

**Final
Site-Specific Field Sampling Plan and
Site-Specific Safety and Health Plan Attachments
Former Printing Plant, Building 2051, Parcel 173(7)
Former Washrack, Building 1740, Soldier's
Chapel, Parcel 127(7)
Range 16 AST, Parcel 177(7)**

**Fort McClellan
Calhoun County, Alabama**

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

December 1998

Revision 1

Site-Specific Field Sampling Plans

Former Printing Plant, Building 2051, Parcel 173(7)

Former Washrack, Building 1740, Soldier's Chapel, Parcel 127(7)

Range 16 AST, Parcel 177(7)

Site Investigation

Final

Site-Specific Field Sampling Plan Attachment
for the Former Printing Plant, Building 2051, Parcel 173(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

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Table of Contents

	Page
List of Tables.....	iii
List of Figures	iii
List of Acronyms.....	iv
Executive Summary	ES-1
1.0 Project Description.....	1-1
1.1 Introduction.....	1-1
1.2 Site Description.....	1-1
1.3 Scope of Work.....	1-2
2.0 Summary of Previous Environmental Studies.....	2-1
3.0 Site-Specific Data Quality Objectives.....	3-1
3.1 Overview.....	3-1
3.2 Data Users and Available Data	3-1
3.3 Conceptual Site Exposure Model	3-2
3.4 Decision-Making Process, Data Uses, and Needs	3-3
3.4.1 Risk Evaluation	3-3
3.4.2 Data Types and Quality.....	3-3
3.4.3 Precision, Accuracy, and Completeness.....	3-4
4.0 Field Activities	4-1
4.1 Utility Clearances.....	4-1
4.2 Environmental Sampling	4-1
4.2.1 Surface Soil Sampling.....	4-1
4.2.1.1 Sample Locations and Rationale.....	4-1
4.2.1.2 Sample Collection	4-2
4.2.2 Subsurface Soil Sampling	4-2
4.2.2.1 Sample Locations and Rationale.....	4-2
4.2.2.2 Sample Collection.....	4-2
4.2.3 Groundwater Sampling	4-3
4.2.3.1 Sample Locations and Rationale.....	4-3
4.2.3.2 Sample Collection.....	4-3
4.2.4 Depositional Soil Sampling.....	4-4
4.2.4.1 Sample Locations and Rationale.....	4-4
4.2.4.2 Sample Collection.....	4-4

Table of Contents (Continued) _____

	Page
4.3 Surveying of Sample Locations.....	4-4
4.4 Decontamination Requirements	4-5
4.5 Analytical Program.....	4-5
4.6 Sample Preservation, Packaging, and Shipping.....	4-6
4.7 Investigation-Derived Waste Management and Disposal	4-6
4.8 Site-Specific Safety and Health	4-6
5.0 Project Schedule	5-1
6.0 References	6-1

List of Tables

Number	Title	Follows Page
3-1	Summary of Data Quality Objectives	3-1
4-1	Sampling Locations and Rationale	4-1
4-2	Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Sample Quantities	4-1
4-3	Groundwater Sample Designations and QA/QC Sample Quantities	4-1
4-4	Analytical Samples	4-1

List of Figures

Number	Title	Follows Page
1-1	Site Location Map, Former Printing Plant, Building 2051, Parcel 173(7)	1-1
1-2	Site Map, Former Printing Plant, Building 2051, Parcel 173(7)	1-1
3-1	Human Health Conceptual Site Exposure Model, Former Printing Plant, Building 2051, Parcel 173(7)	3-3
4-1	Proposed Sample Locations, Former Printing Plant, Building 2051, Parcel 173(7)	4-1

List of Acronyms

ADEM	Alabama Department of Environmental Management
bgs	below ground surface
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
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	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
SVOC	semivolatile organic compound
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 a site investigation at Fort McClellan, Calhoun County, Alabama at the Former Printing Plant, Building 2051, Parcel 173(7) to determine the presence or absence of potential site-specific chemicals. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Former Printing Plant, Building 2051, Parcel 173(7).

Building 2051, Parcel 173(7) is one of four former printing plants at FTMC. Printing operations moved to this building in 1974 and remained through 1975. The building currently functions as a general administration building. Spills or releases are not known to have occurred at this building.

IT will collect three surface soil, three subsurface soil, two groundwater, and one depositional soil sample at this time. IT will analyze samples for parameters that 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 2051, Parcel 173(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide 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 for 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 2051, Parcel 173(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 2051, Parcel 173(7). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Printing Plant, Building 2051, Parcel 173(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

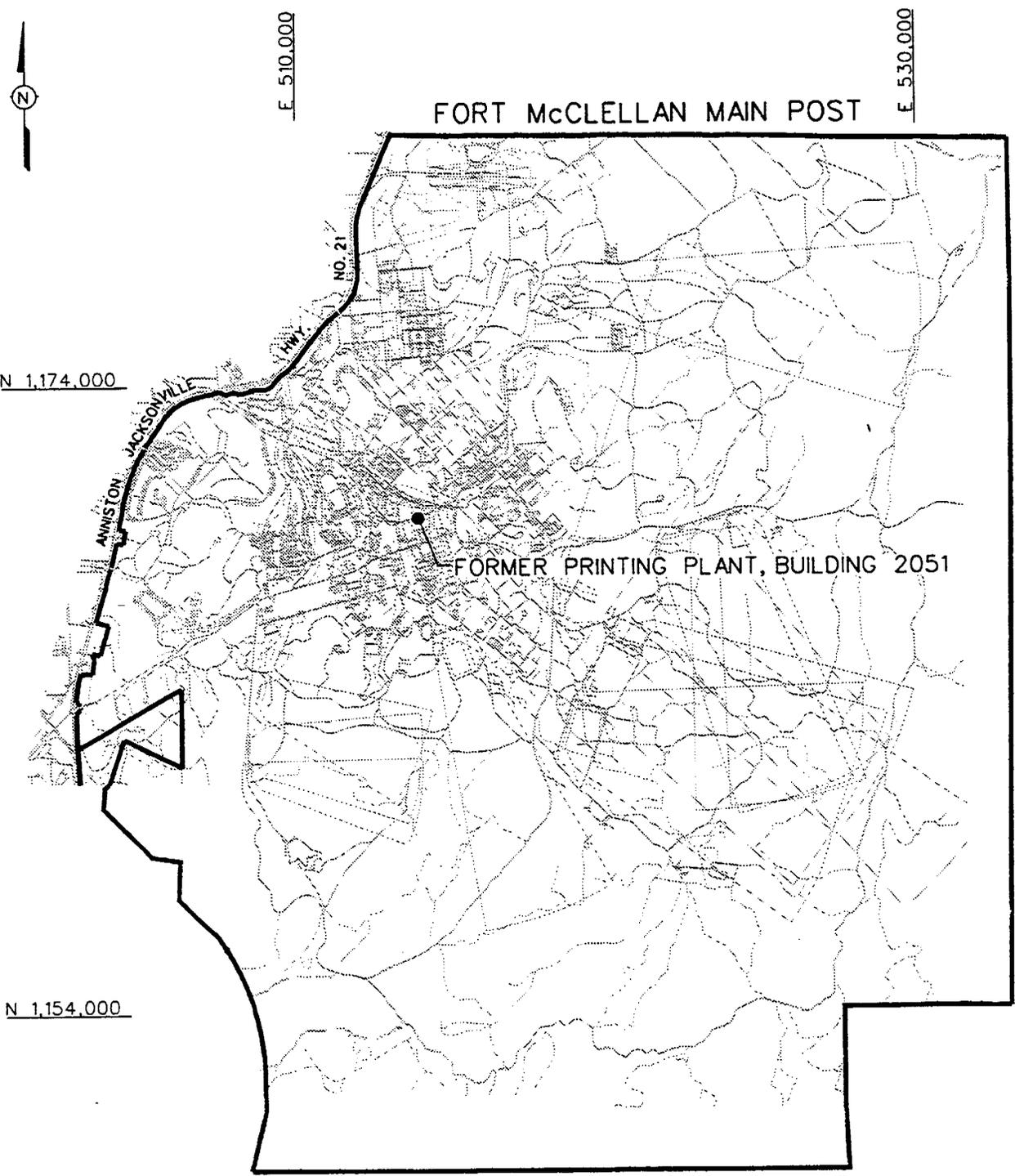
The Former Printing Plant, Building 2051, Parcel 173(7) is located in the south-central portion of Main Post (Figure 1-1). The site is on the corner of 10th Avenue and 20th Street (Figure 1-2). This building is one of four former printing plants at FTMC. Printing operations moved to this building in 1974 from Building 144, and remained through 1975. Printing operations were reportedly conducted in the basement, but this building does not have a basement (IT site visit, October, 1998). This building currently functions as a general administration building. Spills or releases are not known to have occurred at this site, and this site is unevaluated. The building has approximately 17,500 feet of floor space and has been adapted for current use as an administration building.

The building is situated on a paved lot at approximately 770 feet elevation (a knoll or rise) that slopes to the east (Figure 1-2). Cane Creek is approximately one-half-mile to the east. South Branch of Cane Creek is approximately one-quarter-mile to the west, and joins Cane Creek at the southern end of the golf course. Cane Creek flows in a northwesterly direction near the site. There are double doors and single doors along both sides of the building, a loading platform at the rear of the building, and a loading ramp on the west end (southwest corner). There are small

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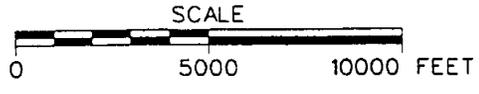
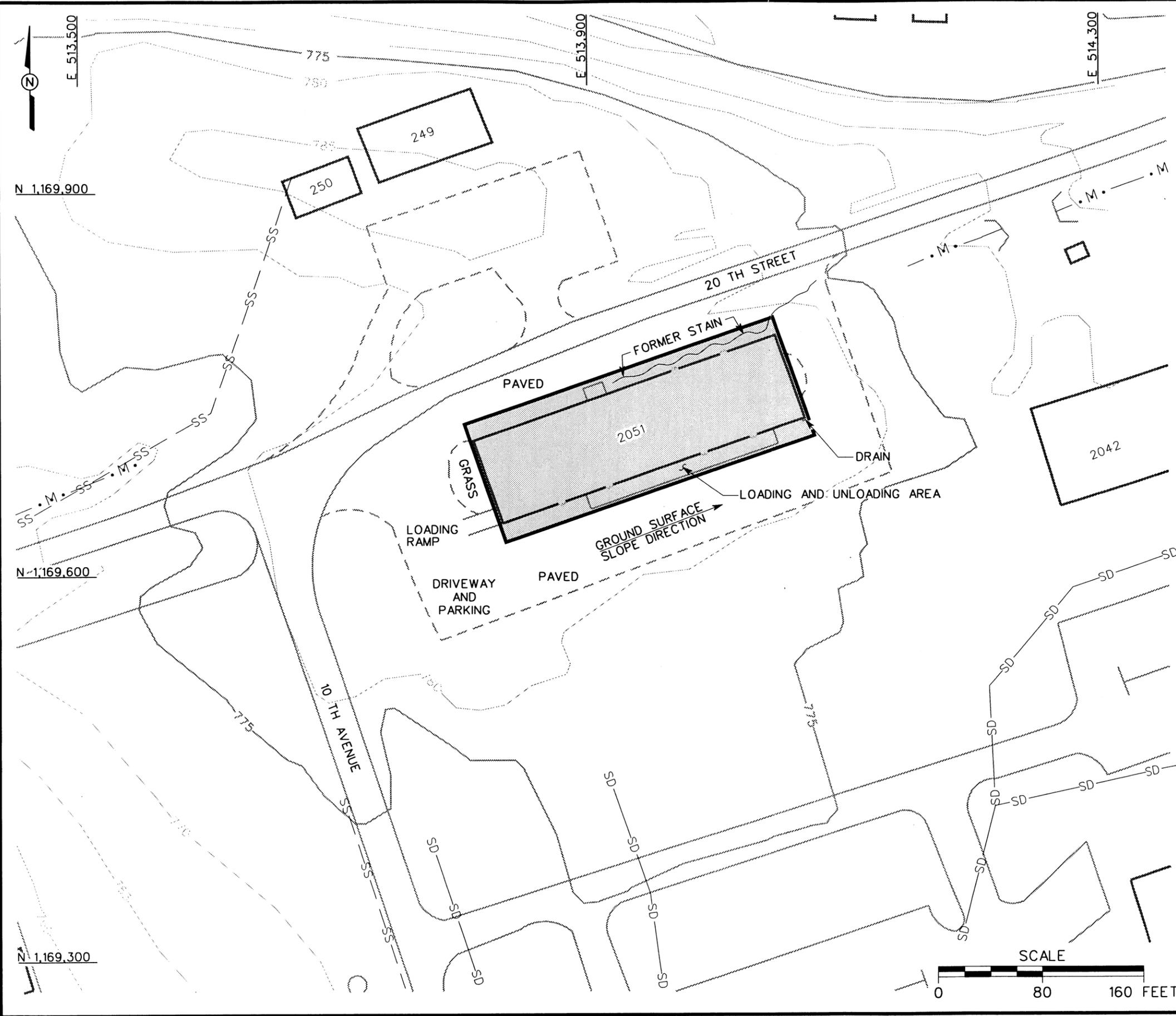


FIGURE 1-1
 SITE LOCATION MAP
 FORMER PRINTING PLANT,
 BUILDING 2051
 PARCEL 173(7)

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



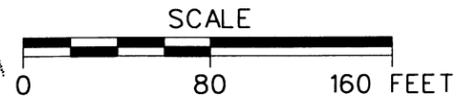
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- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - .M. MANMADE SURFACE DRAINAGE FEATURE
 - SS-- SANITARY SEWER LINE
 - SD--- STORM DRAINAGE LINE

FIGURE 1-2
SITE MAP
FORMER PRINTING PLANT,
BUILDING 2051
PARCEL 173(7)

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



grassy areas at both ends immediately adjacent to the building. A small offset room or shed is attached to the front of the building just west of center. Stains and surface water runoff patterns were evident on the front parking lot leading toward the lowest point on the parcel which is the northeast corner. A stormwater drain is located on the southeast corner and appears to collect runoff water from near the building, loading platform, and the rear parking lot.

This parcel is covered with soils from the Montevallo Series which consists of shallow, well-drained, strongly acid soils (U.S. Department of Agriculture, 1961). These soils are fairly extensive in the northern part, but occur throughout the county. They have developed in the residuum of interbedded shale and fine-grained sandstone or limestone. Where these soils are not eroded, the surface soil is very dark grayish-brown to very dark brown shaly silt loam. The subsoil is yellowish-brown shaly silt loam. Fragments of shale, less than 2 inches square are commonly on and in the soil. There are some eroded places. Runoff, internal drainage, and permeability are rapid. Infiltration is medium. The capacity for available moisture is low. The specific soil type from the Montevallo Series at this site is Montevallo shaly silty clay loam, 10 to 40 percent slopes, severely eroded (MtD3). This type has more runoff and more severe erosion. Depth to water is greater than 20 feet below ground surface (bgs) and depth to bedrock is 1 to 1.5 feet bgs.

1.3 Scope of Work

The scope of work for activities associated with the Former Printing Plant, 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, three subsurface soil, two groundwater, and one depositional soil sample to determine the presence or absence of contamination, if any, at the site and provide data useful in any future planned corrective measures and closure activities.

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

2.0 Summary of Previous 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 2051, Parcel 173(7) was identified as a Category 7 CERFA parcel, where further evaluation is needed. Previous environmental studies have not been conducted at this site.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Former Printing Plant, Building 2051, Parcel 173(7). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund* (EPA, 1993). The DQO process as applied to the Former Printing Plant, Building 2051, Parcel 173(7) 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, the procedures necessary to meet the objectives of the SI, and to 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 by the laboratory in 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 site investigation at the Former Printing Plant, Building 2051, Parcel 173(7), presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3 below. This conceptual model was developed to support the preparation 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 the data and 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. 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 potential site-specific chemical (PSSC) in the site media.

Table 3-1

**Summary of Data Quality Objectives
Site Investigation, Former Printing Plant, Building 2051, Parcel 173(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	None	<u>Potential Contaminant Source</u> Printing press operations <u>Migration Pathways</u> Infiltration to subsurface soil. Infiltration and leaching to groundwater. Dust emissions and volatilization to air. <u>Potential Receptors</u> Resident (future) Groundskeeper (current and future) Construction worker (current and future) <u>PSSC</u> Printing fluids Solvents and metals	Surface soil	SI to confirm whether PSSC are present in the site media. Definitive quality data for future decision making	<u>Surface Soil</u> VOCs SVOCs Metals	Definitive + CESAS Level B Data	3 direct-push soil samples + QC				
			Subsurface soil		<u>Subsurface Soil</u> VOCs SVOCs Metals			Definitive + CESAS Level B Data	3 direct-push soil samples +QC		
			Groundwater		<u>Groundwater</u> VOCs SVOCs Metals					Definitive + CESAS Level B Data	2 direct-push groundwater samples +QC
			Depositional soil		<u>Depositional Soil</u> VOCs SVOCs 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 chemicals.

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

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. The CSEM includes the receptors appropriate to all plausible scenarios, and the potential exposure pathways. Graphically presenting all possible pathways by which a potential receptor 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:

- 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.

Site 173(7) is a former printing plant, Building 2051, located in the south central portion of the Main Post on the corner of 10th Avenue and 20th Street. The building is situated on a knoll that slopes to the east. The building is currently used as an administrative building. Spills or releases are not known to have occurred at this site; however, stains and surface water patterns are evident at the front parking lot, the lowest northeastern area of the parcel.

Semivolatile organic compounds (SVOC), volatile organic compounds (VOC), and inorganics are the most likely chemicals of potential concern at this site. Primary contaminant release, if any, was probably limited to leaks and spills caused by printing operations that initially entered surface soil, or possibly surface water run-off due to printing operations. Potential contaminant transport pathways include infiltration to subsurface soil, and infiltration and leaching to groundwater. There are not any surface water bodies adjacent to this site; therefore, surface water and sediment are not evaluated here.

Receptors included in the CSEM are the:

- Current and future groundskeeper, as ground maintenance personnel currently work the area and could continue to do so in the future

- Future construction worker, it is plausible that demolition or building crews could work at the site under current and future conditions
- Future resident, as a conservative measure.

The site is an administrative building surrounded by a paved area and it is unlikely that this site will be used as a recreational area or support a deer habitat (FTMC, 1997). Thus, the venison and fish consumption scenarios and future recreational site users are excluded from the CSEM. Figure 3-1 provides a summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways for this site.

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 a separate document to be issued as the Habitat-Specific Screening Ecological Risk Assessment Work Plan.

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 site investigation at the Former Printing Plant, Building 2051, Parcel 173(7). Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

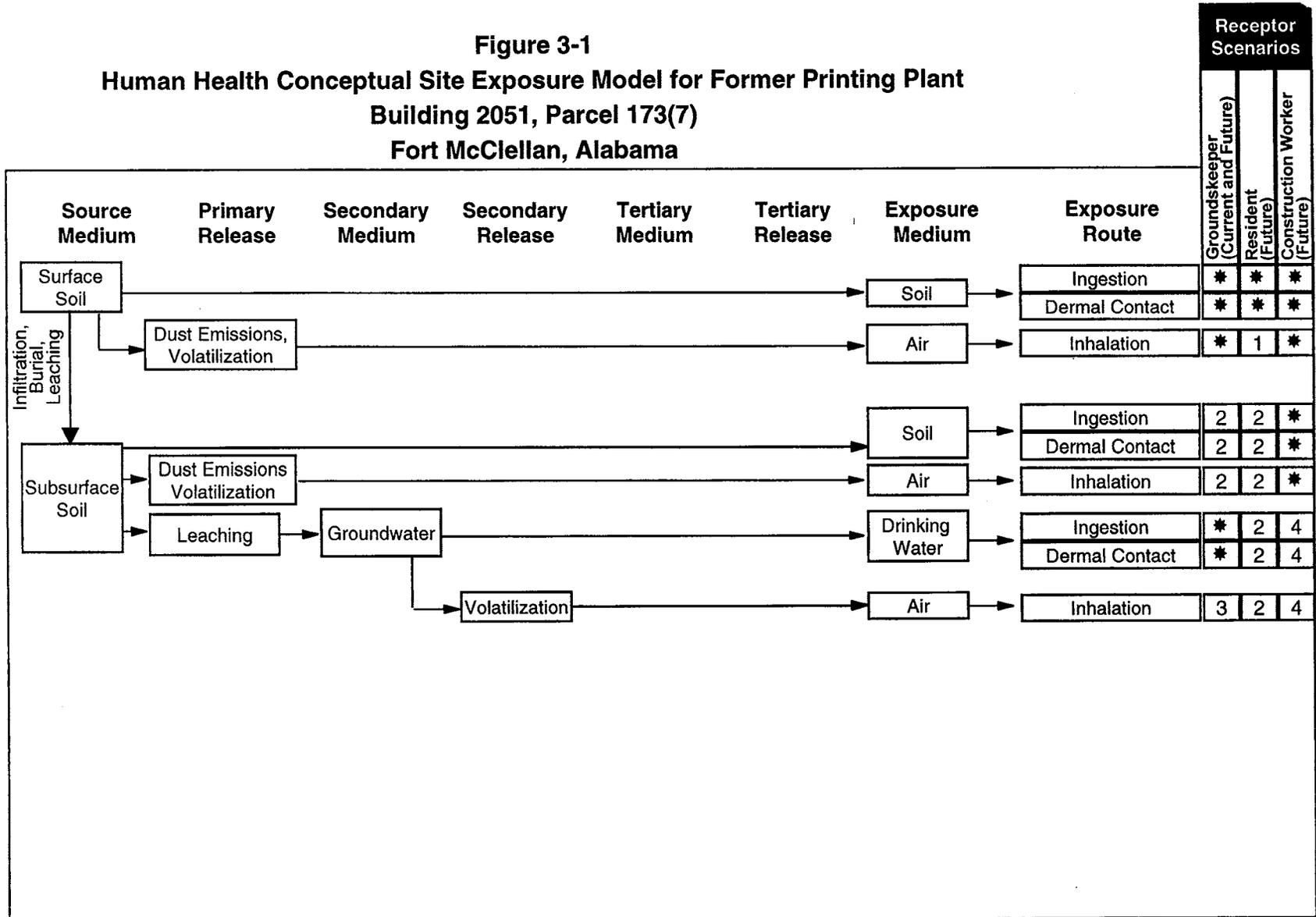
Confirmation of contamination at the Former Printing Plant, Building 2051, Parcel 173(7), will be based on comparing detected site chemical concentrations with site-specific screening levels and background concentrations developed in the WP. EPA definitive data with CESAS Level B data packages will be 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 a feasibility study and risk assessment.

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

Surface soil, subsurface soil, groundwater, and depositional soil will be sampled and analyzed in order to meet the objectives of the site investigation at the Former Printing Plant, Building 2051,

Figure 3-1
Human Health Conceptual Site Exposure Model for Former Printing Plant
Building 2051, Parcel 173(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.

Parcel 173(7). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, including Update III methods where applicable. 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 Section 9.0 of the QAP.

4.0 Field Activities

The parcel of property being investigated under this SI was identified during the EBS (ESE, 1998) and categorized as a Category 7 site. Category 7 indicates the sites that have not been evaluated or that need additional investigation. To meet the objectives of Section 1.3 and Chapter 3.0, the environmental sampling program will consist of surface and subsurface soil sampling, groundwater sampling, and depositional soil sampling.

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 performed during the site investigation at the Former Printing Plant, Building 2051, Parcel 173(7), will include the collection of surface soil, subsurface soil, groundwater, and depositional soil samples for chemical analysis. The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media, and rationale are summarized in Table 4-1. The sample designations and QA/QC sample quantities are shown in Tables 4-2, 4-3 and 4-4. Samples will be submitted for laboratory analyses of site related parameters listed in Section 4.5.

4.2.1 Surface Soil Sampling

Three surface soil samples will be collected at the Former Printing Plant, Building 2051, Parcel 173(7) site.

4.2.1.1 Sample Locations and Rationale

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

Table 4-1

**Sampling Locations and Rationale
Former Printing Plant, Building 2051, Parcel 173(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sampling Location Rationale
PPMP-173-GP01	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil, and groundwater will be collected at the northeast end of the building for downgradient coverage to determine if PSSC are present.
PPMP-173-GP02	Surface Soil Subsurface Soil	Surface soil and subsurface soil will be collected at the drain on the southeast corner of the building to determine if PSSC are present.
PPMP-173-GP03	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil, and groundwater will be collected at the southwest corner of the building near the ramp to determine if PSSC are present.
PPMP-173-DEP01	Depositional Soil	Depositional soil will be collected from near the drain at the southeast corner of the building to determine if PSSC are present.

Table 4-2

**Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Former Printing Plant, Building 2051, Parcel 173(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-173-GP01	PPMP-173-GP01-SS-KF0001-REG	0-1	PPMP-173-GP01-DS-KF003-FD	PPMP-173-GP01-DS-KF004-FS		TCL VOCs, TCL SVOCs TAL Metals
	PPMP-173-GP01-DS-KF0002-REG	a				
PPMP-173-GP02	PPMP-173-GP02-SS-KF0005-REG	0-1			PPMP-173-GP02-SS-KF0005-MS	TCL VOCs, TCL SVOCs TAL Metals
	PPMP-173-GP02-DS-KF0006-REG	a			PPMP-173-GP02-SS-KF0005-MSD	
PPMP-173-GP03	PPMP-173-GP03-SS-KF0007-REG	0-1				TCL VOCs, TCL SVOCs TAL Metals
	PPMP-173-GP03-DS-KF0008-REG	a				
PPMP-173-DEP01	PPMP-173-DEP01-DEP-KF0009-REG	0-1				TCL VOCs, TCL SVOCs TAL Metals

^a Actual sample depth selected for analysis will be at the discretion of the onsite 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.

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities
Former Printing Plant, Building 2051, Parcel 173(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-173-GP01	PPMP-173-GP01-GW-KF3001-REG	a	PPMP-173-GP01-GW-KF3002-FD	PPMP-173-GP01-GW-KF3003-FS	PPMP-173-GP01-GW-KF3001-MS	TCL VOCs, TCL SVOCs
					PPMP-173-GP01-GW-KF3001-MSD	Total TAL Metals
PPMP-173-GP03	PPMP-173-GP03-GW-KF3004-REG	a				TCL VOCs, TCL SVOCs Total TAL Metals

^aSample 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.

Table 4-4

**Analytical Samples
Former Printing Plant, Building 2051, Parcel 173(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 151 - Parcel 173(7): 2 water matrix samples: 2 groundwater samples; 7 soil matrix samples: 3 surface soil samples, 3 subsurface soil samples, 1 depositional soil sample													
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	1	6	1
Total TAL Metals	6010B/7000	water	normal	2	1	2	1	1	1	1	1	6	1
TCL VOCs	8260B	soil	normal	7	1	7	1	1	1	1	1	11	1
TCL SVOCs	8270C	soil	normal	7	1	7	1	1	1	1	1	11	1
TAL Metals	6010B/7000	soil	normal	7	1	7	1	1	1	1	1	11	1
Former Printing Plant, Building 151 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 4 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 one 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

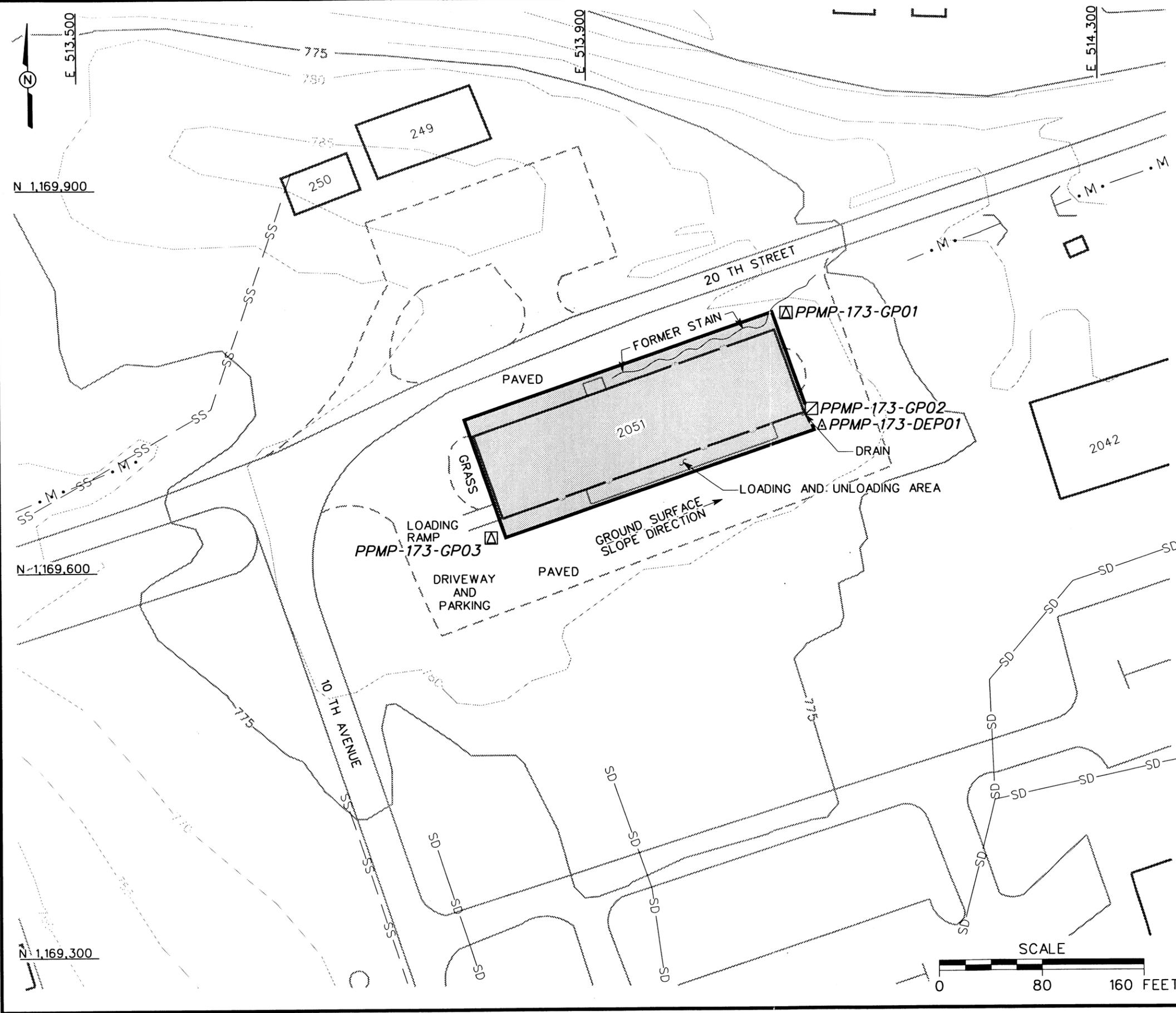
USACE Laboratory split samples are shipped to:

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.
TAL - Target analyte list.
TCL - Target compound list.

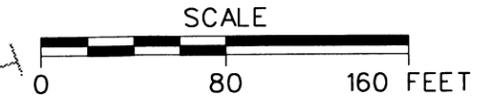
DWG. NO.: /4645es.192
 PROJ. NO.: 774645
 INITIATOR: C. SHORT
 PROJ. MGR.: J. YACOUB
 DRAFT. CHCK. BY:
 ENGR. CHCK. BY: A. MAYILA
 STARTING DATE: 08/03/98
 DATE LAST R.L.V.:
 DRAWN BY: D. BILLINGSLEY
 21 DEC 98
 16:53:02
 DBILLING
 c:\nr\as\g\1\774645es.192



- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - BUILDING
 - TOPOGRAPHIC CONTOURS
 - PARCEL BOUNDARY
 - MANMADE SURFACE DRAINAGE FEATURE
 - PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
 - PROPOSED DEPOSITIONAL SOIL SAMPLE
 - SANITARY SEWER LINE
 - STORM DRAINAGE LINE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
FORMER PRINTING PLANT,
BUILDING 2051
PARCEL 173(7)

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



4.2.1.2 Sample Collection

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Section 4.7.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with 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. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.2 Subsurface Soil Sampling

Three subsurface soil samples will be collected from the three soil borings installed at the Former Printing Plant, Building 2051, Parcel 173(7) site.

4.2.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the same soil borings as described in Section 4.2.1.1. Subsurface soil samples will be collected from the soil borings shown on Figure 4-1. Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot below the ground surface in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 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. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

Soil samples will be collected continuously to twelve feet or until either groundwater or refusal is reached. A detailed lithological log will be written by the on-site geologist for each borehole. Collected subsurface soil samples will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (readings in

ambient air). Typically, the sample showing the highest reading (above background) will be selected and sent to the laboratory for analysis. If none of the samples collected indicate readings above background on the PID, the deepest sample collected will be sent to the laboratory for analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight for determining the existence of any PSSC. Any additional subsurface samples will be collected at the discretion of the on-site geologist, based on field observations.

4.2.3 Groundwater Sampling

Two direct-push groundwater samples will be collected from direct-push temporary wells completed in two of the three borings installed at the site.

4.2.3.1 Sample Locations and Rationale

The direct-push groundwater samples will be collected from the direct-push temporary well locations shown on Figure 4-1. Groundwater sampling rationale is presented in Table 4-1. The groundwater sample designations 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 direct-push groundwater samples will be collected in accordance with the procedures specified in Section 4.7.1.4 of the SAP. The direct-push temporary wells will be completed at the water table surface (to a depth where sufficient water is encountered) to collect a groundwater sample.

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.

4.2.4 Depositional Soil Sampling

One depositional soil sample will be collected at the Former Printing Plant, Building 2051.

4.2.4.1 Sample Locations and Rationale

The depositional soil sample will be collected in the surface drainage feature near the drain at the northeast corner of the building. The sampling rationale is listed in Table 4-1 and the proposed sampling location is shown on Figure 4-1. The depositional soil sample designation, depth, and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample point will be at the discretion of the ecological sampler, based on the physical characteristics of the drainage area and the actual field observations.

4.2.4.2 Sample Collection

The depositional soil sample 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 COC 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 sample will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 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 National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil and groundwater sample locations will be recorded using a GPS to provide accuracy within 1 meter. The direct-push temporary well 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.

4.4 Decontamination Requirements

Sampling and non-sampling equipment will be decontaminated primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination requirements are detailed in Section 4.10.1 of the SAP (IT, 1998a). Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP.

Decontamination of non-sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.5 Analytical Program

Samples collected at locations specified in Chapter 4.0 will be analyzed for various physical and chemical properties. The on-site sample coordinator will provide sampling containers and preservatives, and will coordinate sampling procedures with the field sampling crews in accordance with Table 5-1 in the QAP. The specific suite of analyses to be performed is based on the PSSC historically at the site and EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Printing Plant, Building 2051, Parcel 173(7), include the following list of parameters:

- Target Compound List (TCL) VOCs – Method 5035/8260B
- TCL SVOCs - Method 8270C
- Target Analyte List 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 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.

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 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*, EPH 540-R-93-071, September.