs	8270C	water	normal	3	1	3	1	1	1		1	7	1
Tot TAL Metals	6010B/7000	water	normal	3	1	3	1	1	1		1	7	1
Total and Amenable Cyanide	9010B	water	normal	3	1	3	1	1	1		1	7	1
TCL VOCs	8260B	soil	normal	8	1	8	1	1	1		1	12	1
TCL SVOCs	8270C	soil	normal	8	1	8	1	1	1		1	12	1
TAL Metals	6010B/7000	soil	normal	8	1	8	1	1	1		1	12	1
Total and Amenable Cyanide	9010B	soil	normal	8	1	8	1	1	1		1	12	1
Printing Plant, Building 3183 Total:				44			8	8	8	1	8	77	8

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

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE laboratory split samples
are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Tel: 770-919-5270

MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
VOC - Volatile organic compound.

Split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia
30060-3112
Telephone: (770) 919-5270.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Printing Plant, Building 3183 will include decontamination fluids and disposable personal protective equipment. The IDW will be staged at an accessible point within the fenced area at Buildings 335 and 336 while awaiting final disposal.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

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IT Corporation (IT), 1998c, Letter to Ellis Pope from Jeanne Yacoub, "Procedures For Temporary Residuum Monitoring Well Installation, Conversion, And Abandonment", November, 1998.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribes), and Removal of Indoor Firing Ranges*, May.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture (USDA), 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

Site Investigation

Final

**Site-Specific Field Sampling Plan Attachment
for Former Personnel Decontamination Station
at Building 3185, Parcel 179(7)**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

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

Prepared by:

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

**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

December 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
CWA	chemical warfare agent
CWM	chemical warfare materials
DANC	decontamination agent, noncorrosive
DOD	U.S. Department of Defense
DQO	data quality objective
DS2	decontamination solution No. 2
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
FTMC	Fort McClellan
GB	sarin
GI	government issue
GPS	global positioning system
H	mustard
HD	distilled mustard
IDW	investigation-derived waste
IT	IT Corporation
L	lewisite
NGVD	National Geodetic Vertical Datum
PDS	Personnel Decontamination Station
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation

List of Acronyms (Continued)

STB	super tropical bleach
SVOC	semivolatile organic compound
TCL	target compound list
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Former Personnel Decontamination Station (PDS) at Building 3185, Parcel 179(7) at Fort McClellan, Calhoun County, Alabama to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Former PDS.

The PDS was located at Building 3185 and was used from 1954 to 1973 for final decontamination of personnel after completion of training exercises at Training Area T-6. The initial decontamination of personnel occurred at Training Area T-6. Personnel decontamination activities consisted of decontamination of outer garments using water and government-issue soap. To decontaminate their boots, trainees walked through a shuffle pit filled with decontaminant (super tropical bleach [STB]) at Howitzer Hill (at Training Area T-6) and another shuffle pit located at the PDS (Environmental Sciences and Engineering, 1998). Outer garments were then decontaminated in the PDS.

Specifically, IT will collect five surface soil samples, five subsurface soil samples, and three groundwater samples at this site. Potential contaminant sources at the site include STB, chlorinated compounds, and chemical agents. Therefore, chemical analyses of the samples collected during the field program will include volatile organic compounds, and semivolatile organic compounds. In addition, one surface soil sample will be analyzed for chemical agent breakdown products. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Former PDS, Parcel 179(7), will be used in conjunction with the site-specific safety and health plan (SSHP), and the WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Personnel Decontamination Station (PDS) at Building 3185, under Delivery Order CK005, Contract No. DACA21-96-D-0018.

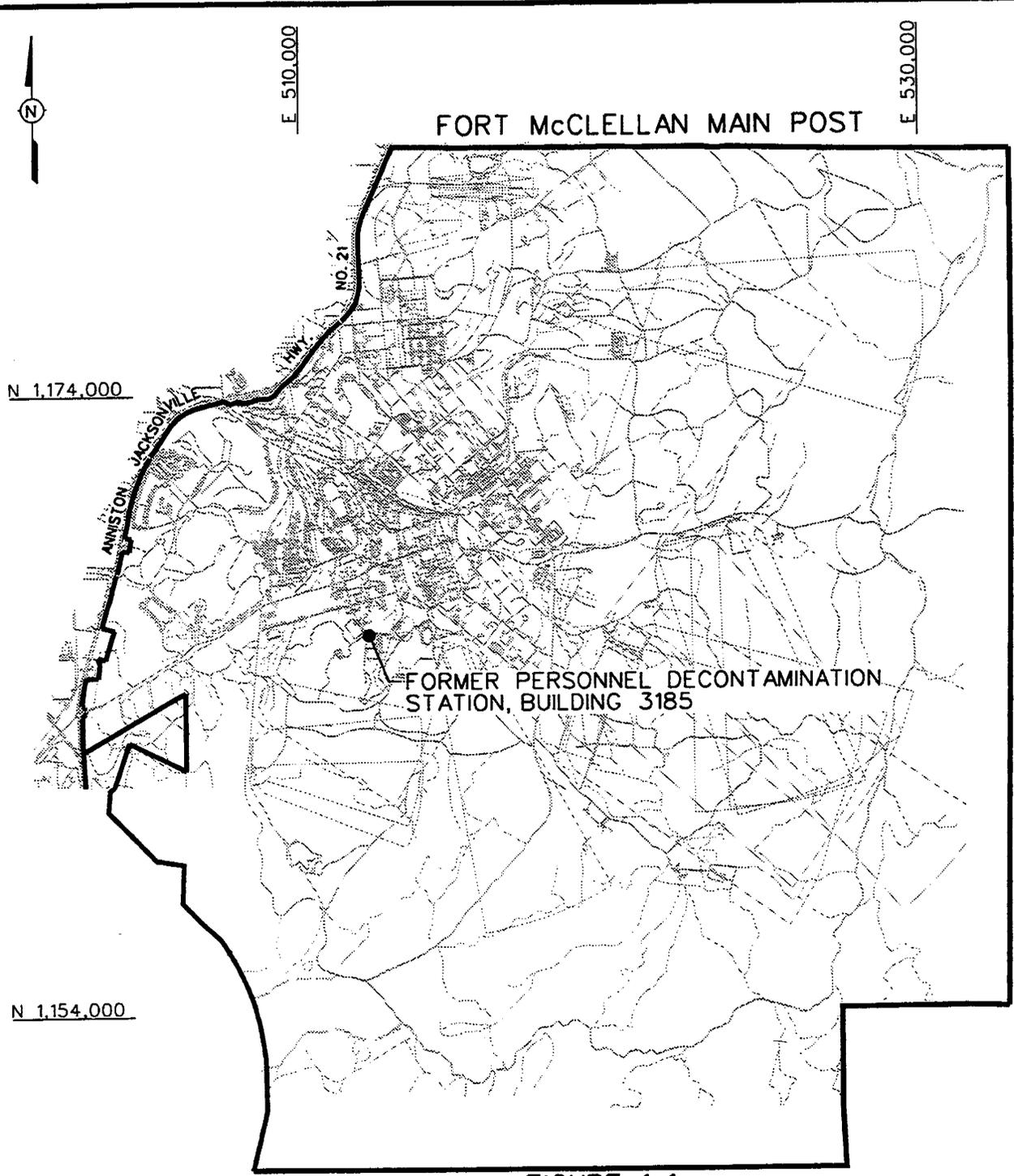
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Former PDS at Building 3185. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former PDS at Building 3185 site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The Main Post installation is bounded on the south and west by the city of Anniston, and on the northwest by the city of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The Former PDS, Building 3185, site is located in the south-central part of the Main Post (Figure 1-1). The study area in and around Building 3185 covers approximately 1 acre. To the east of the site are Building 3169, the Military Police Interview Classroom and Crime Scenes Building; Building 3175, the Mock Weapons Storage Building; and Building 3184, the Physical Security Classroom. The Polygraph Laboratory (Buildings 3165 and 3195) and the Applied Instruction Area are across 25th Street, north of the site. Twenty-sixth Street and Building 3174 (general purpose storage) are south of the site. The buildings and areas east, north, and south of Building 3185 are part of Parcel 161(7). Motor Pool 3100 is west of the site, across 13th Avenue, and will be investigated under another SI for Parcels 146, 24, 25, 73, and 212.

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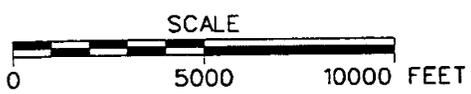


LEGEND:

 FORT McCLELLAN BOUNDARY

FIGURE 1-1
SITE LOCATION MAP
FORMER PERSONNEL
DECONTAMINATION STATION,
BUILDING 3185
PARCEL 179(7)

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



The PDS was used from 1954 to 1973 for final decontamination of personnel after completion of training exercises at Training Area T-6, Parcel 133(6). Area T-6 is addressed as a separate parcel. The initial decontamination of personnel occurred at Training Area T-6. Training exercises at Training Area T-6 (also known as Howitzer Hill) usually used mustard (H) or distilled mustard (HD), although sarin (GB) and lewisite (L) were also used (ESE, 1998). These chemical warfare materials (CWM) were decontaminated using supertropical bleach (STB), decontamination agent noncorrosive (DANC), and decontamination solution No. 2 (DS2). Personnel interviewed during the EBS site visit stated that training aids were intentionally contaminated with up to 2 gallons of HD during each exercise. The training aids consisted of surplus vehicles that had been taken out of service and dedicated to these decontamination training exercises. After being intentionally contaminated with chemical warfare agents (CWA), the training aid was decontaminated using volumes of decontaminant (STB, DS2, or DANC) well in excess of the volume actually required to affect complete decontamination. Reportedly, personnel decontamination was also conducted here before trainees left the site; personnel decontamination activities consisted of decontamination of outer garments using water and government-issue (GI) soap.

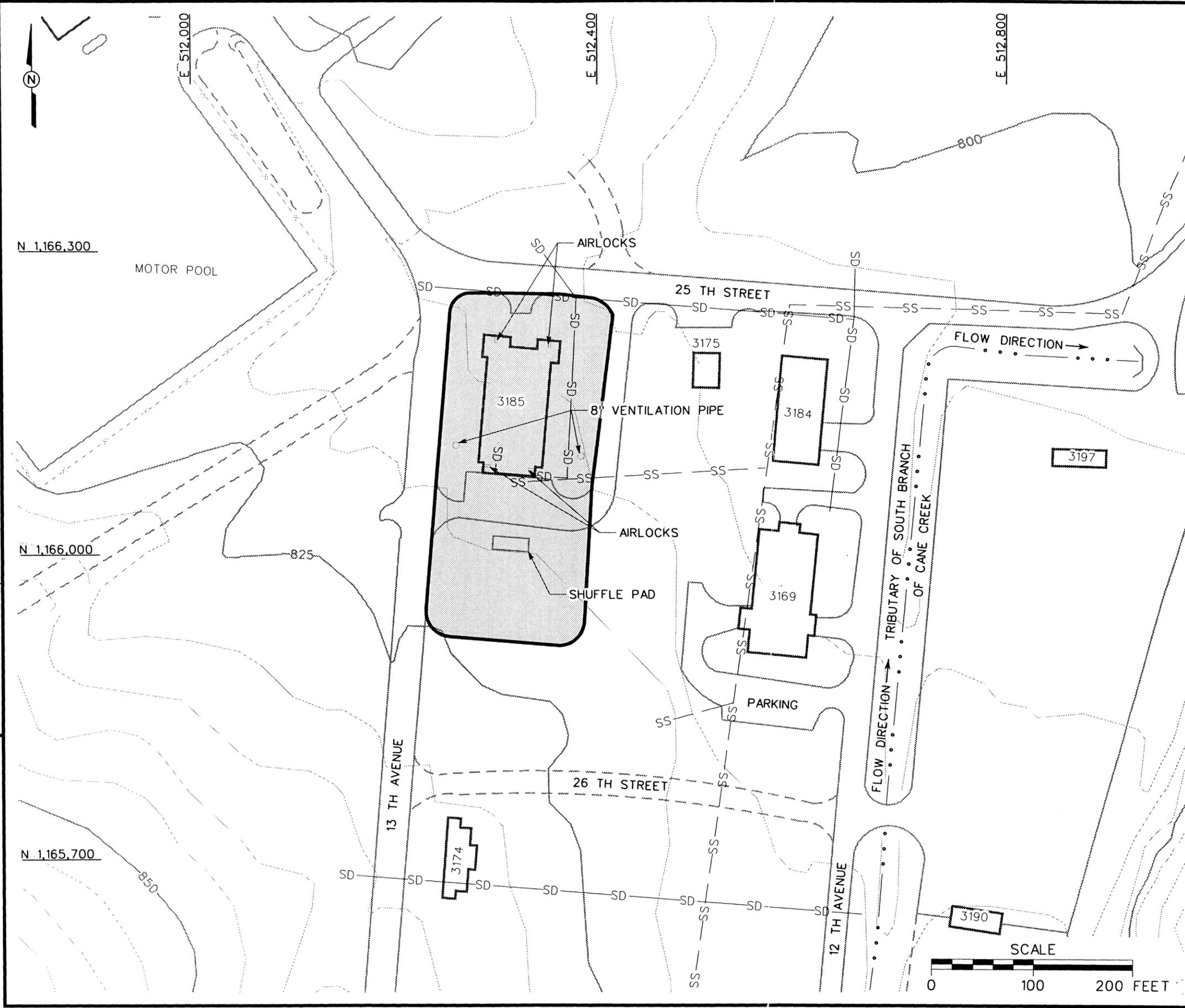
To decontaminate their boots, trainees walked through a shuffle pit filled with the decontaminant STB at Howitzer Hill (at Training Area T-6) and another shuffle pit at the PDS (ESE, 1998).

At Building 3185, trainees repeated the boot decontamination process at another shuffle pit directly behind (south of) Building 3185. This second shuffle pit was also known as Building 3173. Outer garments were then further decontaminated and/or exchanged inside Building 3185. The disposal of decontamination wastes at Building 3185 is not known. Access to the site is listed as unrestricted, although the building is locked.

During a site walkover by IT, ventilation pipes were observed in the vicinity of the building and air locks were observed in the building (Figure 1-2). The purpose of these structures is unknown, however they may have been associated with a negative air pressure system, to prevent air-borne contamination from exiting the building.

Surface drainage in the vicinity of the site flows towards the north to Cane Creek. A tributary of the South Branch of Cane Creek is located 300 feet due east of the site. Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation is approximately 800 to 825 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map showing topographic features and site boundaries.

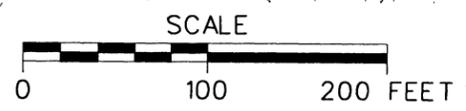
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 DRAWN BY: D. BILLINGSLEY
 DATE LAST
 DRAWN BY:
 DRAFT. CHK. BY:
 ENGR. CHK. BY: A. MAYILA
 INITIATOR: T. NOLEN
 PROJ. MGR.: J. YACOUB
 DWG. NO.: /4645es.206
 PROJ. NO.: 774645



- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
 FORMER PERSONNEL
 DECONTAMINATION STATION,
 BUILDING 3185
 PARCEL 179(7)

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



The soil type at the Former PDS is Anniston and Allen gravelly loam, which is a friable, deep, strongly acid, well-drained soil that has developed in old local alluvium. This soil is formed either by erosional forces, surface runoff, or natural reworking processes. The surface horizon is usually a very dark brown loam or dark grayish-brown sandy loam, while the subsoil is a dark red sandy clay loam. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil. The depth to bedrock is typically 2 feet below ground surface (bgs) to greater than 10 feet bgs. Groundwater is typically greater than 20 feet bgs. Although erosion is a problem, this soil type can be productive in areas with little or no slope (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Former PDS as specified in the statement of work (USACE, 1998) includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect five surface soil, five subsurface soil, and three groundwater samples to determine whether potential site-specific chemicals (PSSC) are present at the Former PDS site and to provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on 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 (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (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, Alabama Department of Environmental Management (ADEM), U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-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 PDS, Building 3185 consists of one site only. The site was identified as a CERFA site, where hazardous substances were possibly stored, released, or disposed of and/or the migration of hazardous substances is suspected. These sites are either not evaluated or require additional evaluation to determine the environmental condition of the site.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action for the Former PDS, Building 3185. The section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Former Personnel Decontamination Station, Building 3185 is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the site investigation and establish a basis for future action at the site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Former PDS, Building 3185 are presented in Table 3-1 and have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health,

Table 3-1

**Summary of Data Quality Objectives
Former Personnel Decontamination Station, Building 3185, Parcel 179(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	<u>Contaminant Source</u> Personnel decontamination station; contaminants and chemical decontaminants including HD, STB, H, GB, L. <u>Migration Pathways</u> Infiltration and leaching to subsurface soil and groundwater. Dust emissions and volatilization from soil to ambient air. <u>Potential Receptors</u> Groundskeeper (current and future) Construction worker (future) Resident (future) <u>PSSC</u> Chemical agent decontaminants STB decontaminant, bleach, DS2 chemical breakdown products	Surface Soil	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present. Obtain sufficient data to support as appropriate the following: • Implementing an immediate response. • No further action. • Proceeding with a RI.	<u>Surface soil</u> TCL-VOCs TCL-SVOCs Chemical breakdown products - 1 sample only	Definitive data in CESAS Level B data packages	5 direct-push samples + QC
			Subsurface Soil		<u>Subsurface Soil</u> TCL-VOCs TCL-SVOCs		5 direct-push samples + QC
			Groundwater		<u>Groundwater</u> TCL-VOCs TCL-SVOCs		3 samples +QC

ADEM - Alabama Department of Environmental Management.
 CESAS - Corps of Engineers South Atlantic Savannah.
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.
 PSSC - Potential site-specific chemical.

QC - Quality control.
 SVOC - Semivolatile organic compound.
 USACE - U.S. Army Corps of Engineers.
 VOC - Volatile organic compound.

and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at the Former PDS, Building 3185 was related to the use of chemical agents and their neutralizing agents and related release activities at this site. The PDS, Building 3185 is located in the Central Main Post and is surrounded by military police and training buildings, the polygraph laboratory, and a motor pool. Currently there is unrestricted access to the location. It is assumed that source media at the site is limited to surface and subsurface soil. Potential contaminant transport pathways include dust emissions and volatilization from soil to ambient air, infiltration to subsurface soil, infiltration and leaching to groundwater, and volatilization from groundwater to air. A tributary of the South Branch of Cane Creek is located 300 feet east of the site, but runoff and erosion do not appear to be a plausible contaminant transport pathway. This creek is not a viable source of fish due to its small size and intermittent nature. Furthermore, contaminated soil or groundwater will probably not reach Cane Creek.

Current site usage is best described as an unoccupied general purpose training building. The groundskeeper scenario is the only receptor scenario considered plausible, given current site usage. Other potential receptors considered, but excluded from current site usage are the:

- Resident: The site is currently not used for residential development.
- Recreational site user: The site is approximately 1 acre, well developed, occupied, and does not offer recreational opportunities.
- Construction worker: The site is currently not under construction.
- Venison and fish consumer: The site does not support either fishing or hunting.

As described in the FTMC Comprehensive Reuse Plan, future plans call for this site to become part of the Ayres State Education Consortium (FTMC, 1997). Future site use scenarios include the following receptors:

- Resident: Although this site is not currently used or scheduled for residential development, this scenario is considered as a conservative measure.
- Groundskeeper: It is anticipated that maintenance activities at the site will continue into the future.
- Construction worker: The site is currently unoccupied, but it is possible that excavation and building activities will occur in the future under the industrial reuse scenario described above.

Other receptors considered, but not included under the future site-use scenario, are the recreational site user, and fish and venison consumption, for the reasons previously described. Contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

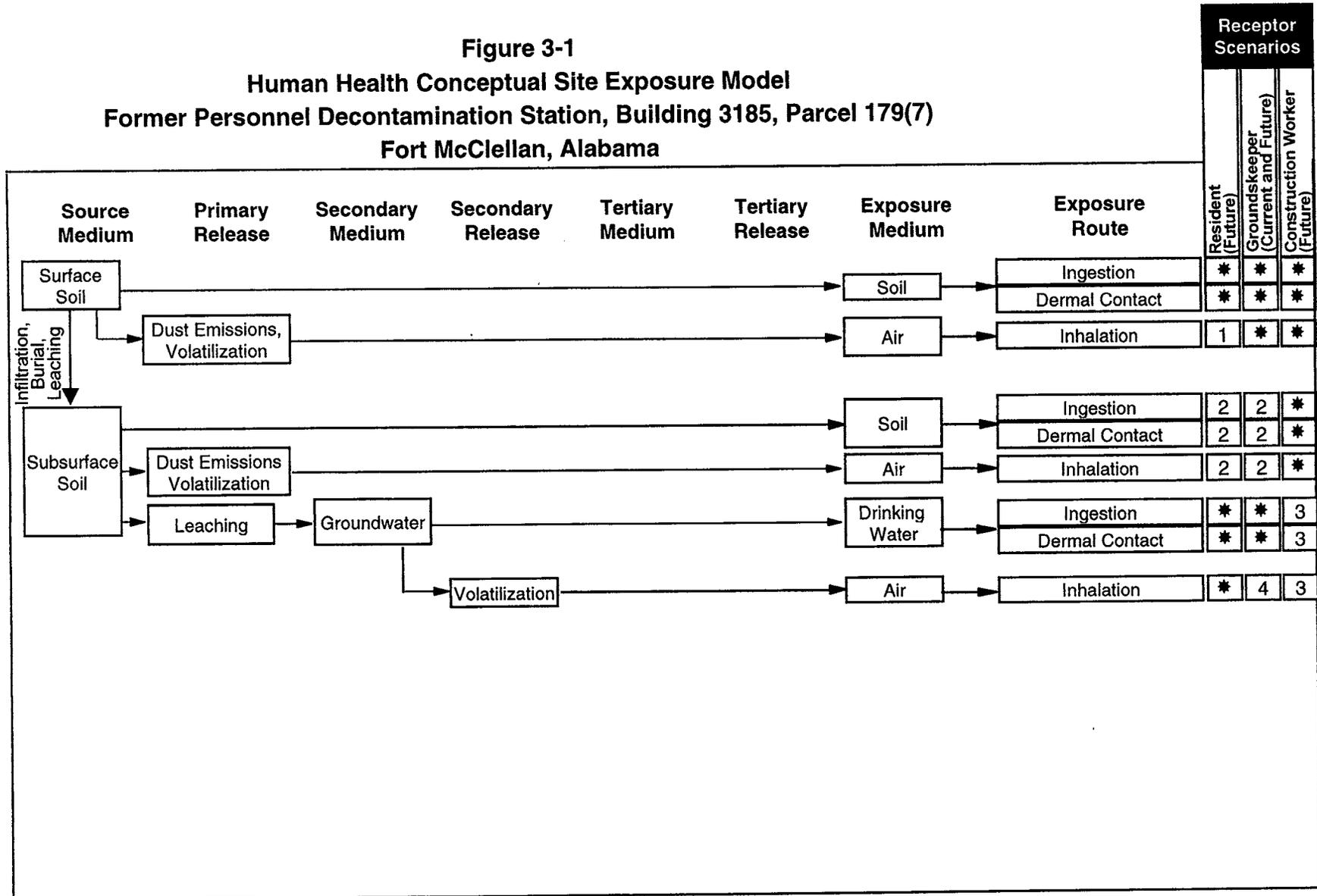
The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Former PDS, Building 3185. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Former PDS, Building 3185 will be based upon a comparison of detected site contaminants to the site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the installation-wide WP.

Figure 3-1
Human Health Conceptual Site Exposure Model
Former Personnel Decontamination Station, Building 3185, Parcel 179(7)
Fort McClellan, Alabama



- * = Complete exposure pathway quantified in SSSL development.
- 1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.
- 2 = Incomplete exposure pathway.
- 3 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.
- 4 = Although theoretically complete, this pathway is judged to be insignificant.

3.4.2 Data Types and Quality

To meet the objectives of the SI at the Former PDS, Building 3185, it will be necessary to sample and analyze surface soils, subsurface soils, and groundwater. As described in Chapter 4.0 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the Former PDS, Building 3185 includes the collection of surface soil, subsurface soil, and groundwater samples for chemical analysis.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected at the locations described in the following subsections.

4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. Five surface soil samples will be collected at the Former PDS, Building 3185, site. The proposed surface soil sampling locations are presented on Figure 4-1.

Surface soil samples will be collected from the upper 1 foot of soil at each sampling location. Surface soil samples collected at the five locations will be submitted for laboratory analyses of target compound list (TCL) volatile organic compounds (VOC) and semivolatile organic compounds (SVOC). The surface sample from location GP05 (Figure 4-1, Table 4-1) will also be submitted for laboratory analysis of chemical agent breakdown products.

4.2.1.2 Sample Collection

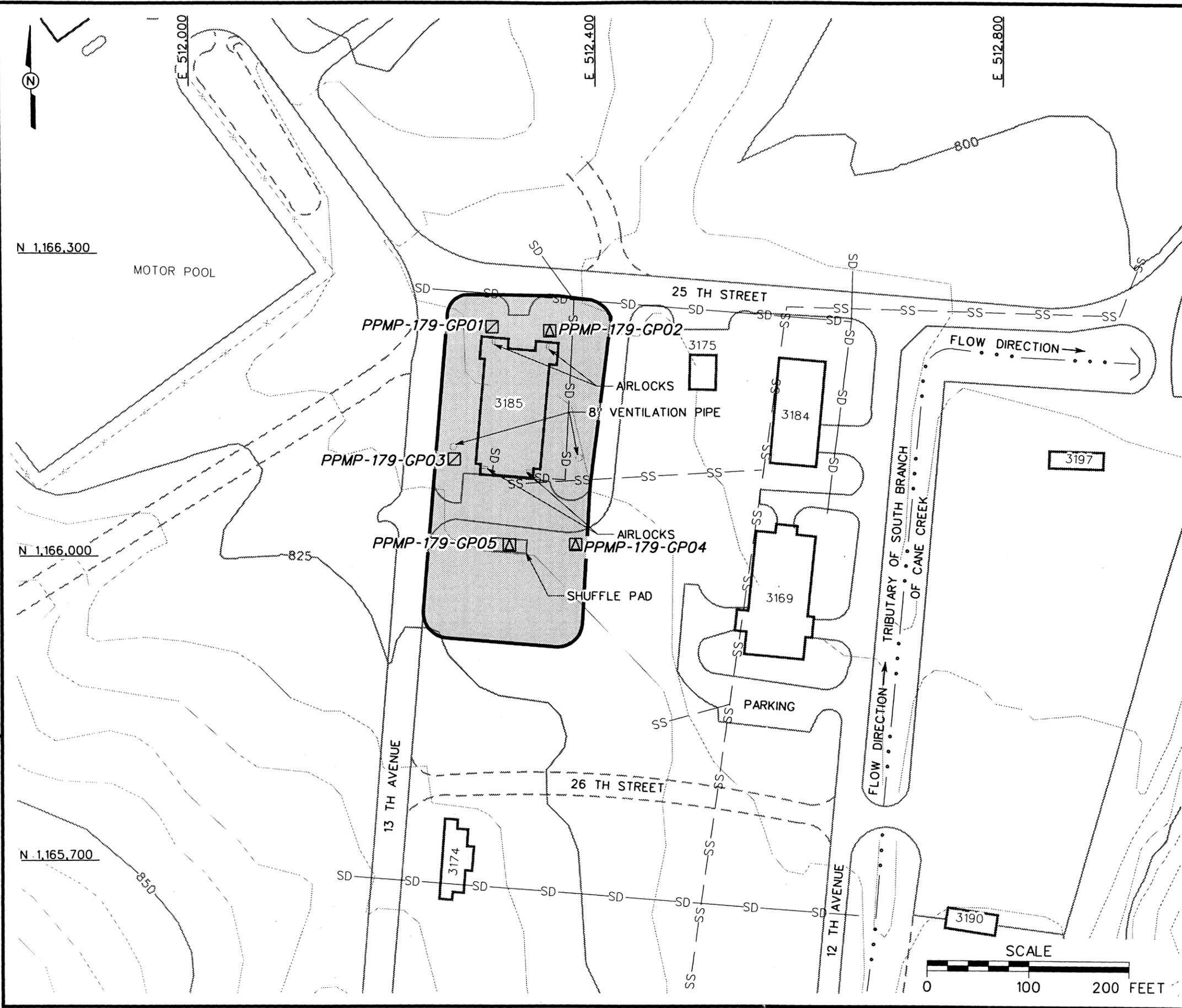
Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Five surface soil samples will be collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a). Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Table 4-1

**Sample Locations and Rationale
Former Personnel Decontamination Station, Building 3185, Parcel 179(7)
Fort McClellan, Calhoun County, Alabama**

Sample Designation	Media Sampled	Location, Description, and Rationale
PPMP-179-GP01	Surface Soil Subsurface Soil	Direct-push samples will be collected near the northwest entrance (air lock doors) to Building 3185. This sampling location represents a potential location for deposition and infiltration of contaminants to the surface or subsurface soil.
PPMP-179-GP02	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected near the northeast entrance (air lock doors) to Building 3185. This sampling location represents a potential location for deposition and infiltration of contaminants to the surface or subsurface soil and eventually to groundwater.
PPMP-179-GP03	Surface Soil Subsurface Soil	Direct-push samples will be collected near the southeast entrance (air lock doors) to Building 3185. This sampling location represents a potential location for deposition and infiltration of contaminants to the surface or subsurface soil.
PPMP-179-GP04	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected downgradient of the shuffle pad. This sampling location will indicate if any PSSC migrated from the shuffle pad.
PPMP-179-GP05	Surface Soil Subsurface Soil Groundwater	Direct-push samples will be collected at the shuffle pad, also known as Building 3173, located south of Building 3185. The sample data will show if PSSC exists in the area around the shuffle pad.

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 ENGR. CHK. BY: A. MAYILA
 INITIATOR: T. NOLEN
 PROJ. MGR.: J. YACOUB
 DWG. NO.: 4645es.207
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
FORMER PERSONNEL
DECONTAMINATION STATION,
BUILDING 3185
PARCEL 179(7)

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

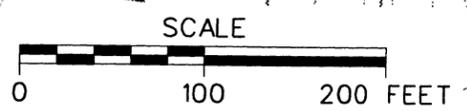


Table 4-2

**Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Former Personnel Decontamination Station, Building 3185, Parcel 179(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-179-GP01	PPMP-179-GP01-SS-KH0001-REG	0-1.0			PPMP-179-GP01-SS-KH0001-MS	TCL VOCs, TCL SVOCs
	PPMP-179-GP01-DS-KH0002-REG	*			PPMP-179-GP01-SS-KH0001-MSD	
PPMP-179-GP02	PPMP-179-GP02-SS-KH0003-REG	0-1.0				TCL VOCs, TCL SVOCs
	PPMP-179-GP02-DS-KH0004-REG	*				
PPMP-179-GP03	PPMP-179-GP03-SS-KH0005-REG	0-1.0				TCL VOCs, TCL SVOCs
	PPMP-179-GP03-DS-KH0006-REG	*				
PPMP-179-GP04	PPMP-179-GP04-SS-KH0007-REG	0-1.0	PPMP-179-GP04-SS-KH0008-FD	PPMP-179-GP04-SS-KH0009-FS		TCL VOCs, TCL SVOCs
	PPMP-179-GP04-DS-KH0010-REG	*				
PPMP-179-GP05	PPMP-179-GP05-SS-KH0011-REG	0-1.0				TCL VOCs, TCL SVOCs, Chemical Agent Breakdown Products
	PPMP-179-GP05-DS-KH0012-REG	*				

* Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TCL - Target compound list.

VOC - Volatile organic compound.

4.2.2 Subsurface Soil Sampling

Five subsurface soil samples will be collected from the same locations as the surface soil samples described in Section 4.2.1.

4.2.2.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. Five subsurface soil samples will be collected from the Former PDS, Building 3185. The proposed subsurface soil sampling locations are presented on Figure 4-1.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP (IT, 1998a).

Subsurface soil samples will be continuously collected from 1 foot to 12 feet below land surface or until either refusal or groundwater is encountered. Each sample interval collected from the boring will be field screened against background levels (ambient air) using a photoionization detector (PID). Samples will be collected for headspace screening as specified in Section 4.15 of the SAP. The soil sample from each boring exhibiting the highest reading (above background) on a PID will be sent to the laboratory for analysis. If none of the sample intervals indicate elevated PID readings, the deepest sample interval will be submitted to the laboratory.

Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Groundwater Sampling

Groundwater samples will be collected from three of the five surface and subsurface soil sample locations described in Sections 4.2.1 and 4.2.2.

4.2.3.1 Sample Locations and Rationale

The groundwater sampling rationale is presented in Table 4-1. Three groundwater samples will be collected from the Former PDS, Building 3185 site.

4.2.3.2 Sample Collection

Groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. Groundwater samples will be collected in accordance with the procedures and methods specified in Section 4.7.1.1 of the SAP (IT, 1998a). Direct-push temporary wells will be completed in soil borings advanced into the water table (to a depth where sufficient water is encountered) to collect a groundwater sample. The direct-push temporary wells will be completed in the soil borings described in Sections 4.2.1 and 4.2.2.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil sampling locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Former Personnel Decontamination Station, Building 3185, Parcel 179(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-179-GP02	PPMP-179-GP02-GW-KH3001-REG	a	PPMP-179-GP02-GW-KH3002-FD	PPMP-179-GP02-GW-KH3003-FS		TCL VOCs, TCL SVOCs
PPMP-179-GP04	PPMP-179-GP04-GW-KH3004-REG	a			PPMP-179-GP04-GW-KH3004-MS PPMP-179-GP04-GW-KH3004-MSD	TCL VOCs, TCL SVOCs
PPMP-179-GP05	PPMP-179-GP05-GW-KH3005-REG	a				TCL VOCs, TCL SVOCs

*Direct-push temporary wells will be installed to sufficient depth to collect a groundwater sample.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

for horizontal coordinates and to an accuracy of 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former PDS, Building 3185 site consist of the following analytical suite:

- TCL VOCs - Method 5035/8260B
- TCL SVOCs - Method 8270.

In addition, one surface soil sample location (PPMP-179-GP05) will be analyzed for the following list of chemical agent breakdown products:

- Method 8321CWM
 - Thiodiglycol
 - Isopropylmethylphosphonic acid (IMPA)
 - Ethylmethylphosphonic acid (EMPA)
 - Methylphosphonic acid (MPA)
 - Diisopropylmethylphosphonic acid (DIMP)
 - Dimethylmethylphosphonic acid (DMMP)
- Method 8270CWM
 - 1,4-Oxathiane
 - 1,4-Dithiane
 - p-Chlorophenylmethylsulfoxide
 - p-Chlorophenylmethylsulfone.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 of this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP).

Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

Table 4-4

**Analytical Samples
Former Personnel Decontamination Station, Building 3185, Parcel 179(7)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Former Personnel Decontamination Station, Building 3185, Parcel 179(7): 10 soil matrix (5 surface soil and 5 subsurface soils); 3 water matrix (3 groundwater samples)													
TCL VOCs	8260B	water	normal	3	1	3	1	1	1	1	1	8	1
TCL SVOCs	8270C	water	normal	3	1	3	1	1	1		1	7	1
TCL VOCs	8260B	soil	normal	10	1	10	1	1	1		1	14	1
TCL SVOCs	8270C	soil	normal	10	1	10	1	1	1		1	14	1
Chemical Agent Breakdown Product	8321CWM/ 8270CWM	soil	normal	1	1	1	1	1	1		1	5	1
Former Personnel Decontamination Station, Building 3185 Total:				27			5	5	5	1	5	48	5

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

Ship samples to: Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Tel: 770-919-5270

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
TCL - Target compound list.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP (IT, 1998a). Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401

Split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia
30060-3112
Telephone: (770) 919-5270.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements described in Section 4.10 and Appendix D of the SAP. The IDW expected to be generated at the Former PDS, Building 3185 will include decontamination fluids and disposable personal protective equipment. The IDW will be staged at an accessible point within the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

5.0 Project Schedule

The project schedule for the site investigation activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

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U.S. Department of Agriculture (USDA), 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September.

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Site Investigation

Final Site-Specific Field Sampling Plan Attachment for Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7)

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

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

Prepared by:

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

**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

December 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
ESE	Environmental Sciences and Engineering
FTMC	Fort McClellan
GC	gas chromatography
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
mL	milliliter
NGVD	National Geodetic Vertical Datum
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7) at Fort McClellan, Calhoun County, Alabama to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Former Fog Oil Storage Area West of the Skeet Range. The site is located immediately west of the Iron Mountain Road and south of Summerall Gate Road on the Main Post.

Specifically, IT will collect four subsurface soil samples, one surface water sample, and one sediment sample and perform a surface soil field screening program for heavy hydrocarbons. Potential contaminant sources at the Former Fog Oil Storage Area West of the Skeet Range site include fog oil and possibly other petroleum products. Therefore, chemical analysis of the samples collected during the field program and submitted to the analytical laboratory will consist of semivolatile organic compounds. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

The Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7), falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a). Therefore, IT will conduct unexploded ordnance (UXO) avoidance activities, including surface sweeps and downhole surveys of soil borings.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Former Fog Oil Storage Area West of the Skeet Range will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Former Fog Oil Storage Area West of the Skeet Range (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Fog Oil Storage Area West of the Skeet Range, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

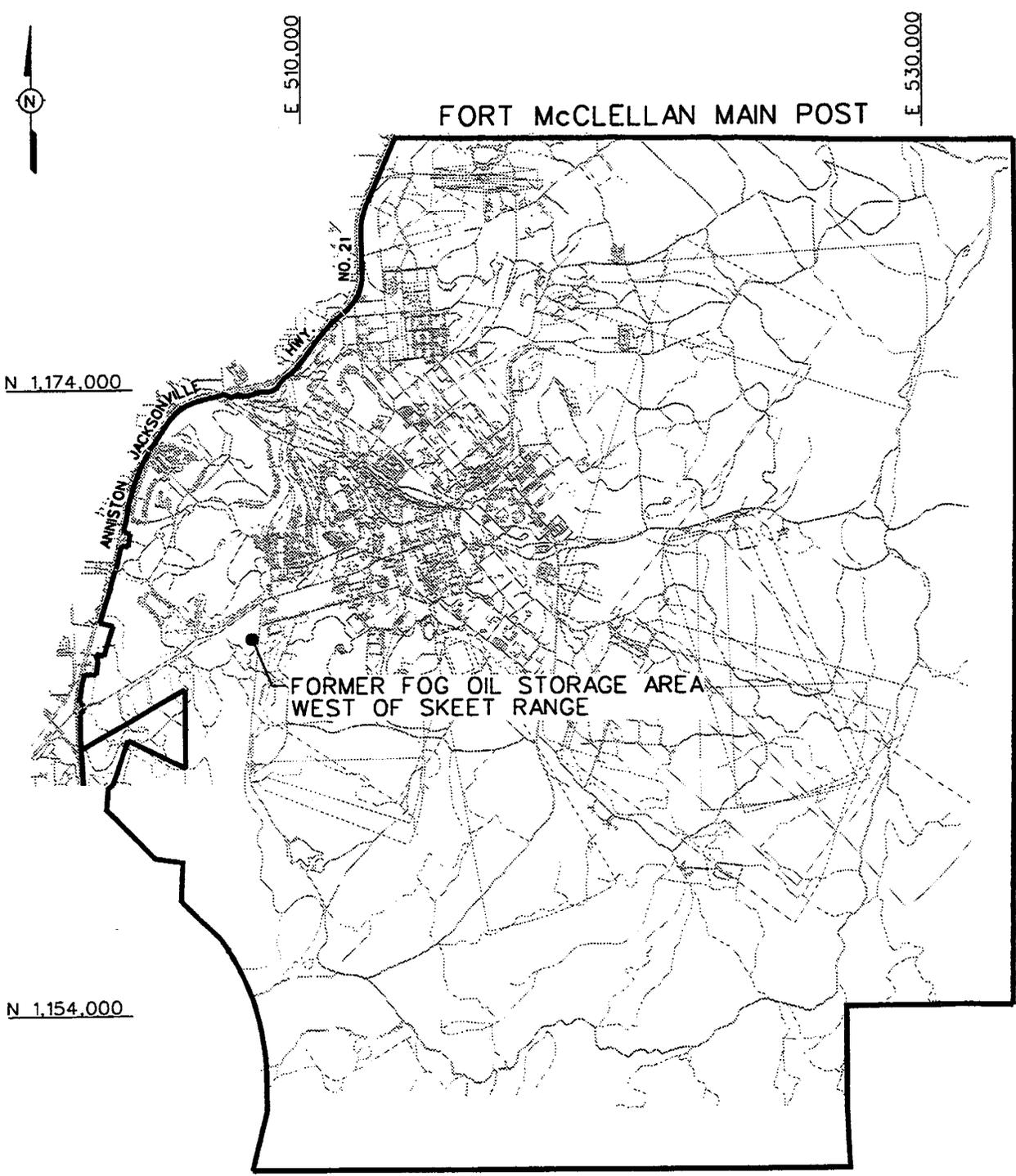
FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The Main Post installation is bounded on the south and west by the city of Anniston, and on the northwest by the city of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The Former Fog Oil Storage Area West of the Skeet Range is located on the west side of Iron Mountain Road, west of the former skeet range on the Main Post (Figure 1-1). The dates of use could not be determined. The study area covers approximately 2 acres. The site and the area around the site is mostly undeveloped or wooded. Figure 1-2 is a site map showing topographic features and site boundaries. The overgrown remains of a dirt road traverses the site from north-east to southwest. This road and the cleared area (Parcel 122[7]) are visible, only, in the 1949 photograph composite of the Environmental Photographic Interpretation Center (EPIC) report (U.S. Environmental Protection Agency [EPA], 1990). The entire site is now covered with trees and brush. Near the center of the site, concrete blocks, metal stays, and brackets were found by

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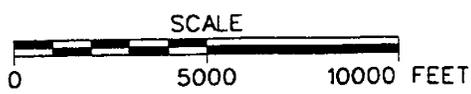


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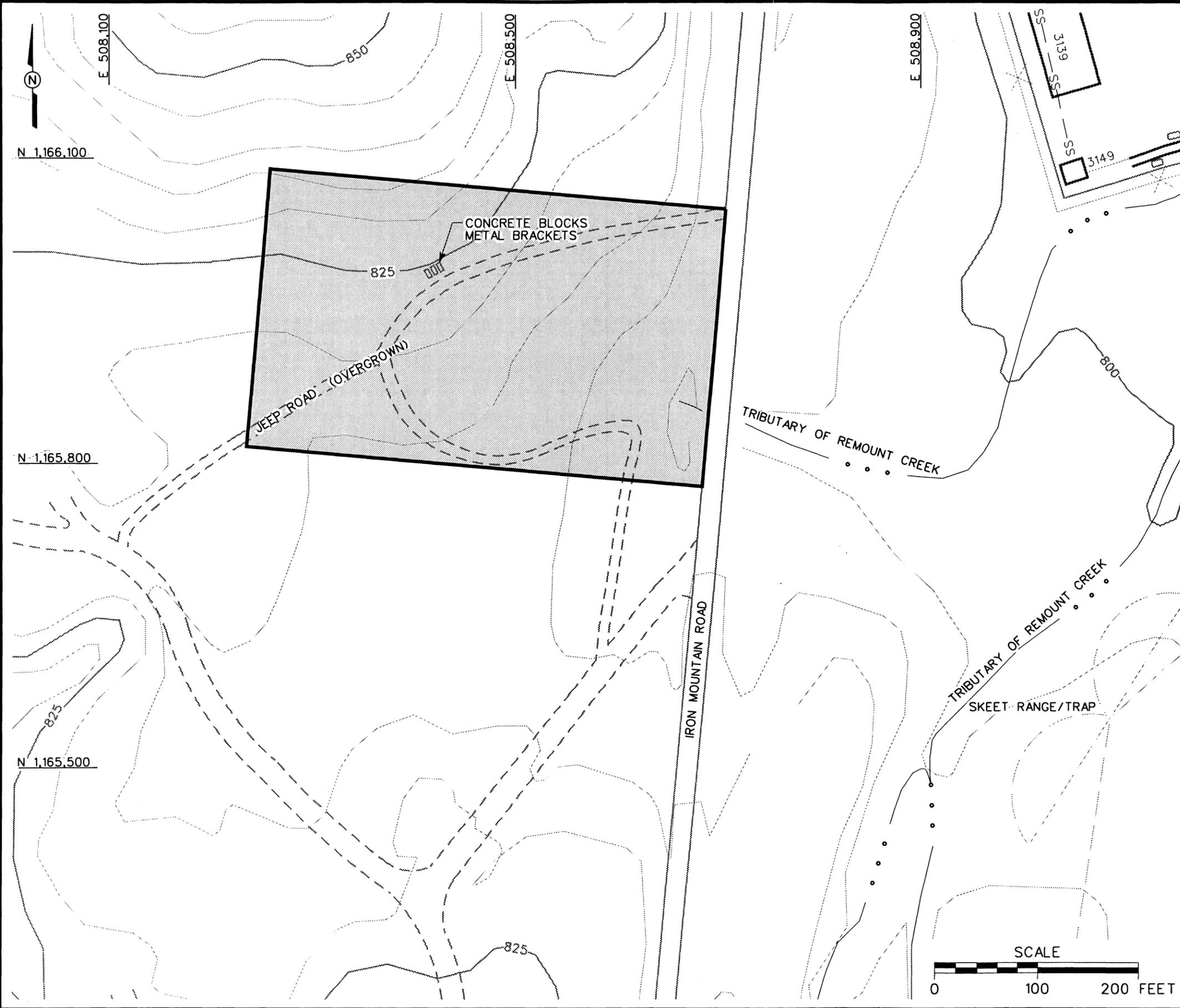
 FORT McCLELLAN BOUNDARY

FIGURE 1-1
SITE LOCATION MAP
FORMER FOG OIL STORAGE AREA
WEST OF SKEET RANGE
PARCEL 122(7)

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



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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - SANITARY SEWER LINE

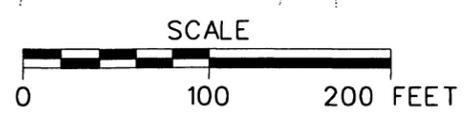


FIGURE 1-2
SITE MAP
FORMER FOG OIL STORAGE AREA
WEST OF SKEET RANGE
PARCEL 122(7)

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



IT personnel during the June 1998 site walk. These items may be the remains of fog oil drum racks.

Fog oil was used by the military to produce a fog obscurant to conceal troops, beach landings, and supply during World War II and the Korean War. Fog oil smoke may be produced from mobile personnel carriers (mobile smoke) or from stationary locations (static smoke). The petroleum distillate the military labels fog oil is also used as diesel engine lubricating oil. Industrial uses of the oil are in metal working oils, cutting oils, newspaper ink, agricultural pesticides, livestock spray, and medicinal uses such as laxatives (3D, 1996).

Fog oil is the middle distillate product of crude petroleum oil. There is not an exact formulation for fog oil and it can be described as a mineral oil, a petroleum distillate or a hydrotreated heavy naphthenic base oil (3D, 1996). The military has used standard grade fuels (SGF 1 and SGF 2), diesel fuel, jet fuel JP4, and kerosene to produce smoke (3D, 1996). SGF 2 is similar to SAE No. 20 motor oil (Brubaker, et al., 1992). SGF 1 has not been supplied to the military since the 1970s and SGF 2 has been used since 1956 (3D, 1996). SGF 2 has been modified to reduce aromatic hydrocarbons. An analysis of SGF 2 performed in August, 1995 indicated the presence of aliphatic, alkane and alkene hydrocarbons (3D, 1996). Aromatic hydrocarbons were not detected in the sample. Early fog oils contained approximately 50 percent aliphatic and 50 percent aromatic compounds.

The Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7), falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a).

There is a tributary of Remount Creek flowing eastward from the eastern boundary of the site. The site slopes to the south and southeast and is approximately 400 feet long (east to west) and more than 200 feet wide (north to south). Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation is approximately 805 to 835 feet above sea level as established by the National Geodetic Vertical Datum (NGVD).

The soil type at the Former Fog Oil Storage Area West of the Skeet Range is the Anniston and Allen gravelly clay loam, which is a severely eroded soil with poor infiltration and moisture capacity. This soil is formed either by erosional forces, surface runoff, or natural reworking processes. Color is typically reddish-brown. The depth to bedrock or groundwater is highly variable and depends upon the locale, slope, or presence of fractures. The high erosion hazard,

low capacity for available moisture, and thin root zone make this soil poorly suited for cultivation (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Former Fog Oil Storage Area West of the Skeet Range, as specified in the statement of work (USACE, 1998b), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Conduct a surface and near surface UXO survey over all areas to be included in the investigation and sampling effort.
- Provide downhole UXO survey support for all intrusive drilling to determine buried downhole hazards.
- Collect four subsurface soil samples, one surface water sample, and one sediment sample to determine whether potential site-specific chemicals (PSSC) are present at the Former Fog Oil Storage Area West of the Skeet Range and to provide data to determine future planned corrective measures and closure activities.
- Conduct a surface soil field screening for heavy hydrocarbons on a 50 foot grid over approximately 2 acres.

The possibility of UXO exists at the Former Fog Oil Storage Area West of the Skeet Range; therefore, UXO surface sweeps and downhole surveys of soil borings will be required to support field activities at this site. The surface sweeps and downhole surveys will be conducted to identify anomalies for the purpose of UXO avoidance.

Upon completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on 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 (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (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, Alabama Department of Environmental Management (ADEM), EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. In the 1949 aerial photographs in the EPIC report (EPA, 1990), the Fog Oil Storage Area West of the Skeet Range is a cleared area with a dirt road traversing the site from northeast to southwest. The dirt road is now overgrown, but the grade of the roadbed still exists as a guide to crossing the area. 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.

This CERFA site is classified as a Category 7 site because various type of materials, equipment, vehicles, hazardous materials and hazardous wastes have been stored and, some of these materials may possibly have been released onto the site or to the environment, and/or were disposed of on site property. The Former Fog Oil Storage Area West of the Skeet Range site lacks adequate documentation and, therefore, requires additional evaluation to determine the environmental condition of the parcel.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action for the Former Fog Oil Storage Area West of the Skeet Range. This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Former Fog Oil Storage Area West of the Skeet Range is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the SI and establish a basis for future action at the site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Former Fog Oil Storage Area are presented in Table 3-1 and have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways,

Table 3-1

**Summary of Data Quality Objectives
Former Fog Oil Storage Area
West of the Skeet Range, Parcel 122(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	<u>Contaminant Source</u> Fog oil Fuels and fuel components <u>Migration Pathways</u> Infiltration and leaching to subsurface soil, and groundwater, erosion, and runoff to surface water and sediment. Dust emissions and volatilization from soil to air. Discharge of groundwater to surface water and sediment. Volatilization from surface water to air. <u>Potential Receptors</u> Groundskeeper (future); construction worker (future); resident (future); recreational site user (current & future); venison consumption (current & future). <u>PSSC</u> Fog oil Fuels Heavy hydrocarbons Other petroleum products	Subsurface soil	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present. Obtain sufficient data to support as appropriate the following: • Implementing an immediate response. • No further action. • Proceeding with a RI.	<u>Subsurface Soil</u> TCL-SVOCs	Definitive data in CESAS Level B data packages	4 direct-push + QC
			Surface soil		<u>Surface Soil</u> Field screening for heavy hydrocarbons		Heavy hydrocarbon field screening grid on 50-foot centers over approximately 2 acres. Approximately 63 sample points.
			Surface water		<u>Surface Water</u> TCL - SVOCs	Definitive data in CESAS Level B data package	1 surface water sample + QC
			Sediment		<u>Sediment</u> TCL - SVOCs TOC, grain size	Definitive data in CESAS Level B data package	1 sediment sample

ADEM - Alabama Department of Environmental Management.
 CESAS - Corps of Engineers South Atlantic Savannah.
 DOD - U.S. Department of Defense.
 EPA - U.S. Environmental Protection Agency.

PSSC - Potential site-specific chemical.
 QC - Quality control.
 SVOC - Semivolatile organic compound.
 TCL - Target compound list.

USACE - U.S. Army Corps of Engineers.

and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential for contamination at the Former Fog Oil Storage Area West of the Skeet Range is related to the storage of fog oil at this site. The Fog Oil Storage Area West of the Skeet Range is located west of Iron Mountain Road on the Central Main Post and is surrounded by wooded areas. Currently, there is unrestricted access to the location. An intermittent tributary of Remount Creek flows east from the site. It is assumed that potential releases of contaminants were restricted to surface soil. Potential contaminant transport pathways include dust emissions and volatilization from soil to air, infiltration and leaching to subsurface soil and groundwater, discharge of groundwater to surface water and sediment, erosion and runoff to surface water and sediment, and volatilization from surface water to air.

Current site use is best described as unrestricted open space. Plausible receptor scenarios under current site usage are limited to the recreational site user and venison consumption. Other potential receptors considered, but not included under current site usage, are:

- Resident: The site is not currently used for residential purposes
- Groundskeeper: The site is not actively used, and workers do not maintain the site.
- Construction worker: The site is undeveloped and no excavation or building activities are taking place.

As described in the FTMC Comprehensive Reuse Plan, future plans call for this site to become part of Remediation Reserve 4, which contains land required to create the proposed Eastern Bypass (FTMC, 1997). The most plausible receptors under the future site-use scenario continue to include the recreational site user and venison consumption. Additional receptors considered under the future scenario include the resident, groundskeeper, and construction worker. The

contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways are summarized in Figure 3-1 and Table 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Former Fog Oil Storage Area West of the Skeet Range. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

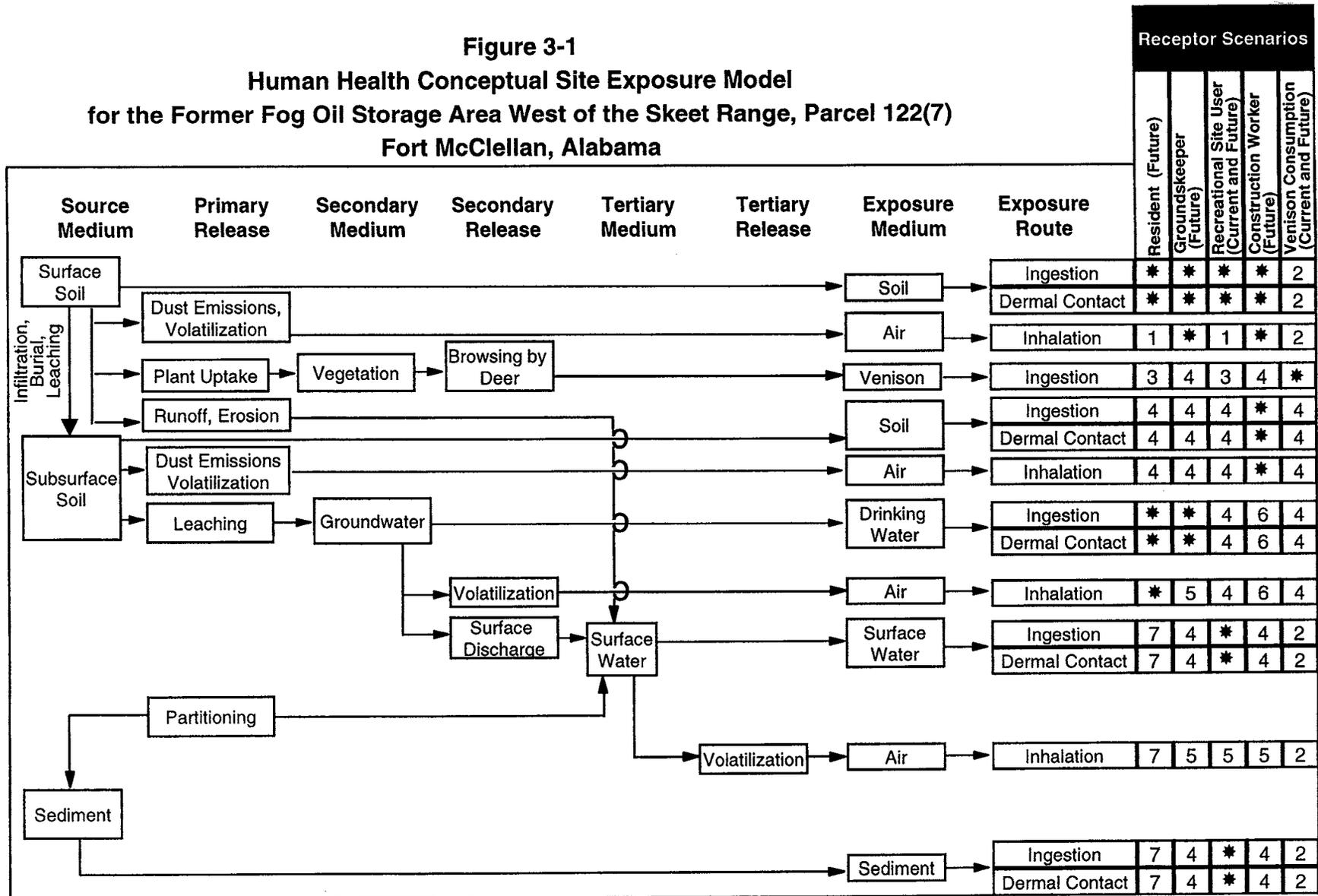
Confirmation of contamination at the Former Fog Oil Storage Area will be based upon a comparison of detected site contaminants to the site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the installation-wide work plan.

3.4.2 Data Types and Quality

To meet the objectives of the SI at the Former Fog Oil Storage Area West of the Skeet Range, it will be necessary to sample and analyze subsurface soils, surface water, and sediment. As described in Chapter 4.0 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Off-site laboratory samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at these levels of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment. In the area designated for on-site screening for heavy hydrocarbons using a portable gas chromatograph, the data will be considered "screening quality" level. The screening data will be reported in a quantitative manner and be presented in an Excel spreadsheet format. In addition to meeting the quality needs of this SI, data analyzed at "screening quality level" are appropriate for site characterization only.

Figure 3-1
Human Health Conceptual Site Exposure Model
for the Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = This scenario is created to assess indirect (food chain) exposure to surface soil, surface water and sediment.

3 = Evaluated under venison and fish consumption scenario.

4 = Incomplete exposure pathway.

5 = Although theoretically complete, this pathway is judged to be insignificant.

6 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

7 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 UXO Survey Requirements and Utility Clearances

The Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7) site falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a). Therefore, IT will conduct unexploded ordnance (UXO) avoidance activities, including surface sweeps and downhole surveys of soil borings.

4.1.1 Surface UXO Survey

A UXO sweep will be conducted over areas that will be included in the sampling and surveying activities to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for easy avoidance. Subsurface metallic anomalies will not be disturbed, and will also be marked for easy avoidance. UXO personnel requirements, procedures, and detailed descriptions of the geophysical equipment to be used are provided in Chapter 4.0 and Appendices D and E of the approved SAP (IT, 1998a).

4.1.2 Downhole UXO Survey

During the soil boring and downhole sampling, a downhole UXO survey will be performed to determine if buried metallic objects are present. UXO monitoring, as described in Chapter 4.0 of the SAP (IT, 1998a), will continue until undisturbed soils are encountered or the borehole has been advanced 12 feet below ground surface, whichever is reached first.

4.1.3 Utility Clearances

After the UXO surface survey has cleared the area to be sampled and prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and ground-water samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the FTMC installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are approved (for both UXO and utility avoidance) for intrusive sampling, the stakes will be labeled as cleared.

4.2 Hydrocarbon Screening

A surface soil field screening for heavy hydrocarbons will be conducted at the Former Fog Oil Storage Area West of the Skeet Range as part of the site characterization to determine the

presence or absence of PSSCs. The results of the field screening will be used to adjust the proposed locations of the subsurface soil samples described in Section 4.3.

4.2.1 Surface Soil Screening

Approximately 63 surface soil locations will be screened according to the format described in the following subsection.

4.2.1.1 Screening Locations and Rationale

The surface soil field screening rationale is presented in Table 4-1. Approximately 63 surface soil locations, spaced in a 50-foot grid over approximately 2 acres, will be screened at the Former Fog Oil Storage Area West of the Skeet Range. The proposed surface soil screening locations are presented on Figure 4-1.

4.2.1.2 Screening Methodology

Surface soil screening for heavy hydrocarbons will be performed in an on-site laboratory using a portable gas chromatography (GC) system. The instrumentation will consist of a GC setup with a flame ionization detector. The methodology will be based on EPA Method 8015 for total petroleum hydrocarbons diesel range organics.

Surface soil samples will be collected and returned to the on-site laboratory for extraction. The extraction for this field screening procedure will consist of transferring 3 grams of soil into a 40-milliliter (mL) glass vial, then adding 10 mL of methylene chloride. The vials containing soil and methylene chloride are then shaken using a vibratory shaker. The extracts are then filtered and transferred to 5-mL GC vials and loaded on to the GC for analysis via an autosampler.

Field analysis data generated by the on-site laboratory will be reported to the IT task leader on a daily basis. Data will be reported in a quantitative manner and be presented in an Excel spreadsheet format. Due to the nature of the field extraction method, the data will meet “field screening” data quality levels.

4.3 Environmental Sampling

The environmental sampling program during the SI at the Former Fog Oil Storage Area West of the Skeet Range includes the collection of surface water (if present), sediment (or depositional soil if surface water is absent), and subsurface soil samples for chemical analysis.

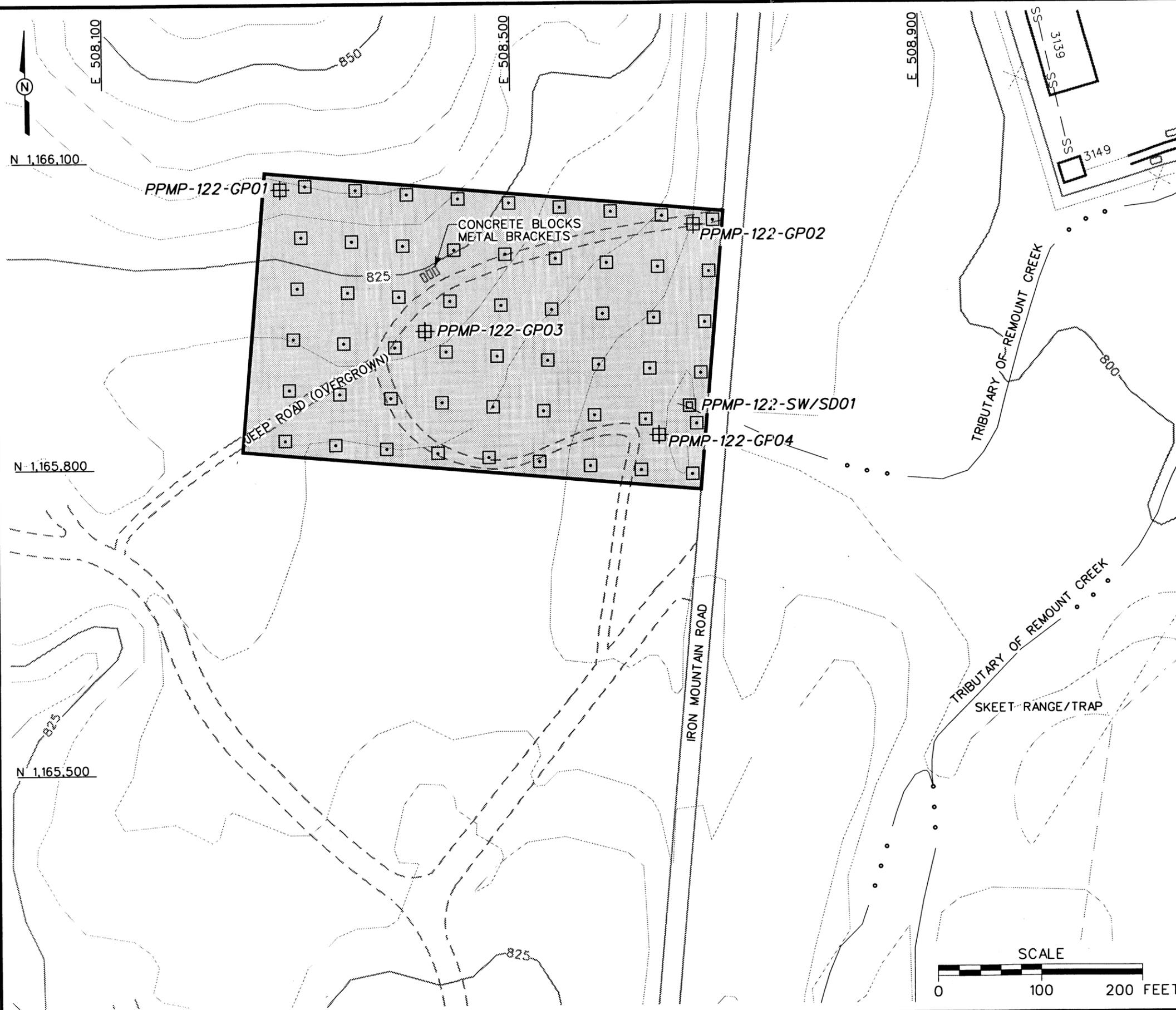
Table 4-1

**Site Sampling Rationale
Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7)
Fort McClellan, Calhoun County, Alabama**

Sample Designation	Media Sampled	Sampling Location Rationale
Field Surface Soil Screening, Locations 1-63	Surface Soil	Surface soil field screening for heavy hydrocarbons will be performed at approximately 63 locations within the study parcel. The screening locations will be evenly spaced on 50-foot centers in a grid covering approximately 2 acres. These screening locations will determine the presence or absence of potential site-specific chemicals (PSSC) in surface soil at the site.
PPMP-122-GP01	Subsurface Soil	Direct-push samples will be collected at the highest elevation within the study parcel. This sampling location is in the northwest portion of the study parcel and is upgradient of any released contaminants from the site.
PPMP-122-GP02	Subsurface Soil	Direct-push samples will be collected at the northeast corner of the study parcel. This sampling location represents a likely downgradient point for the collection of contaminants migrating across the site.
PPMP-122-GP03	Subsurface Soil	Direct-push samples will be collected where possible fog oil drum racks were found within the study parcel. Source area sample will be collected to confirm presence or absence of PSSCs.
PPMP-122-GP04	Subsurface Soil	Direct-push samples will be collected at the lowest elevation within the study parcel, where runoff may collect before infiltrating to the subsurface soil or migration to surface water.
PPMP-122-SW/SD01	Surface Water	Surface water sample will be collected at the head of the drainage channel of the tributary to Remount Creek that originates within the site.
PPMP-122-SW/SD01	Sediment	Sediment sample will be collected at the head of the drainage channel of the tributary to Remount Creek.

Note: Subsurface sampling locations may be adjusted based on surface soil field screening results.

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 ENGR. CHCK. BY: A. MAYILA
 INITIATOR: T. NOLEN
 PROJ. MGR.: J. YACOBUB
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - BRIDGE
 - CULVERT WITH HEADWALL
 - SURFACE DRAINAGE / CREEK
 - MANMADE SURFACE DRAINAGE FEATURE
 - FENCE
 - SANITARY SEWER LINE
 - PROPOSED SURFACE WATER/SEDIMENT SAMPLE
 - PROPOSED HYDROCARBON FIELD SCREENING SURFACE SOIL SAMPLE
 - PROPOSED SUBSURFACE SOIL SAMPLE

FIGURE 4-1
 PROPOSED SAMPLE LOCATION
 FORMER FOG OIL STORAGE AREA
 WEST OF SKEET RANGE
 PARCEL 122(7)

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



4.3.1 Subsurface Soil Sampling

Four subsurface soil samples will be collected from the locations described in the following subsection.

4.3.1.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. Four subsurface soil samples will be collected from the Former Fog Oil Storage Area West of the Skeet Range. The proposed subsurface soil sampling locations are presented on Figure 4-1. These proposed locations may be adjusted based on the results generated by the surface soil field screening.

4.3.1.2 Sample Collection

Subsurface soil samples will be collected using the direct-push sampling procedures specified in Sections 4.7.1.1 of the SAP.

Subsurface soil samples will be continuously collected from 1 foot to 12 feet below land surface or until either refusal or groundwater is encountered. Each sample interval collected from the boring will be field screened using a photoionization detector (PID) to measure headspace level above background (ambient air). Samples will be collected for headspace screening as specified in Section 4.13 of the SAP. The soil sample from each boring exhibiting the highest reading on a PID (above background) will be sent to the laboratory for analysis. If none of the samples collected indicate elevated PID readings, the deepest sample interval will be sent to the laboratory for analysis. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.2 Surface Water Sampling (Contingent)

One surface water sample will be collected from the headwaters of the tributary to Remount Creek that originates within Parcel 122(7). The collection of a surface water sample is contingent on the presence of water in the surface water drainage channel that defines the tributary. If no water is present, no surface water sample will be collected and the substrate in the drainage channel may be sampled as depositional soil (see Section 4.3.4).

Table 4-2

**Subsurface Soil Sample Designations and QA/QC Sample Quantities
Former Oil Storage Area West of the Skeet Range, Parcel 122(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-122-GP01	PPMP-122-GP01-DS-FZ0001-REG	a				TCL SVOCs
PPMP-122-GP02	PPMP-122-GP02-DS-FZ0002-REG	a				TCL SVOCs
PPMP-122-GP03	PPMP-122-GP03-DS-FZ0003-REG	a				TCL SVOCs
PPMP-122-GP04	PPMP-122-GP04-DS-FZ0004-REG	a	PPMP-122-GP04-DS-KY0005-FD	PPMP-122-GP04-DS-KY0006-FS	PPMP-122-GP04-DS-KY0004-MS PPMP-122-GP04-DS-KY0004-MSD	TCL SVOCs

^a Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TCL - Target compound list.

4.3.2.1 Sample Location and Rationale

The surface water sampling rationale is listed in Table 4-1. The surface water sample will be collected from the location proposed on Figure 4-1. The surface water sample designation and required QA/QC sample quantities are listed in Table 4-3. The exact sampling location will be determined in the field based on actual field observations.

4.3.2.2 Sample Collection

Surface water samples will be collected in accordance with procedures specified in Section 4.10.1.3 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.15 of the SAP. Sample containers sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for parameters listed in Section 4.5.

4.3.3 Sediment Sampling (Contingent)

One sediment sample will be collected at the same location as the surface water sample presented in Section 4.3.2. If no surface water is present, the substrate within the drainage channel may be sampled as depositional soil (see Section 4.3.4).

4.3.3.1 Sample Locations and Rationale

The tentative location for the sediment sample to be collected is shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample quantities are listed in Table 4-3. The actual sediment sample point selected will be at the discretion of the ecological sampler based on the drainage pathways and actual field observations.

4.3.3.2 Sample Collection

Sediment sample collection will be conducted in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sediment sample will be analyzed for the parameters listed in Section 4.5.

4.3.4 Depositional Soil Sampling (Contingent)

One depositional soil sample may be collected in the drainage channel that defines the tributary to Remount Creek. The collection of the depositional soil sample is contingent on the absence of surface water in the tributary. If surface water is present, a surface water sample will be collected (see Section 4.3.2) and the substrate will be sampled as sediment (see Section 4.3.3).

Table 4-3

**Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-122-SW/SD01	PPMP-122-SW/SD01-SW-FZ2001-REG	NA	PPMP-122-SW/SD01-SW-FZ2002-FD	PPMP-122-SW/SD01-SW-FZ2003-FS		TCL SVOCs
	PPMP-122--SW/SD01-SD-FZ1001-REG	0 - 0.5				TCL SVOCs, TOC, Grain Size

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

TOC - Total organic carbon.

VOC - Volatile organic compound.

Depositional soil samples will be collected in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP.

4.4 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.5 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil sampling locations will be recorded using a GPS to provide accuracy within 1 meter. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.6 Analytical Program

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Fog Oil Storage Area West of the Skeet Range site consist of the following analytical suite:

- Target compound list semivolatile organic compounds - Method 8270C.

In addition to the above analysis, the sediment sample will be analyzed for the following list of parameters:

- Total organic carbon - Method 9060
- Grain size - American Society for Testing and Materials D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-4 of this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401

Split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia
30060-3112
Telephone: (770) 919-5270.

4.8 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Fog Oil Storage Area will include decontamination fluids and disposable personal protective equipment. The IDW will be staged at an accessible point within the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

Table 4-4

**Analytical Samples
Former Fog Oil Storage Area West of the Skeet Range, Parcel 122(7)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Former Fog Oil Storage Area West of Skeet Range - Parcel 122(7): 4 subsurface soil, 1 surface water, 1 sediment													
TCL SVOCs	8270C	water	normal	1	1	1					1	2	0
TCL SVOCs	8270C	sediment	normal	1	1	1					1	2	0
TCL SVOCs	8270C	soil	normal	4	1	4	1	1	1		1	8	1
TOC	9060	sediment	normal	1	1	1						1	0
Grain Size	ASTM D-421/D-422	sediment	normal	1	1	1						1	0
Former Fog Oil Storage Area West of Skeet Range Total:				8			1	1	1	0	3	14	1

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

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE laboratory split samples
are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Tel: 770-919-5270

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

5.0 Project Schedule

The project schedule for the site investigation activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Brubaker, K. L., D. H. Rosenblatt, and C. I. Snyder, 1992, *Environmental Effects of Fog Oil and CS Usage at the Combat Maneuver Training Center, Hohenfels, Germany*, March.

3D International Environmental Group, (3D), 1996, *Ecological Risk Assessment: Effect of Fog Oil Obscurant on Selected Amphibians, Reptiles, and Birds at Fort Leonard Wood, Missouri*, July.

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

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IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

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U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

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U.S. Environmental Protection Agency (EPA), 1990, *Installation Assessment, Army Closure Program, Fort McClellan, Anniston, Alabama*, (TS-PIC-89334), Environmental Photographic Interpretation Center (EPIC), Environmental Monitoring Systems Laboratory.

Site Investigation
Final
Site-Specific Field Sampling Plan Attachment
for the Trenches West of Remount Creek, Parcel 228(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

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

Prepared by:

IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923

Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645

December 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
ESE	Environmental Sciences and Engineering
E-W	east to west
FTMC	Fort McClellan
GPR	ground-penetrating radar
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
NGVD	National Geodetic Vertical Datum
N-S	north to south
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
TCL	target compound list
USACE	U.S. Army Corps of Engineers
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct site investigation activities at the Trenches West of Remount Creek, Parcel 228(7) at Fort McClellan, Calhoun County, Alabama to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The purpose of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Trenches West of Remount Creek.

The Environmental Photographic Interpretation Center (EPIC) report (U.S. Environmental Protection Agency, 1990) identified a set of trenches located west of Remount Creek within the 3200 Area. The trenches are now covered; geophysical survey methods will be used in an effort to determine the exact location of the trenches. Information was not available regarding the type of training or disposal activities that may have taken place at these excavations.

Possible contaminant sources at the site may include petroleum products, solvents, metals, pesticides and herbicides, polychlorinated biphenyls (PCB), and explosives. Specifically, IT will collect five surface soil samples, five subsurface soil samples, three groundwater samples, two depositional soil samples, one surface water sample, and one sediment sample at this site. Chemical analyses of the samples collected during the field program will include target compound list (TCL) volatile organic compounds, TCL semivolatile organic compounds, target analyte list metals, chlorinated pesticides, organophosphorus pesticides, chlorinated herbicides, PCBs, and nitroexplosive compounds. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Trenches West of Remount Creek, Parcel 228(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Trenches West of Remount Creek, Parcel 228(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

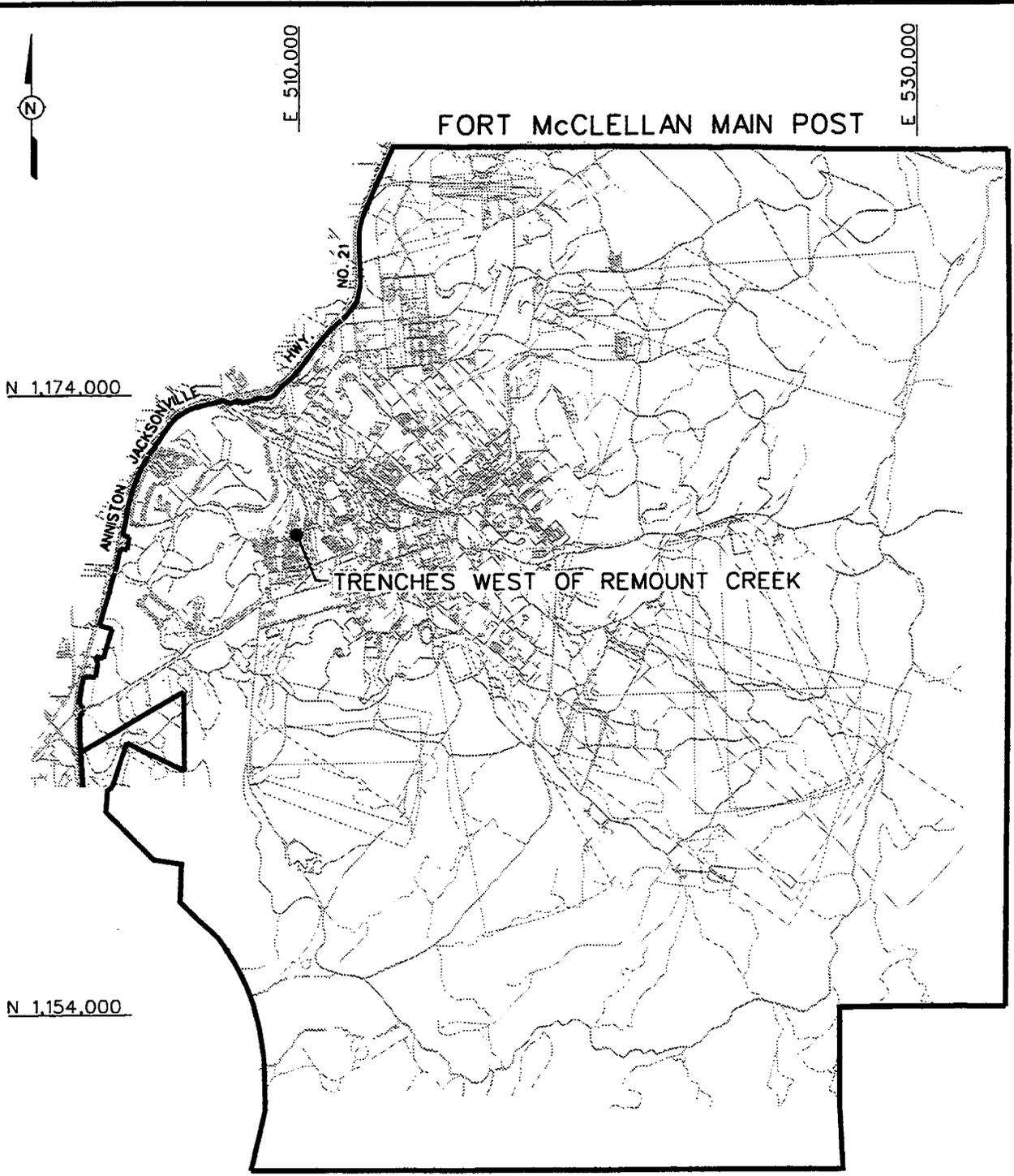
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC, Calhoun County, Alabama, has been prepared to provide technical guidance for sample collection and analysis at the Trenches West of Remount Creek. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Trenches West of Remount Creek site, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

1.2 Site Description

FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The Main Post installation is bounded on the south and west by the city of Anniston and on the northwest by the city of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The Trenches West of Remount Creek site is located in the west-central portion of the Main Post (Figure 1-1). The study area, also known as Parcel 228(7), covers approximately 2 acres. The site and the area around the site is currently well developed, with several buildings, streets, and parking lots. The site is approximately centered on the intersection of 14th Avenue and 15th Avenue; Buildings 3210 and 3278, a dining facility and company headquarters, respectively, are located at the south end of the parcel. Building 3240 (an enlisted barracks) is located south of the parcel boundary. Buildings 3250 (a religious educational facility) and 3244 (enlisted barracks) are located just north and northwest of the parcel. These buildings are inactive and closed.

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 ENGR. CHCK. BY: A. MAYILA
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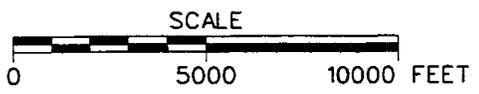


LEGEND:

 FORT McCLELLAN BOUNDARY

FIGURE 1-1
SITE LOCATION MAP
TRENCHES WEST OF REMOUNT
CREEK
PARCEL 228(7)

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



Buildings 3205 (another dining facility) and 3277 (another company headquarters building) are west of the parcel boundary. The eastern boundary of the parcel is at the top of a lightly wooded slope descending to Remount Creek. The aforementioned buildings on or around the site are all part of Parcel 161(1) and are all scheduled to be demolished.

Surface drainage in the vicinity of the site flows eastward toward a tributary of Remount Creek, 300 feet away. Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation is approximately 760 to 780 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map showing topographic features and the site boundaries.

The Environmental Photographic Interpretation Center (EPIC) report (U.S. Environmental Protection Agency [EPA], 1990) identified a set of three trenches located west of Remount Creek in the 3200 Area of the Main Post. The trench identified in the EPIC report as potentially being located in the northeast portion of Parcel 228(7) is approximately 100 feet long, very narrow, and oriented due north and south. The potential trench in the north central portion of the site is irregularly shaped, approximately 150 feet long and 75 feet wide, and is oriented northeast to southwest along its major axis. The potential trench at the south end of the site is in the shape of an oval, approximately 100 feet long by 50 feet wide, and is oriented from northwest to southeast along its length.

The soil type at the Trenches West of Remount Creek site is the Anniston and Allen gravelly loam, which is a friable, deep, strongly acid, well-drained soil that has developed in old local alluvium. This soil is formed either by erosional forces, surface runoff, or natural reworking processes. The surface horizon is usually a very dark brown loam or dark grayish-brown sandy loam, while the subsoil is a dark red sandy clay loam. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil. The depth to bedrock or groundwater is highly variable and depends on the locale, slope, or presence of fractures. Although erosion is a problem, this soil type can be productive in areas with little or no slope (U.S. Department of Agriculture, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Trenches West of Remount Creek as specified in the statement of work (USACE, 1998) includes the following tasks:

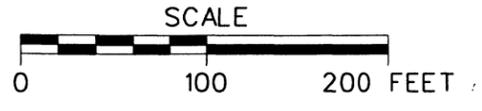
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 ENGR. CHK. BY: A. MAYILA
 PROJ. NO.: 774645
 DWG. NO.: 4645es.209
 INITIATOR: T. NOLEN
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - EXTENT OF PROPOSED GEOPHYSICAL SURVEY
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE
 - APPROXIMATE TRENCH LOCATION (FROM AERIAL PHOTOGRAPH)

FIGURE 1-2
SITE MAP
TRENCHES WEST OF REMOUNT
CREEK
PARCEL 228(7)

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



- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Perform a geophysical survey to determine the location of trenches and to better locate the proposed samples.
- Collect five surface soil, five subsurface soil, three groundwater, two depositional soil samples, one surface water sample, and one sediment sample to determine whether potential site-specific chemicals (PSSC) are present at the Trenches West of Remount Creek and provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on 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 (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (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, Alabama Department of Environmental Management (ADEM), EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-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 Trenches West of Remount, Parcel 228(7) site was classified as Category 7; an area that has not been evaluated and requires further evaluation.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action selection for the Trenches West of Remount Creek site. This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Trenches West of Remount Creek site is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the SI and establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Trenches West of Remount Creek site are presented in Table 3-1 and have been used to formulate a site-specific conceptual model. A conceptual site exposure model (CSEM) was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

3.3 Conceptual Site Exposure Model

The CSEM provides the basis for identifying and evaluating potential risks to human health in the risk assessment. Graphically presenting all possible pathways by which a potential receptor

Table 3-1

**Summary of Data Quality Objectives
Trenches West of Remount Creek, Parcel 228(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	Contaminant Source Unknown. Potential training or dumping activities.	Surface Soil	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present. Obtain sufficient data to support, as appropriate the following: • Screening level risk assessment • Implementing an immediate response. • No further action. • Proceedings with a RI.	Surface Soil TCL-VOCs TCL-SVOCs TAL-Metals CI Pesticides OP Pesticides CI Herbicides PCBs	Definitive data in CESAS Level B data packages	5 direct-push + QC
			Subsurface Soil		Subsurface Soil TCL-VOCs TCL-SVOCs TAL-Metals CI Pesticides OP Pesticides CI Herbicides PCBs		
		Migration Pathways Infiltration and leaching to subsurface soil and groundwater, transport by depositional soils, dust emissions and volatilization from groundwater and soil to air. Runoff into surface water and sediment.	Groundwater		Groundwater TCL-VOCs TCL-SVOCs TAL-Metals CI Pesticides OP Pesticides CI Herbicides PCBs	Definitive + CESAS Level B data package	5 direct-push + QC
			Depositional Soil		Depositional Soil TCL-VOCs TCL-SVOCs TAL-Metals CI Pesticides OP Pesticides CI Herbicides PCBs		
		Surface water	Surface water TCL-VOCs TCL-SVOCs TAL-Metals CI Pesticides OP Pesticides CI Herbicides PCBs		Definitive + CESAS Level B data package	3 direct-push + QC	
		Sediment	Sediment TCL-VOCs TCL-SVOCs TAL-Metals CI Pesticides OP Pesticides CI Herbicides PCBs				
Potential Receptors Groundskeeper (current and future) Resident (future) Construction worker (future) Recreational site use (future)	PSSCs Petroleum products Solvents Chlorinated pesticides Organophosphorus pesticides Chlorinated herbicides PCBs Nitroexplosive compounds Metals						

ADEM - Alabama Department of Environmental Management.
ASTM - American Society for Testing and Materials.
CESAS - Corps of Engineers South Atlantic Savannah.
CI - Chlorinated.
DOD - U.S. Department of Defense.

EPA - U.S. Environmental Protection Agency.
OP - Organophosphorous.
PCB - Polychlorinated biphenyl.
PSSC - Potential site-specific chemicals.
QC - Quality control.

TOC - Total organic carbon.
TCL - Target compound list.
USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

may be exposed, including all sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Contaminant sources
- Contaminant release mechanisms
- Source mediums
- Contaminant transport pathways
- Exposure pathways
- Potential receptors.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

The nature and extent of potential contamination at this site is unknown. Based upon site-specific anecdotal information, PSSCs at this site may include petroleum products, solvents, metals, pesticides, herbicides, polychlorinated biphenyls (PCB), and nitroexplosive compounds. Potential contaminant releases at this site were probably into surface or subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, deposition onto surface soils along the east side of the site, dust emissions and volatilization from soil to ambient air, runoff into surface water and sediments, and volatilization from groundwater to air.

The site is currently inactive, and the only plausible current receptor is the groundskeeper. As described in Table 2-1 of the FTMC comprehensive reuse plan, future plans call for the site to become part of the Buckner Retirement Community (FTMC, 1997). Plausible future receptors at the site include:

- Groundskeeper: The site is slated for commercial use, and could be maintained by groundskeepers in the future.
- Construction worker: It is plausible that buildings will be modified, demolished, or erected on this site in the future.
- Resident: The site may include residents in the future.
- Recreational site user: The site could offer recreational opportunities in the future.

The only potential receptors considered but excluded under either current or future site use scenarios are:

- Venison and fish consumption: The site does not support fishing or hunting and probably will not in the future.

Contaminant release and transport mechanisms, source and exposure media, receptors, and exposure pathways for this site are summarized in Figure 3-1 and Table 3-1.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the SI at the Trenches West of Remount Creek. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

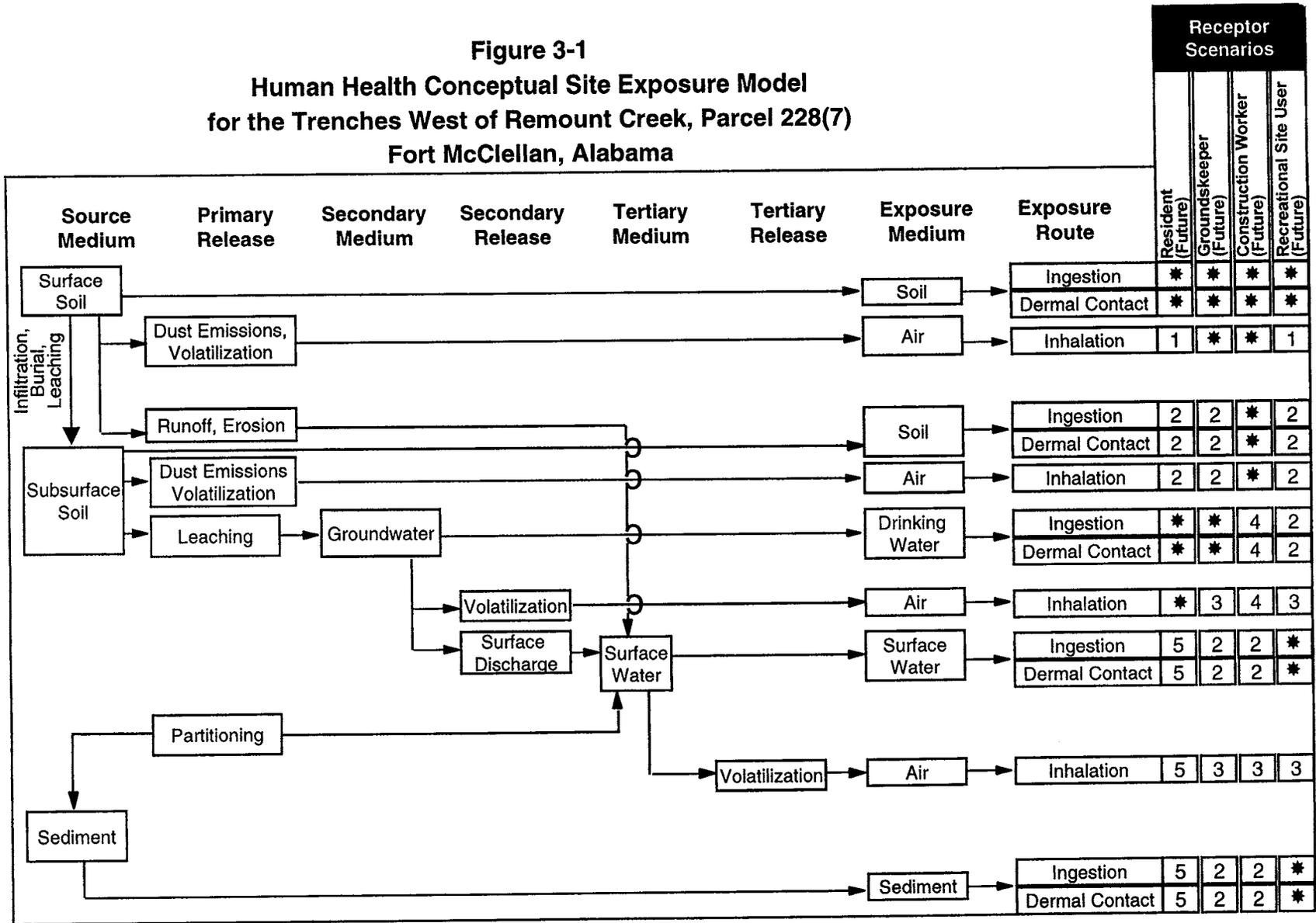
Confirmation of contamination at the Trenches West of Remount Creek will be based upon a comparison of detected site contaminant concentrations to the site-specific screening levels developed in the installation-wide WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in the installation-wide WP.

3.4.2 Data Types and Quality

To meet the objectives of the SI at the Trenches West of Remount Creek, it will be necessary to sample and analyze surface and subsurface soils, groundwater, depositional soils, surface water, and sediment. As described in Chapter 4.0 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1
Human Health Conceptual Site Exposure Model
for the Trenches West of Remount Creek, Parcel 228(7)
Fort McClellan, Alabama



* = Complete exposure pathway quantified in SSSL development.
 1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.
 2 = Incomplete exposure pathway.
 3 = Although theoretically complete, this pathway is judged to be insignificant.
 4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.
 5 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Geophysical Survey

A surface geophysical survey will be conducted over the Trenches West of Remount Creek site in an effort to determine the location of the trenches, and to locate the proposed sample locations within the proper area. The geophysical methods to be used include magnetics, frequency-domain electromagnetic (EM) induction, and ground-penetrating radar (GPR). These combined methods offer the best approach to screening sites for buried metallic debris, which may reveal the exact location of the trenches.

4.2.1 Methodology and Instrumentation

The magnetic surveys will be conducted using a Geometrics G-858G magnetic gradiometer (for collecting survey data) and a Geometrics G-856AX magnetometer or equivalent (for collecting base station data). Frequency-domain EM surveys will be conducted using a Geonics EM31 terrain conductivity meter, coupled to an Omnidata DL720 digital data logger. The GPR survey will be conducted using a Geophysical Survey Systems Inc. System-2P or equivalent, coupled to either 200- or 400-megahertz antennas, depending on site conditions and signal attenuation. If required, a Metrotech 9860-NRL EM utility locator or equivalent will be used confirm the presence or absence of metallic subsurface utilities, which may be evident as linear anomalies in the EM31 contour maps.

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation, and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the SAP and the following IT standard operating procedures for geophysical investigations:

- ITGP-001: Surface Magnetic Surveys
- ITGP-002: Surface Frequency-Domain EM Surveys

- ITGP-003: GPR Surveys
- ITGP-005: Global Positioning System (GPS) System Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely location of the former trench areas.
- Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

Following visual inspection of the sites and evaluation of reconnaissance scans with the instruments, base grids will be staked throughout each site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The base grids will be established using either a GPS or conventional civil surveying techniques. The geophysics base grids will be referenced to the Alabama State Plane Coordinate System. Using the base grids as a reference, the geophysics crew will mark control points on 20-foot centers throughout each site with surveyor's paint and/or plastic pin flags. To the extent possible, the grids will be oriented in the north to south (N-S) direction. If vegetation or surface metal is present, it shall be removed where necessary prior to collecting geophysical data.

After the survey grids are complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EM and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. Geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the

observed geophysical anomalies will be documented on the contour maps. Digital GPR data will be collected where necessary to aid with interpreting anomalies seen in the EM and magnetic data maps.

Geophysical results will be used to properly position the proposed sample locations at the Trenches West of Remount Creek site. The conclusions from the geophysical survey at Trenches West of Remount Creek site will be incorporated into the SI report.

4.2.2 Areal Coverage

Geophysical surveys will encompass an area approximately 450 feet long by 200 feet wide (Figure 4-1). The following is a list of steps that will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 10 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart.
- GPR profile data will be collected to further characterize anomalies seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.
- In areas of the site where linear EM31 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for large buried metal objects. The locations of interpreted pipelines will be marked in the field with paint and placed on the site map.

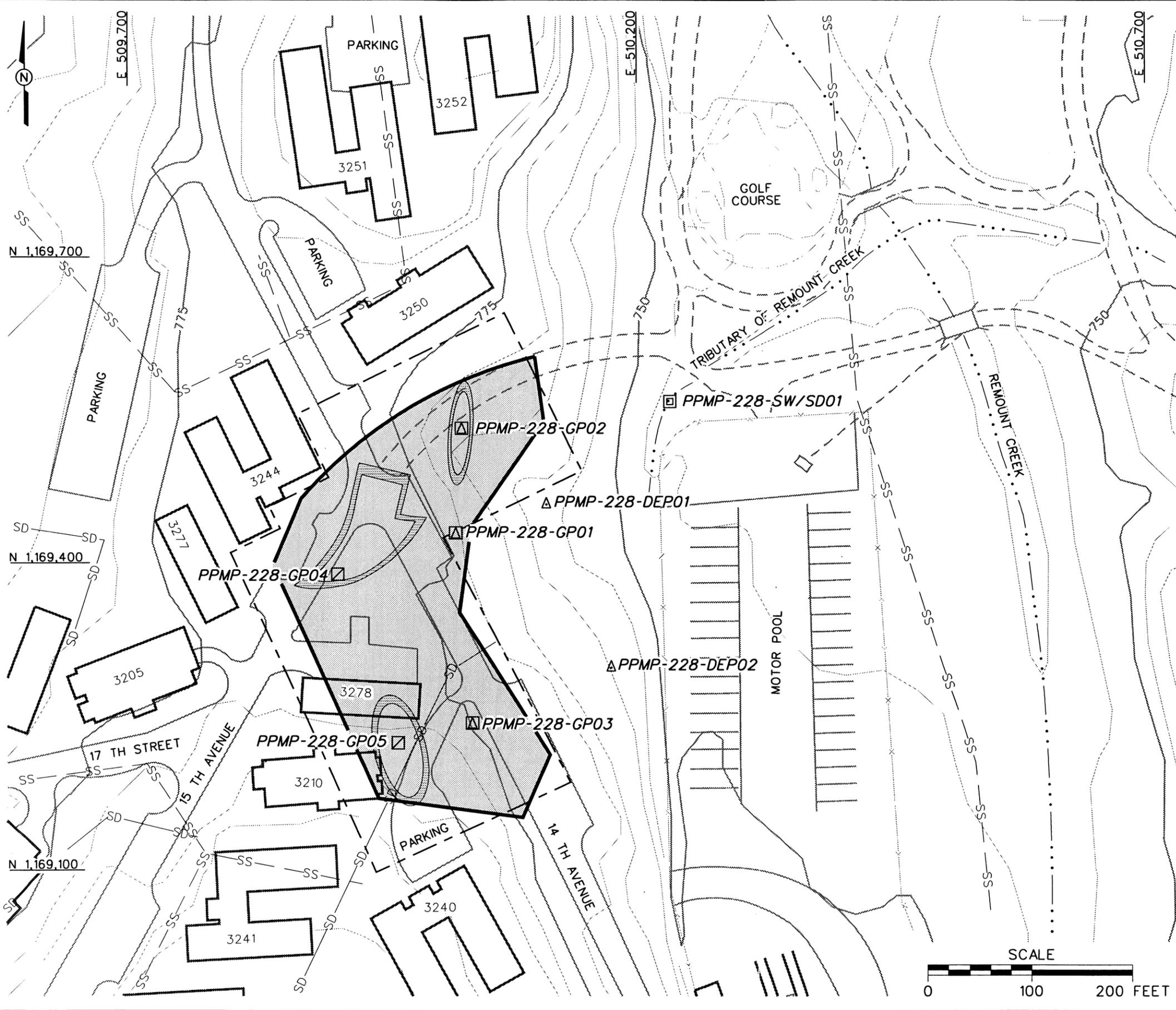
4.3 Environmental Sampling

The environmental sampling program during the SI at the Trenches West of Remount Creek includes the collection of surface and subsurface soil, groundwater, and depositional soil samples for chemical analysis.

4.3.1 Surface Soil Sampling

Surface soil samples will be collected at the locations described in the following subsection.

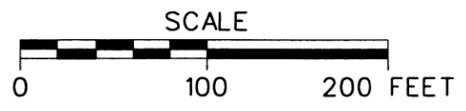
05 NOV 98 STARTING DATE: 08/12/98 DATE LAST P. DRAFT. CHK. BY: INITIATOR: T. NOLEN DWG. NO.: 4645es.210
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - EXTENT OF PROPOSED GEOPHYSICAL SURVEY
 - SURFACE DRAINAGE / CREEK
 - FENCE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE
 - APPROXIMATE TRENCH LOCATION (FROM AERIAL PHOTOGRAPH)
 - PROPOSED SURFACE WATER/SEDIMENT SAMPLE
 - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED DEPOSITIONAL SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
TRENCHES WEST OF REMOUNT
CREEK
PARCEL 228(7)

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



4.3.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. Five surface soil samples will be collected at the Trenches West of Remount Creek. The proposed surface soil sampling locations are presented on Figure 4-1. Surface soil sample locations may be revised based on the results of the geophysical survey investigation.

4.3.1.2 Sample Collection

Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Five surface soil samples will be collected from direct-push sampling locations as specified in Section 4.7.1.1 of the SAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from the same locations as the surface soil samples described in Section 4.3.1. Subsurface soil sample locations may be revised based on the results of the geophysical survey investigation.

4.3.2.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. Five subsurface soil samples will be collected from the Trenches West of Remount Creek. The proposed subsurface soil sampling locations are presented on Figure 4-1.

4.3.2.2 Sample Collection

Subsurface soil samples will be collected during the advancement of direct-push rods using the methodology specified in Section 4.7.1.1 of the SAP.

Subsurface soil samples will be continuously collected from 1 foot to 12 feet below land surface until refusal or until groundwater is encountered. Each sample interval collected from the boring will be field screened using a photoionization detector (PID). Samples will be collected for headspace screening as specified in Section 4.15 of the SAP. The soil sample from each boring which exhibits the highest reading on a PID will be sent to the laboratory for analysis. If none of the sample intervals indicate elevated PID readings (above background), the deepest sample interval will be submitted to the laboratory. Subsurface soil sample designations, depths,

Table 4-1

**Sample Locations and Rationale
Trenches West of Remount Creek, Parcel 228(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sample Location Rationale
PPMP-228-GP01	Surface soil Subsurface soil Groundwater	Direct-push samples will be collected downgradient of the north-central potential trench area.
PPMP-228-GP02	Surface soil Subsurface soil Groundwater	Direct-push samples will be collected in the area of the potential northeastern trench.
PPMP-228-GP03	Surface soil Subsurface soil Groundwater	Direct-push samples will be collected downgradient of the potential southern trench area.
PPMP-228-GP04	Surface soil Subsurface soil	Direct-push samples will be collected in the potential north-central trench area.
PPMP-228-GP05	Surface soil Subsurface soil	Direct-push samples will be collected at the potential southern trench area.
PPMP-228-DEP01	Depositional soil	Samples will be collected from the toe of the slope near the northeast corner of the site. This sampling location represents a likely point of collection for depositional soils sloughing off the study parcel towards the tributary of Remount Creek.
PPMP-228-DEP02	Depositional soil	Samples will be retrieved from the toe of the slope near the southeast corner of the site. This sampling location represents a likely point of collection for depositional soils that have sloughed directly downslope from the study parcel.
PPMP-228-SW/SD01	Surface Water Sediment	Samples will be collected from headwaters of the tributary to Remount Creek that originate within the parcel.

Table 4-2

**Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Trenches West of Remount Creek, Parcel 228(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-228-GP01	PPMP-228-GP01-SS-KK0001-REG PPMP-228-GP01-DS-KK0002-REG	0-1 a			PPMP-228-GP01-SS-KK0001-MS PPMP-228-GP01-SS-KK0001-MSD	TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals, Nitroexplosives
PPMP-228-GP02	PPMP-228-GP02-SS-KK0003-REG PPMP-228-GP02-DS-KK0004-REG	0-1 a				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals, Nitroexplosives
PPMP-228-GP03	PPMP-228-GP03-SS-KK0005-REG PPMP-228-GP03-DS-KK0006-REG	0-1 a				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals, Nitroexplosives
PPMP-228-GP04	PPMP-228-GP04-SS-KK0007-REG PPMP-228-GP04-DS-KK0010-REG	0-1 a	PPMP-228-GP04-SS-KK0008-FD	PPMP-228-GP04-SS-KK0009-FS		TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals, Nitroexplosives
PPMP-228-GP05	PPMP-228-GP05-SS-KK0011-REG PPMP-228-GP05-DS-KK0012-REG	0-1 a				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals, Nitroexplosives
PPMP-228-DEP01	PPMP-228-DEP01-DEP-KK0013-REG	0-0.5				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals, Nitroexplosives
PPMP-228-DEP02	PPMP-228-DEP02-DEP-KK0014-REG	0-0.5				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, OP Pesticides, Cl Herbicides, TAL Metals, Nitroexplosives

* Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observation.

Cl - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

and required QA/QC sample quantities are listed in Table 4-2. Sample documentation and chain of custody will be recorded as specified in Section 4.11 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.3 Groundwater Sampling

Groundwater samples will be collected from three of the five surface and subsurface soil sample locations described in Sections 4.3.1 and 4.3.2.

4.3.3.1 Sample Locations and Rationale

The groundwater sampling rationale is presented in Table 4-1. Three groundwater samples will be collected from the Trenches West of Remount Creek.

4.3.3.2 Sample Collection

The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. Groundwater samples will be collected in accordance with the procedures and methods specified in Section 4.7.1.1 of the SAP. Direct-push temporary wells will be completed in soil borings advanced into the water table (to a depth where sufficient water is encountered) to collect a groundwater sample. The direct-push temporary wells will be installed in the soil borings described in Sections 4.3.1 and 4.3.2.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.4 Surface Water Sampling (Contingent)

One surface water sample will be collected from the headwaters of the tributary to Remount Creek that originates within Parcel 228(7). The collection of a surface water sample is contingent on the presence of water in the surface water drainage channel that defines the

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Trenches West of Remount Creek, Parcel 228(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-228-GP01	PPMP-228-GP01-GW-KK3001-REG	a			PPMP-228-GP01-GW-KK3001-MS PPMP-228-GP01-GW-KK3001-MSD	TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, Total TAL Metals, Cl Herbicides, OP Pesticides, Nitroexplosives
PPMP-228-GP02	PPMP-228-GP02-GW-KK3002-REG	a				TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, Total TAL Metals, Cl Herbicides, OP Pesticides, Nitroexplosives
PPMP-228-GP03	PPMP-228-GP03-GW-KK3003-REG	a	PPMP-228-GP03-GW-KK3004-FD	PPMP-228-GP03-GW-KK3005-FS		TCL VOCs, TCL SVOCs, Cl Pesticides, PCBs, Total TAL Metals, Cl Herbicides, OP Pesticides, Nitroexplosives

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

Cl - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

tributary. If no water is present, no surface water sample will be collected and the substrate in the drainage channel may be sampled as depositional soil (see Section 4.3.6).

4.3.4.1 Sample Locations and Rationale

The surface water sampling rationale is listed in Table 4-1. The surface water sample will be collected from the location proposed on Figure 4-1. The surface water sample designation and required QA/QC sample quantities are listed in Table 4-4. The exact sampling location will be determined in the field based on actual field observations.

4.3.4.2 Sample Collection

Surface water samples will be collected in accordance with procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for parameters listed in Section 4.6.

4.3.5 Sediment Sampling (Contingent)

One sediment sample will be collected at the same location as the surface water sample presented in Section 4.3.4. If no surface water is present, the substrate within the drainage channel may be sampled as depositional soil (see Section 4.3.6).

4.3.5.1 Sample Locations and Rationale

The tentative location for the sediment sample to be collected is shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample quantities are listed in Table 4-4. The actual sediment sample point selected will be at the discretion of the ecological sampler based on the drainage pathways and actual field observations.

4.3.5.2 Sample Collection

Sediment sample collection will be conducted in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sediment sample will be analyzed for the parameters listed in Section 4.6.

4.3.6 Depositional Soil Sampling

Depositional soil samples will be collected at the Trenches West of Remount Creek.

Table 4-4

**Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Trenches West of Remount Creek, Parcel 228(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-228-SW/SD01	PPMP-228-SW/SD01-SW-FZ2001-REG	NA				TCL SVOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, TAL Metals, Nitroexplosives
	PPMP-228--SW/SD01-SD-FZ1001-REG	0 - 0.5	PPMP-228-SW/SD01-SD-FZ1002-FD	PPMP-228-SW/SD01-SD-FZ1003-FS		TCL SVOCs, TCL SVOCs, CI Pesticides, PCBs, OP Pesticides, CI Herbicides, TAL Metals, Nitroexplosives, TOC, Grain Size

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

TOC - Total organic carbon.

VOC - Volatile organic compound.

4.3.6.1 Sample Locations and Rationale

The depositional soil sampling rationale is presented in Table 4-1. Two depositional soil samples will be collected from the slope east of the Trenches West of Remount Creek. The proposed depositional soil sampling locations are presented on Figure 4-1.

4.3.6.2 Sample Collection

As specified in Section 4.9.1.1 of the SAP, the depositional soil samples will be collected similar to surface soil samples from soil depths of less than 1 foot using a hand auger. The depositional soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.4 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.5 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either GPS or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the NGVD of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for all soil sample locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Direct-push temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.6 Analytical Program

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the site consist of the following analytical suite:

- Target Compound List (TCL) Volatile Organic Compounds – Method 5035/8260B
- TCL Semivolatile Organic Compounds – Method 8270C
- Target Analyte List Metals – Method 6010B/7000
- PCBs – Method 8082
- Chlorinated Herbicides – Method 8151A
- Chlorinated Pesticides – Method 8081A
- Organophosphorus Pesticides – Method 8141A
- Nitroexplosive Compounds - Method 8330.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Split samples collected for the USACE laboratory will be shipped to the following address:

Sample Receiving
USACE South Atlantic Division laboratory
611 South Cobb Drive
Marietta, Georgia 30060-3112
Telephone: (770) 421-5295.

Table 4-5

**Analytical Samples
Trenches West of Remount Creek, Parcel 228(7)
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	QA Lab
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
Trenches West of Remount Creek - Parcel 228(7): 4 water matrix (3 groundwater, 1 surface water), 13 soil matrix (1 sediment, 2 depositional soil, 5 surface soil, 5 subsurface soil)													
TCL VOCs	8260B	water	normal	4	1	4	1	1	1	1	1	9	1
TCL SVOCs	8270C	water	normal	4	1	4	1	1	1	1	1	8	1
Tot TAL Metals	6010B/7000	water	normal	4	1	4	1	1	1	1	1	8	1
Cl Pesticides	8081A	water	normal	4	1	4	1	1	1	1	1	8	1
PCBs	8082	water	normal	4	1	4	1	1	1	1	1	8	1
OP Pesticides	8141A	water	normal	4	1	4	1	1	1	1	1	8	1
Cl Herbicides	8151A	water	normal	4	1	4	1	1	1	1	1	8	1
N. Explosives	8330	water	normal	4	1	4	1	1	1	1	1	8	1
TCL VOCs	8260B	soil	normal	13	1	13	2	2	1	1	1	18	2
TCL SVOCs	8270C	soil	normal	13	1	13	2	2	1	1	1	18	2
Tot TAL Metals	6010B/7000	soil	normal	13	1	13	2	2	1	1	1	18	2
Cl Pesticides	8081A	soil	normal	13	1	13	2	2	1	1	1	18	2
PCBs	8082	soil	normal	13	1	13	2	2	1	1	1	18	2
OP Pesticides	8141A	soil	normal	13	1	13	2	2	1	1	1	18	2
Cl Herbicides	8151A	soil	normal	13	1	13	2	2	1	1	1	18	2
N. Explosives	8330	soil	normal	13	1	13	2	2	1	1	1	18	2
Trenches West of Remount Creek Total:						136	24	24	16	1	16	209	24

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

Ship samples to: Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Tel: 770-919-5270

Cl - Chlorinated.
MS/MSD - Matrix spike/matrix spike duplicate.
OP - Organophosphorus.
PCB - Polychlorinated biphenyls.

QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.

4.8 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Trenches West of Remount Creek site will include decontamination fluids and disposable personal protective equipment. The IDW will be staged at an accessible point within the fenced area at Buildings 335 and 336 while awaiting final disposal.

5.0 Project Schedule

The project schedule for all site investigation activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998c, Letter to Ellis Pope from Jeanne Yacoub, "Procedures for Temporary Residuum Monitoring Well Installation, Conversion, and Abandonment," November, 1998.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Modification No. 1, Site Investigations at Fort McClellan, Alabama, Including Ecological Screening Sites (Creeks and Tribes), and Removal of Indoor Firing Ranges*, May.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture (USDA), 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.

U.S. Environmental Protection Agency (EPA), 1990, *Installation Assessment, Army Closure Program, Fort McClellan, Anniston, Alabama* (TS-PIC-89334, Environmental Photographic Interpretation Center (EPIC), Environmental Monitoring Systems Laboratory.