

Site Investigation

Final

Site-Specific Field Sampling Plan Attachment

Site Investigation at the

Old Incinerator Building 5710, Parcel 125(7)

Fort McClellan

Calhoun County, Alabama

Prepared for:

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

October 1998

Revision 1

Table of Contents

	<i>Page</i>
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 Existing 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	3-1
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 UXO Survey Requirements and Utility Clearances	4-1
4.1.1 Surface UXO Survey	4-1
4.1.2 Downhole UXO Survey.....	4-1
4.1.3 Utility Clearances	4-1
4.2 Environmental Sampling	4-2
4.2.1 Surface Soil Sampling	4-2
4.2.1.1 Sample Locations and Rationale	4-2
4.2.1.2 Sample Collection Procedures.....	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 Procedures.....	4-3
4.2.3 Surface Water Sampling.....	4-3
4.2.3.1 Sample Locations and Rationale	4-3
4.2.3.2 Sample Collection Procedures.....	4-4

Table of Contents (Continued)

	Page
4.2.4 Sediment Sampling.....	4-4
4.2.4.1 Sample Locations and Rationale	4-4
4.2.4.2 Sample Collection Procedures.....	4-4
4.2.5 Depositional Soil Sampling.....	4-4
4.2.5.1 Sample Locations and Rationale	4-4
4.2.5.2 Sample Collection Procedures.....	4-5
4.3 Decontamination Requirements	4-5
4.4 Surveying of Sample Locations.....	4-5
4.5 Analytical Program.....	4-5
4.6 Sample Preservation, Packaging, and Shipping	4-6
4.7 Investigation-Derived Waste Management	4-7
4.8 Site-Specific Safety and Health.....	4-7
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	Site Sampling Rationale	4-2
4-2	Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and Sample QA/QC Quantities	4-2
4-3	Surface Water and Sediment Sample Designations and QA/QC Sample Quantities	4-3
4-4	Analytical Samples	4-6

List of Figures

Number	Title	Follows Page
1-1	Site Location Map, Old Incinerator Building 5710, Parcel 125(7)	1-1
1-2	Site Map, Old Incinerator Building 5710, Parcel 125(7)	1-1
3-1	Human Health Conceptual Site Exposure Model for Old Incinerator Building 5710, Parcel 125(7)	3-3
4-1	Proposed Sampling Locations, Old Incinerator Building 5710, Parcel 125(7)	4-2

List of Acronyms

ADEM	Alabama Department of Environmental Management
ASP	Ammunition Supply Point
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
COC	chain of custody
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
NAD83	1983 North American Datum
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
UXO	unexploded ordnance
WP	installation-wide work plan

Executive Summary

This site-specific field sampling plan attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for the Old Incinerator Building 5710, at Fort McClellan, Calhoun County, Alabama, will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b), the habitat-specific screening ecological risk assessment work plan, and the SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and installation-wide quality assurance plan. Site-specific hazard analyses are included in the SSHP.

The Old Incinerator Building 5710 is located on the east side of the northern Main Post, close to the Ammunition Supply Point. The incinerator at Building 5710 has been dismantled and is no longer standing. The area where the incinerator previously operated is now overgrown with trees and vegetation. The only visible sign of the incinerator is the fieldstone foundation, which is covered with brush and leaves. Also, there is metal debris strewn along the remaining foundation. The area of the site is less than 1 acre. The site is located on the north bank of Cave Creek where the creek passes between Cemetery Hill and Reservoir Ridge. The dates the site was used have not been determined.

The Old Incinerator Building 5710 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 avoidance activities, including surface sweeps and downhole surveys of soil borings.

Specifically, IT will collect two surface soil samples, two subsurface soil samples, two surface water samples, two sediment samples and one depositional soil sample at this site. Potential contaminant sources at the Old Incinerator Building 5710 include petroleum products (e.g., gasoline, diesel, heating oil, waste oil, and lubricants), solvents, and metals. Chemical analyses of the samples collected during the field program will include volatile organic compounds, semivolatile organic compounds, pesticides, herbicides, dioxins, and metals. Additionally, sediment samples will be analyzed for total organic carbon and grain size. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

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 Old Incinerator Building 5710, Parcel 125(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

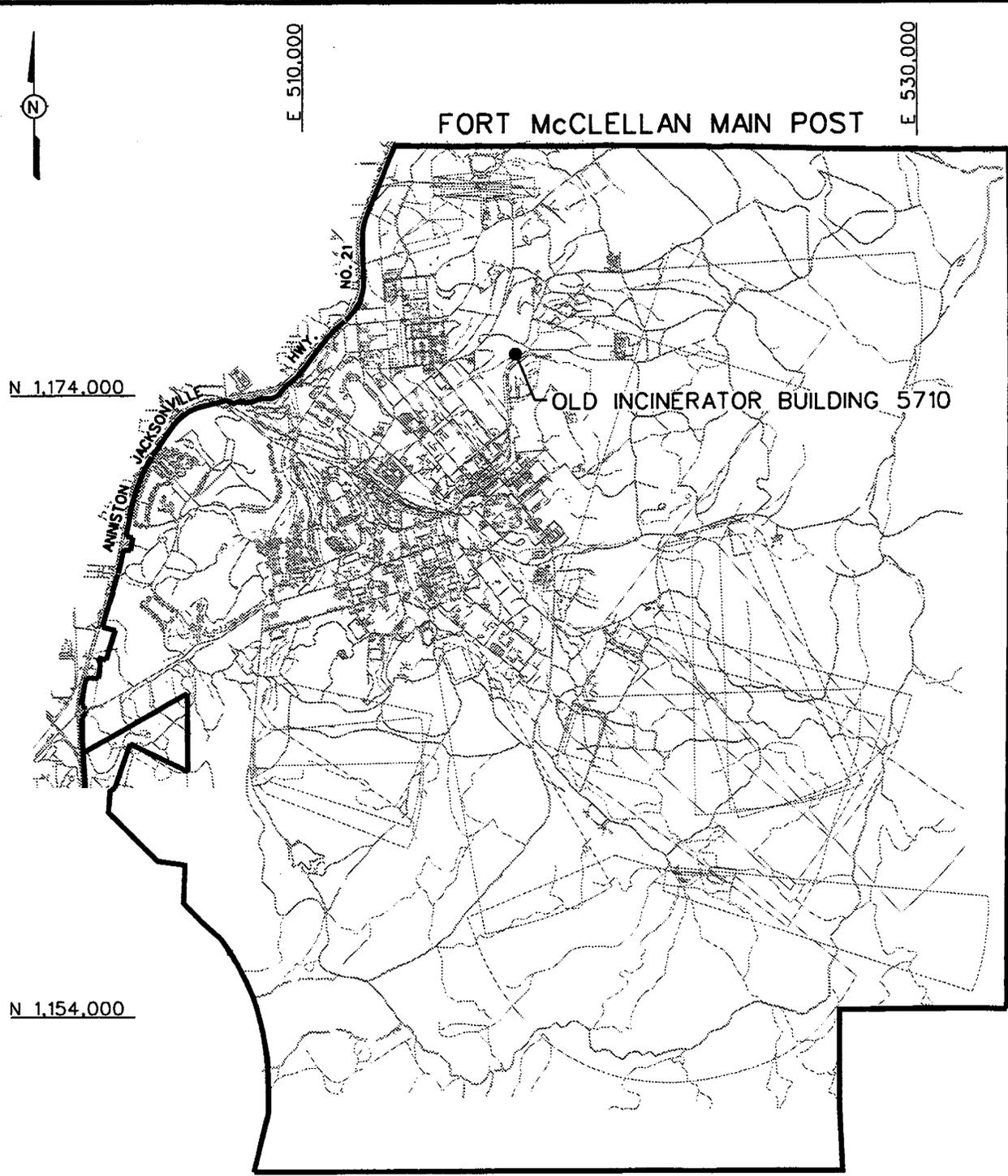
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Old Incinerator, Building 5710, Parcel 125(7) (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Old Incinerator site, and the installation-wide work plan (WP) (IT, 1998b), the habitat-specific screening ecological risk assessment work plan, and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and installation-wide quality assurance plan (QAP).

1.2 Site Description

The Old Incinerator Building 5710 was constructed of fieldstone in 1927, but is no longer standing. The site is located on the east side of the northern Main Post, close to the east side of the Ammunition Supply Point (ASP) (Figure 1-1). The incinerator at Building 5710 has been dismantled and is no longer standing. The area where the incinerator previously operated is now overgrown with trees and vegetation. The only visible sign of the incinerator is the fieldstone foundation, which is covered with brush and leaves. Also, there is metal debris strewn along the remaining foundation. The study area covers slightly less than 1 acre; its dimensions are very approximate. The site and the area around the site is mostly undeveloped or wooded. Cave Creek flows from the northeast to the southwest along the southeast border of the site. The site is located on the north bank of Cave Creek where the creek passes between Cemetery Hill and Reservoir Ridge. Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation is approximately 780 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map that shows topographic features and site boundaries.

The soil type at the Old Incinerator site is the Atkins Series, which consists of poorly drained, strongly acid, silty loam soils. These soils are formed from the alluvium of sandstone and shale-

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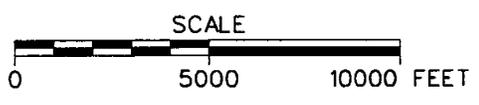


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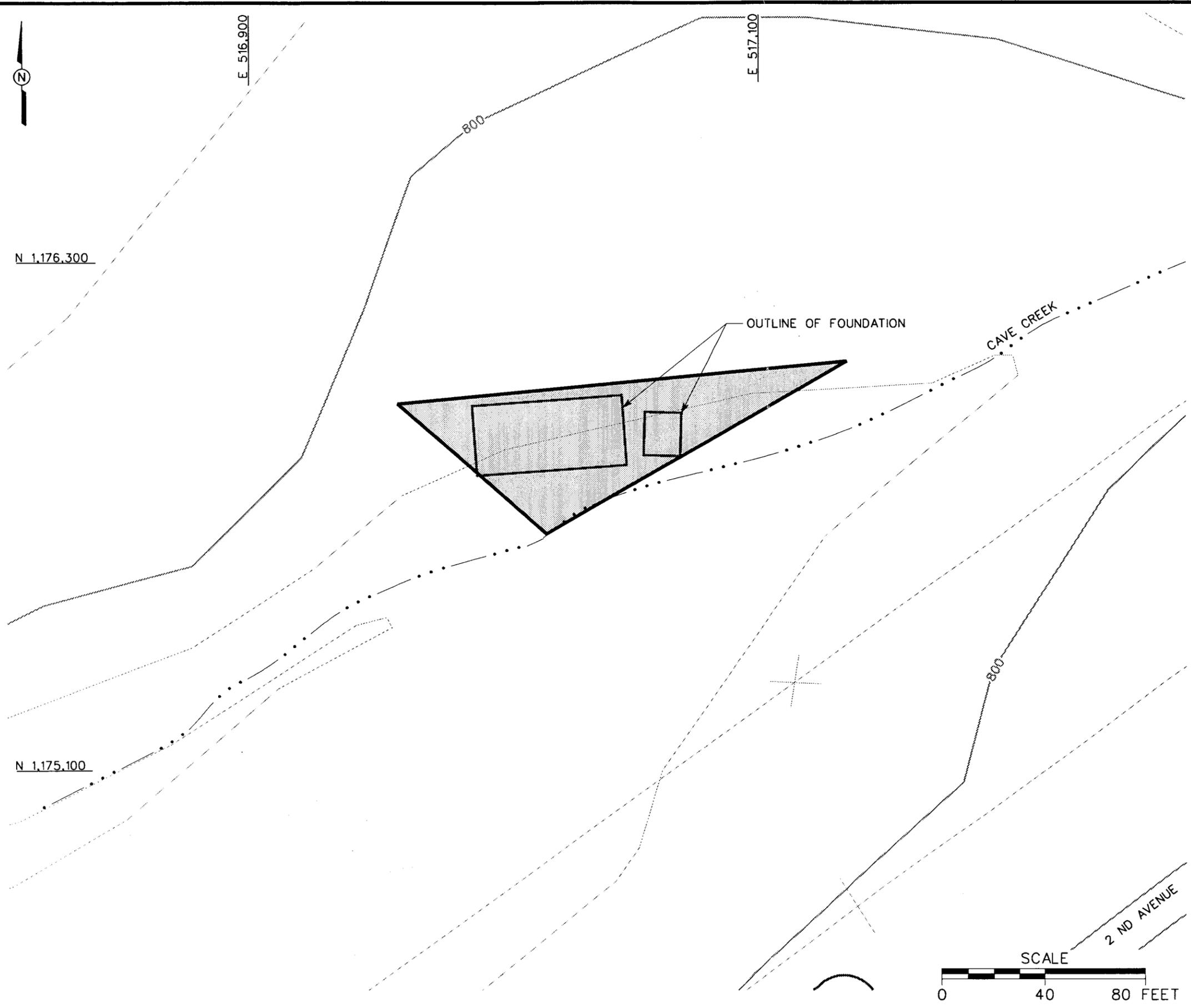
 FORT McCLELLAN BOUNDARY

FIGURE 1-1
SITE LOCATION MAP
OLD INCINERATOR BUILDING 5710
PARCEL 125(7)

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



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	PAVED ROADS AND PARKING
	BUILDING
	TOPOGRAPHIC CONTOURS
	PARCEL BOUNDARY
	BRIDGE
	CULVERT WITH HEADWALL
	SURFACE DRAINAGE / CREEK
	FENCE
	RAILROAD

FIGURE 1-2
 SITE MAP
 OLD INCINERATOR BUILDING 5710
 PARCEL 125(7)

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



based soils, typically light to dark grayish-brown in color. The depth to bedrock is usually 2 to 6 feet or greater, while the depth to groundwater is very shallow. This floodplain soil is high in organic matter but low in natural fertility. The tendency for flooding makes 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 Old Incinerator site as specified in the statement of work (USACE, 1998a), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Conduct a surface and near surface unexploded ordnance (UXO) survey over all areas to be included in the sampling effort.
- Provide downhole UXO support for all intrusive direct-push activity to determine downhole hazards.
- Collect two surface soil samples, two subsurface soil samples, two surface water samples, two sediment samples, and one depositional soil sample to determine whether potential site-specific chemicals (PSSC) are present at the Old Incinerator site and provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final summary reports will be prepared in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

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, 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 Old Incinerator consists of one site only. The site was identified as a CERFA site, where petroleum products were stored, released, or disposed, and/or migration of hazardous substances is suspected, but the sites are either not evaluated, or require additional evaluation to determine their environmental condition.

The Old Incinerator site was located east of the northern Main Post (east of the ASP) and was constructed of fieldstone by troops in 1927. It was also near Landfill No. 2, which was then in use. Currently, Building 5710 is no longer standing and the site has unrestricted access. Other information regarding this building's dates of use or operation is not available. Surface soil, subsurface soil, surface water, sediment, and depositional soils are media of potential concern.

There were not any other investigations identified for the Old Incinerator Building 5710. The Old Incinerator Building 5710 site is identified as a Category 7 CERFA site: areas that are not evaluated or require further evaluation.

The Old Incinerator Building 5710 lacks adequate documentation and therefore requires evaluation to determine the environmental condition of the parcel.

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 Old Incinerator Building 5710. 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 Old Incinerator is described in more detail in Sections 3.2 and 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 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 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 Old Incinerator 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 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 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,

and helps 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 Old Incinerator is unknown but would probably consist of metals and dioxins. Petroleum products may have been disposed at this site; however, it is assumed that solid waste was primarily disposed here. The Old Incinerator is located in the hills east of the northern Main Post and is surrounded by wooded areas. Currently, there is unrestricted access to the location. Cave Creek flows along the southeast border of the site. It is assumed that initial releases of any potential contaminants were restricted to surface soil 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, discharge of groundwater to the surface, erosion and runoff to the surface water and sediment of Cave Creek, and volatilization from surface water of the creek. It is unlikely that contamination remains in groundwater at this site.

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

- Resident: The site is not currently used for residential development.
- Groundskeeper: The site is not actively used and there is no need for workers to maintain the site.
- Construction worker: The site is currently undeveloped and no excavation or building is occurring.

As described in the FTMC comprehensive reuse plan, future plans call for this site to become part of the Remediation Range, which will eventually be conveyed to the U.S. Fish and Wildlife Service for use as a National Wildlife Refuge (FTMC, 1997). The most plausible receptors for the future site-use scenario include those under the current use scenario. Other receptors

considered and included under the future scenario are 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.

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 Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Old Incinerator site. Data uses and needs are summarized in Table 3-1.

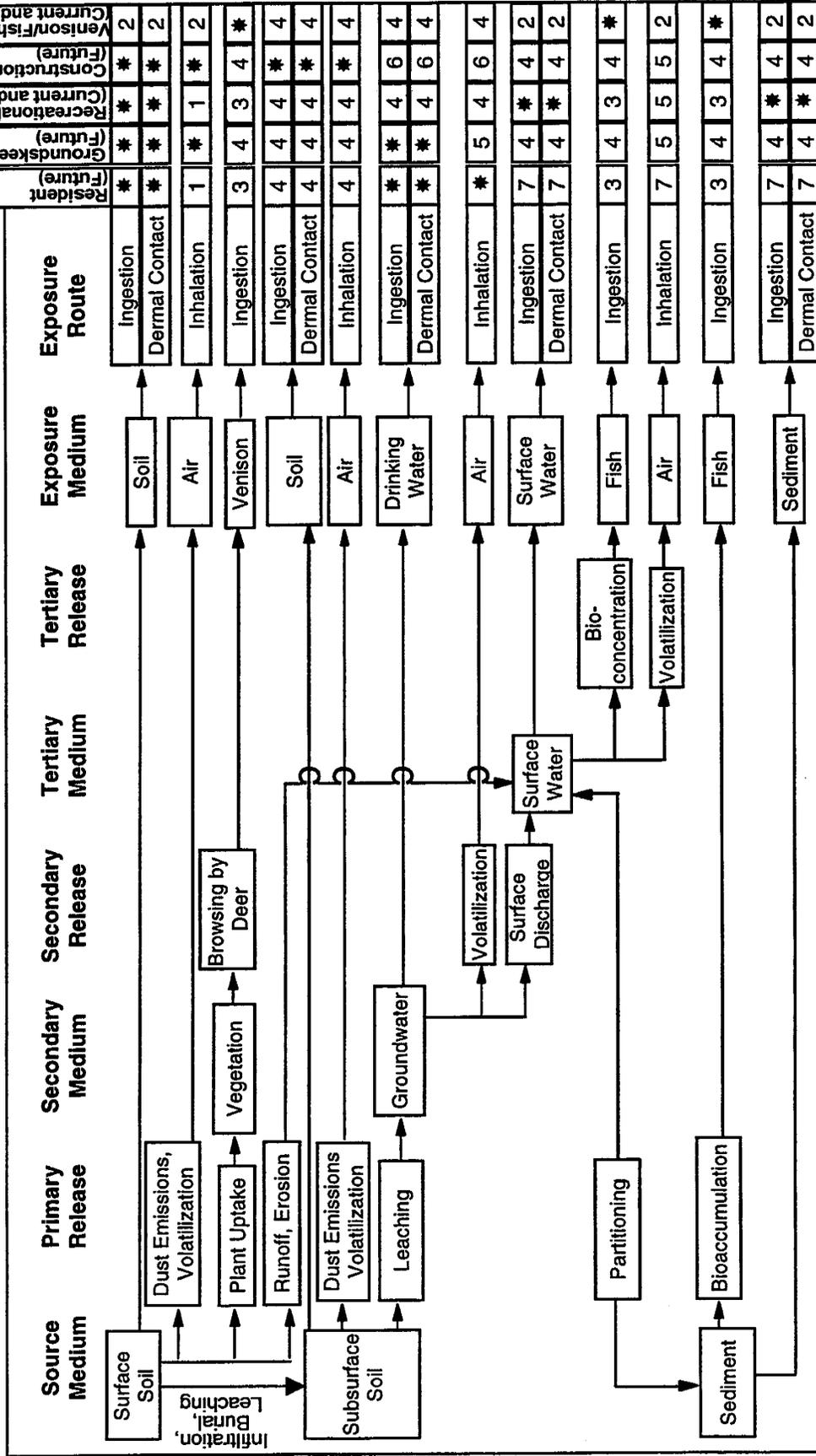
3.4.1 Risk Evaluation

Confirmation of contamination at the Old Incinerator site will be based upon a comparison of detected site contaminants to the site-specific screening levels developed in the WP (IT, 1997b). 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.

3.4.2 Data Types and Quality

To meet the objectives of the SI at the Old Incinerator site, it will be necessary to sample and analyze surface and subsurface soils, surface water, sediment, and depositional soils. 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 Old Incinerator Building 5710,
Parcel 125(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 recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.
 7 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user.

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

4.1 UXO Survey Requirements and Utility Clearances

The Old Incinerator Building 5710 site falls within the “Possible Explosive Ordnance Impact Area” shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998b).

Therefore, IT will conduct UXO avoidance activities, including surface sweeps and downhole surveys of soil borings in addition to conducting utility clearances before installing soil borings.

4.1.1 Surface UXO Survey

An unexploded ordnance (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. 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 activities, 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 to 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 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 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 Environmental Sampling

The environmental sampling program during the SI at the Old Incinerator Building 5710 includes the collection of two surface soil samples, two subsurface soil samples, two surface water samples, two sediment samples, and one depositional soil sample for chemical analysis.

4.2.1 Surface Soil Sampling

Surface soil samples will be collected from two soil borings installed at the Old Incinerator Building 5710 site.

4.2.1.1 Sample Locations and Rationale

Surface soil samples will be collected near the remains of the large rectangular concrete structure and the smaller concrete structures at the site. The surface soil sampling rationale is provided 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 surface soil sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.2.1.2 Sample Collection Procedures

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology in accordance with the procedures 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. Surface soil samples will be screened with the PID for information only; not to select samples to submit for analysis. 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. Sample documentation and chain of custody (COC) 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

Subsurface soil samples will be collected from the two soil borings installed at the Old Incinerator Building 5710 site. The locations are described in Section 4.2.1.1

4.2.2.1 Sample Locations and Rationale

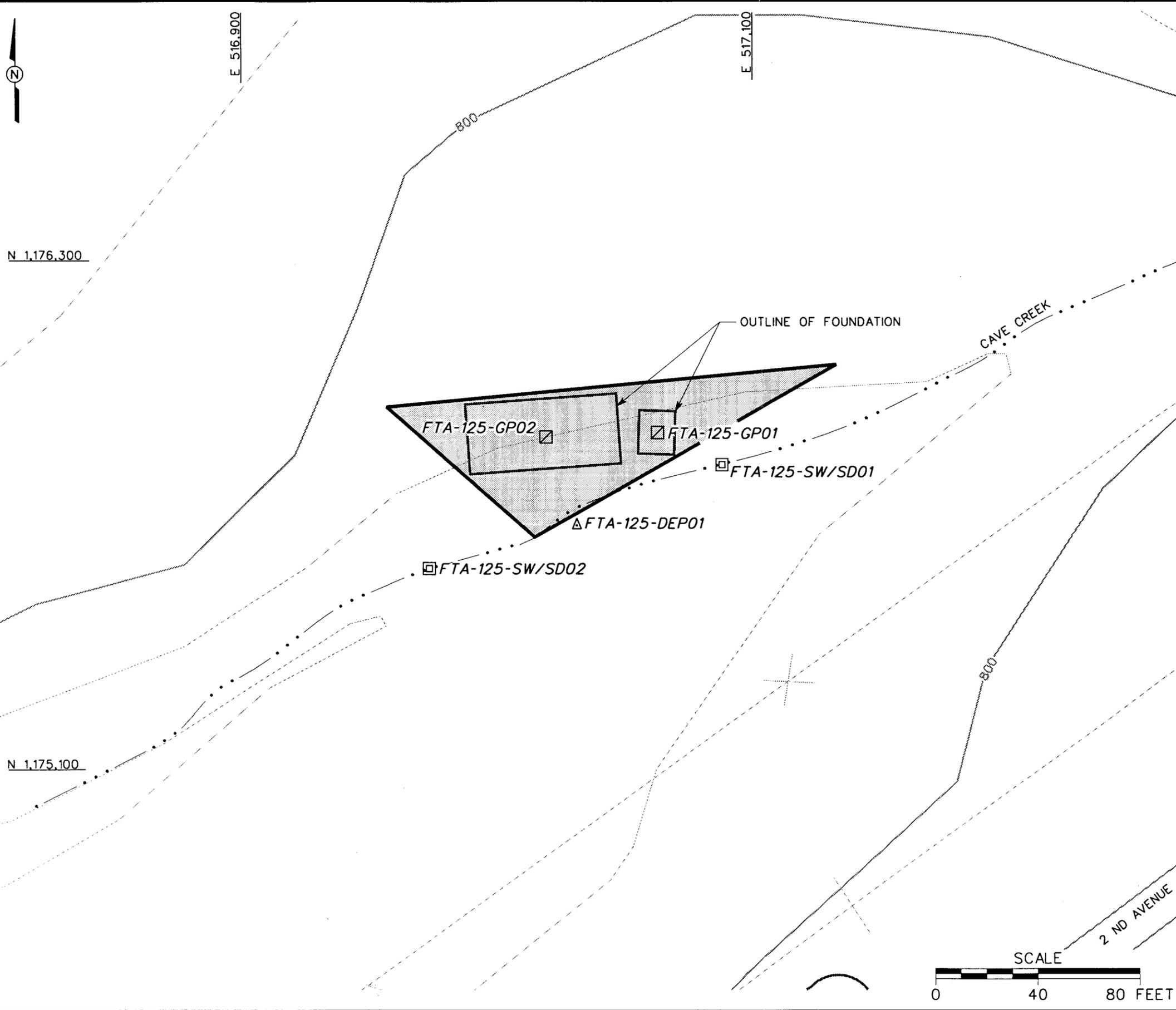
Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil

Table 4-1

**Site Sampling Rationale
Old Incinerator Building 5710, Parcel 125(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Media	Rationale
FTA-125-GP01	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil samples will be collected from within the remains of the small concrete structure on the east side of the site to determine if residues from operations at the old incinerator are present in concentrations above guidance levels. To reach ground surface for soil sample collection, the concrete structure will be cored with a core drill.
FTA-125-GP02	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil samples will be collected from within the remains of the large rectangular concrete structure on the site to determine if residues from operations at the old incinerator are present in concentrations above guidance levels. To reach ground surface for soil sample collection, the concrete structure will be cored with a core drill.
FTA-125-SW/SD01	SEDIMENT SURFACE WATER	Sediment and surface water samples will be collected from an upgradient location on Cave Creek, which is adjacent to the site. Sampling location represents the most hydrologically upgradient position and possible background sample.
FTA-125-SW/SD02	SEDIMENT SURFACE WATER	Sediment and surface water samples will be collected from a downgradient location on Cave Creek. Sampling location represents a possible deposition of contaminants. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
FTA-125-DEP01	DEPOSITIONAL SOIL	A depositional soil sample will be collected at the most probable point of exit from the site for surface water runoff. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.

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 ENGR. CHCK. BY: J. YACOUB
 INITIATOR: T. NOLEN
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LEGEND	
	PAVED ROADS AND PARKING
	BUILDING
	TOPOGRAPHIC CONTOURS
	PARCEL BOUNDARY
	BRIDGE
	CULVERT WITH HEADWALL
	SURFACE DRAINAGE / CREEK
	FENCE
	RAILROAD
	PROPOSED SURFACE WATER/SEDIMENT SOIL SAMPLE
	PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
	PROPOSED DEPOSITIONAL SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
OLD INCINERATOR BUILDING 5710
PARCEL 125(7)

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

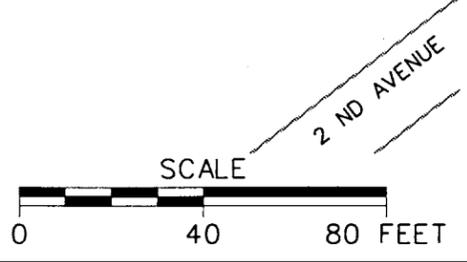


Table 4-2

Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Sample Quantities
 Old Incinerator Building 5710, Parcel 125(7)
 Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicate	Field Spills	Matrix Spike Matrix Spike Duplicate	
FTA-125-GP01	FTA-125-GP01-SS-FY-0001-REG	0-1.0	--	--	--	TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins
FTA-125-GP02	FTA-125-GP02-SS-FY-0002-REG	0-1.0	FTA-125-GP02-FY-0003-FD	FTA-125-GP02-FY-0004-FS	FTA-125-GP02-FY-0002-MS/MSD	TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins
FTA-125-DEP01	FTA-125-DP01-DEP-FY-0005-REG	Depositional soils				TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins
FTA-125-GP01	FTA-125-GP01-DS-FY-0006-REG	> 1 foot ^a	--	--	--	TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins
FTA-125-GP02	FTA-125-GP02-DS-FY-0007-REG	> 1 foot ^a				TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins

^aContinuous sampling will be used from 1 foot depth to 12 feet below land surface. Actual sample intervals will be selected by the site geologist depending on field observations.

- CI - Chlorinated
- OP - Organophosphorus
- MS/MSD - Matrix spike/matrix spike duplicate.
- NA - Not applicable.
- QA/QC - Quality assurance/quality control.
- VOC - Volatile organic compound.
- SVOC - Semivolatile organic compound.
- TCL - Target compound list.
- TAL - Target analyte list.
- TOC - Total organic carbon.

boring sampling locations will be determined in the field by the on-site geologist based on actual field observations.

4.2.2.2 Sample Collection Procedures

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 soils samples collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP.

Soil samples will be collected continuously for the first 12 feet or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (readings in ambient air). Typically, the subsurface soil sample showing the highest readings above background using the PID will be sampled and submitted to the laboratory for analysis. If none of the sample intervals collected indicate elevated readings on the PID, the deepest interval collected will be submitted for laboratory analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC at the interval. 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 to the existence of any PSSC.

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 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.

4.2.3 Surface Water Sampling

Two surface water samples will be collected from Cave Creek which is located southeast of the Old Incinerator Building 5710 site.

4.2.3.1 Sample Locations and Rationale

The surface water sampling rationale is listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and required QA/QC sample requirements are listed in Table 4-3. The exact sampling locations will

Table 4-3

Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
 Old Incinerator Building 5710, Parcel 125(7)
 Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples				Analytical Suite
			Field Duplicate	Field Splits	Matrix Spike Duplicate	Matrix Spike Duplicate	
FTA-125-SW/SD01	FTA-125-SW/SD01-SW-FY-2001-REG	surface water	--	--	--	--	TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins
FTA-125-SW/SD02	FTA-125-SW/SD02-SW-FY-2002-REG	surface water	FTA-125-SW/SD02-SW-FY-2002-FD	FTA-125-SW/SD02-SW-FY-2002-FS	FTA-125-SW/SD02-SW-2002-MS/MSD	FTA-125-SW/SD02-SW-2002-MS/MSD	TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins
FTA-125-SW/SD01	FTA-125-SW/SD01-SD-FY-1001-REG	0-0.5	--	--	--	--	TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins, TOC, Grain Size (ASTM D421/D422)
FTA-125-SW/SD02	FTA-125-SW/SD02-SD-FY-1002-REG	0-0.5	FTA-125-SW/SD02-SD-FY-1002-FD	FTA-125-SW/SD02-SD-FY-1002-FS	FTA-125-SW/SD02-SD-FY-1002-MS/MSD	FTA-125-SW/SD02-SD-FY-1002-MS/MSD	TCL VOCs, SVOCs, TAL Metals, OP Pesticides, CI Herbicides, Dioxins, TOC, Grain Size (ASTM D421/D422)

ASTM - American Society for Testing and Materials.

CI - Chlorinated

MS/MSD - Matrix spike/matrix spike duplicate.

NA - Not applicable.

OP - Organophosphorus

QA/QC - Quality assurance/quality control.

VOC - Volatile organic compound.

SVOC - Semivolatile organic compound.

TCL - Target compound list.

TAL - Target analyte list.

TOC - Total organic carbon.

be determined in the field by the ecological sampler, based on drainage pathways and actual field observations.

4.2.3.2 Sample Collection Procedures

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 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 Chapter 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

4.2.4 Sediment Sampling

Two sediment samples will be collected from Cave Creek which is located southeast of the Old Incinerator Building 5710 site. These sediment samples will be collected at the same locations as the surface water samples described in Section 4.3.4.

4.2.4.1 Sample Locations and Rationale

The tentative locations for the two sediment samples are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample requirements are listed in Table 4-2. The actual sediment sample points will be at the discretion of the ecological sampler, based on the drainage pathways and actual field observations.

4.2.4.2 Sample Collection Procedures

Sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.5.

4.2.5 Depositional Soil Sampling

One depositional soil sample will be collected at the Old Incinerator Building 5710 site.

4.2.5.1 Sample Locations and Rationale

The depositional soil sample will be collected at the most probable point for surface runoff to exit the site. 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 actual field observations.

4.2.5.2 Sample Collection Procedures

Depositional soil sample collection will be conducted 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 Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. 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 National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water 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 locations specified in Chapter 4.0 of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as the EPA,

ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Motor Pool Area 3100, 23rd Street site consist of the following list of analytical suites:

- Organophosphorus pesticides - Method 8141A
- Dioxins - Method 8290
- Target compound list (TCL) volatile organic compounds - Method 5035/8260B
- TCL semivolatile organic compounds - Method 8270C
- Target analyte list (TAL) metals – Method 6010B/7000
- Chlorinated herbicides - Method 8151A
- Chlorinated pesticides - Method 8181A.

In addition, the sediment samples 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 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.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/COC records will be secured and included with each shipment of coolers to the following subcontract laboratory:

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

Table 4-4

**Analytical Samples
Old Incinerator Building 5710, Parcel 125(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples ^a		QA/QC Samples ^b				Quanterra Total No. Analysis	QA Lab Total No. Analysis		
				No. of Points	No. of Events	Field Dups (10%)	Splits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)			Eq. Rinse (1/wk/matrix)	
Old Incinerator - Parcel 125(7): 2 surface water, 7 soil matrix; 2 subsurface soil, 2 sediment, 1 depositional soil													
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
Cl Pesticides	8081A	water	normal	2	1	2	1	1	1	1	1	6	1
OP Pesticides	8141A	water	normal	2	1	2	1	1	1	1	1	6	1
Cl Herbicides	8151A	water	normal	2	1	2	1	1	1	1	1	6	1
Tot TAL Metals	6010B/7000	water	normal	2	1	2	1	1	1	1	1	6	1
Dioxins	8290	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
Cl Pesticides	8081A	soil	normal	7	1	7	1	1	1	1	1	11	1
OP Pesticides	8141A	soil	normal	7	1	7	1	1	1	1	1	11	1
Cl Herbicides	8151A	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
Dioxins	8290	soil	normal	7	1	7	1	1	1	1	1	11	1
Old Incinerator Building 5710 Total:				63		14		14		1		14	

^aFor TCL VOC analyses in soil, the total number of samples is calculated based on the SW-846 Update III requirements for collection and individual analysis of three aliquots of soil for each sample collected. QA/QC sample totals also reflect this requirement. The incremental cost of \$8 per sample for the Encore soil sampler is added to the base analytical cost of \$132 per volatile sample for a total analytical cost of \$151 per sample.

^bField 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: 423-584-4315

USACE Laboratory split samples are shipped to: USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060
Tel: 770-919-5270

Table 4-4

**Analytical Samples
Old Incinerator Building 5710, Parcel 125(7)
Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

- 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.

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

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060
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 Appendix D of the SAP. The IDW expected to be generated at the Old Incinerator Building 5710 site will include decontamination fluids and disposable personal protective equipment. The IDW will be staged in the fenced area around Buildings 335 and 336 while awaiting final disposal.

4.8 Site-Specific Safety and Health

Safety and health requirements for this SI are provided in the SSHP attachment for the Old Incinerator Building 5710, Parcel 125(7). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the site investigation activities will be provided by the IT project manager to the BRAC Closure 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.

U.S. Army Corps of Engineers (USACE), 1998a, *Statement of Work for Task Order CK005, Site Investigations, Fort McClellan, Alabama, Scope of Work*, January.

U.S. Army Corps of Engineers (USACE), 1998b, *Archives Search Report, Maps, Fort McClellan, Anniston, Alabama*, June.

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.