

FINAL



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# ADDENDUM #5 TO THE SAMPLING AND ANALYSIS PLAN



3d Inf Div (Mech)

**FOR THE**

**Corrective Action Plan–Part A and B Investigations  
for  
Former Underground Storage Tanks,  
Hunter Army Airfield, Georgia**

Prepared for



**U.S. ARMY CORPS OF ENGINEERS  
SAVANNAH DISTRICT**

Contract No. DACA63-97-D-0041  
Delivery Order 0054

**August 2001**



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**ADDENDUM #5  
TO THE  
SAMPLING AND ANALYSIS PLAN  
FOR THE  
CORRECTIVE ACTION PLAN--PART A AND B INVESTIGATIONS  
FOR  
FORMER UNDERGROUND STORAGE TANKS,  
HUNTER ARMY AIRFIELD, GEORGIA**

Prepared for

U.S. Army Corps of Engineers  
Savannah District  
Under Contract Number DACA63-97-D-0041  
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August 2001

**APPROVALS**

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## **List of Abbreviations and Acronyms**

BTEX	benzene, toluene, ethylbenzene, and xylenes
PAH	polyaromatic hydrocarbon
QC	quality control
SAP	Sampling and Analysis Plan

## **1.0 INTRODUCTION**

This addendum supplements the *Sampling and Analysis Plan for the Corrective Action Plan--Part A and B Investigations for Former Underground Storage Tanks at Hunter Army Airfield, Georgia* (SAIC 1999a). It presents changes to the Sampling and Analysis Plan (SAP) and the specific sampling requirements for performing long-term monitoring. Table 1 identifies general site-specific information and presents the proposed activities for the site.

## **2.0 PROJECT ORGANIZATION**

The organizational chart for the project is presented in Addendum #2 (SAIC 1999b).

## **3.0 FIELD ACTIVITIES**

Field activities for the Pumphouse #1 site will consist of collection of groundwater samples from eight existing wells during two rounds of semiannual sampling and the installation of two soil borings. Groundwater samples collected from the monitoring wells at the site will be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX).

Two soil borings will be installed after the groundwater contaminant concentrations have reached their respective alternate concentration limits. The soil boring locations will be determined based on the analytical data from the groundwater sampling and the CAP--Part B soil sampling results. One soil sample will be collected from each boring during installation and sent to the laboratory for BTEX and polyaromatic hydrocarbon (PAH) analysis.

The sampling locations for the site are presented in Appendix A, Figure A-1. Table 2 presents the sample numbering system that will be used for this investigation. Table 3 presents a summary of the field and quality control (QC) soil and groundwater samples to be collected during the investigations.

### **3.1 GROUNDWATER SAMPLING**

Groundwater samples will be collected from eight existing wells (D-MW-05, D-MW-06, P1-MW-01, P1-MW-02, P1-MW-18, P1-MW-19, P1-MW-22, and P1-MW-23) using low-flow sampling techniques. Field measurements performed during the investigation will include pH, specific conductance, and temperature. Procedures and equipment for measurement of pH, specific conductance, and temperature are presented in the SAP (SAIC 1999a). The location for each well to be sampled is presented in Appendix A, Figure A-1.

### **3.2 WATER LEVEL MEASUREMENT**

A complete set of water level measurements will be collected from wells D-MW-05, D-MW-06, D-MW-07, P1-MW-01, P1-MW-02, P1-MW-03, P1-MW-17, P1-MW-18, P1-MW-19, P1-MW-21, P1-MW-22,



P1-MW-23, P1-MW-24, P1-MW-36, and P1-MW-40 prior to leaving the site. Procedures and equipment for water level measurements are presented in the SAP (SAIC 1999a).

### 3.3 SOIL BORINGS

#### *Direct-Push Sampling*

Direct-push techniques will be used to install two soil borings and will provide soil samples with a minimum amount of soil waste. Decontaminated sampling tubes measuring 2 inches outside diameter by 48 inches will be used for soil sample collection. Disposable, thin-walled plastic (acetate), open-ended tubes 1.5-inches diameter by 45 inches will be placed in the sampling tube to collect a soil sample. Soil samples will be collected continuously on 4-foot centers from the ground surface to the water table.

#### *Sample Selection for Shallow Boreholes*

One soil sample will be collected from each borehole. Sample selection will be based on the criteria below.

- In cases in which no contamination is detected by field headspace gas analysis in any of the borehole intervals, one soil sample from the 2.0-foot interval prior to encountering the water table will be selected for laboratory analysis.
- In cases in which contamination is detected by field headspace gas analysis in one or more of the borehole intervals, one soil sample from the 2.0-foot interval exhibiting the highest detected organic vapor concentration will be selected for laboratory analysis.

For the Pumphouse #1 site, the soil will be sent to an off-site analytical laboratory and analyzed for BTEX and PAHs. A summary of the number of soil and QC soil samples for the site is presented in Table 3.

Soil samples designated for BTEX analysis will be collected using Encore™ sampling devices. Three Encore™ samples will be collected from each 2.0-foot interval. The analytical methods listed in Table 3 have been revised to reflect the May 1998 changes in the state regulations regarding underground storage tanks.

## 4.0 REFERENCES

SAIC (Science Applications International Corporation)1999a. *Sampling and Analysis Plan for the Corrective Action Plan—Part A and B Investigations for Former Underground Storage Tanks at Hunter Army Airfield, Georgia, Oak Ridge, Tennessee*, January.

SAIC 1999b. *Addendum #2 to the Sampling and Analysis Plan for the Corrective Action Plan—Part A and B Investigations for Former Underground Storage Tanks at Hunter Army Airfield, Georgia, Oak Ridge, Tennessee*, April.

**Table 1. Proposed Field Activities at the Pumphouse #1 Site, Hunter Army Airfield, Georgia**

Site	Facility ID	Building	Type of Fuel	Well Sampling	Soil Borings
Pumphouse #1	9-025085	8060	JP-8	D-MW-05, D-MW-06, P1-MW-01, P1-MW-02, P1-MW-18, P1-MW-19, P1-MW-22, P1-MW-23	SB-AA, SB-AB

**Table 2. Sample Number System for the Field Activities, Hunter Army Airfield, Georgia**

Sample Identification: XX##NT	
XX = Area Designator	<u>Examples</u> AN = INV-AN (Pumphouse #1)
## = Sample Location	Sample locations will be consecutive starting from the last sample location. <u>Examples</u> AA = Soil Borehole AA 02 = Monitoring well 02
N = Sample Depth	Sample depth will be represented by a number for each laboratory sample. <u>Examples</u> 1 = First Interval 2 = Second Interval
T = Sample Type	<u>Examples</u> 1 = Soil Sample 2 = Groundwater Sample 3 = Soil Duplicate 4 = Groundwater Duplicate 5 = Rinsate Blank (Soil Equipment) 6 = Rinsate Blank (Groundwater Equipment) 7 = Soil Quality Assurance Split Sample 8 = Groundwater Quality Assurance Split Sample 9 = Surface Water Sample 0 = Sediment Sample
All trip blank samples used during the project will be consecutively identified.	

Table 3. Summary of Soil and Groundwater Samples To Be Collected during Addendum #5 Investigations, Hunter Army Airfield, Georgia

Investigation	Matrix	Analysis	Analytical Procedures	No. Field Smpls	QC Dups <sup>a</sup>	Field Rnsts <sup>b</sup>	QC Trip Blks	Total Smpls	Holding Time	Preservation Requirements	Sample Containers
Pumphouse #1	Groundwater	BTEX	EPA 8260B	16	2	1	4	23	14 days	Cool 4°C <sup>c</sup> HCl pH <2	2, 40 mL GSV
	Soil	BTEX	EPA 5035/8260B	2	0	0	0	2	48 hours	Cool 4°C	3 Encore <sup>TM</sup>
		PAH	EPA 8270	2	0	0	0	2	14/40 days	Cool 4°C	1, 8-ounce CWM

BTEX Benzene, toluene, ethylbenzene, and xylenes  
 CWM Clear, widemouth glass jar  
 EPA U.S. Environmental Protection Agency  
 GSV Glass septa vial  
 PAH Polyaromatic hydrocarbon  
 QC Quality control  
 (This table is in conformance with EM200-1-3.)

<sup>a</sup> The number of QC duplicate samples represents a 10-percent distribution between the different types of investigations to be conducted; however, the actual number of duplicates collected for each investigation type might vary slightly from the distribution presented.

<sup>b</sup> The number of QC rinseate blank samples represents a 5-percent distribution between the different types of investigations to be conducted; however, the actual number of blanks collected for each investigation type might vary slightly from the distribution presented.

<sup>c</sup> Sample containers will be filled so that no headspace is present.



**APPENDIX A**  
**SITE MAP FOR PUMPHOUSE #1**

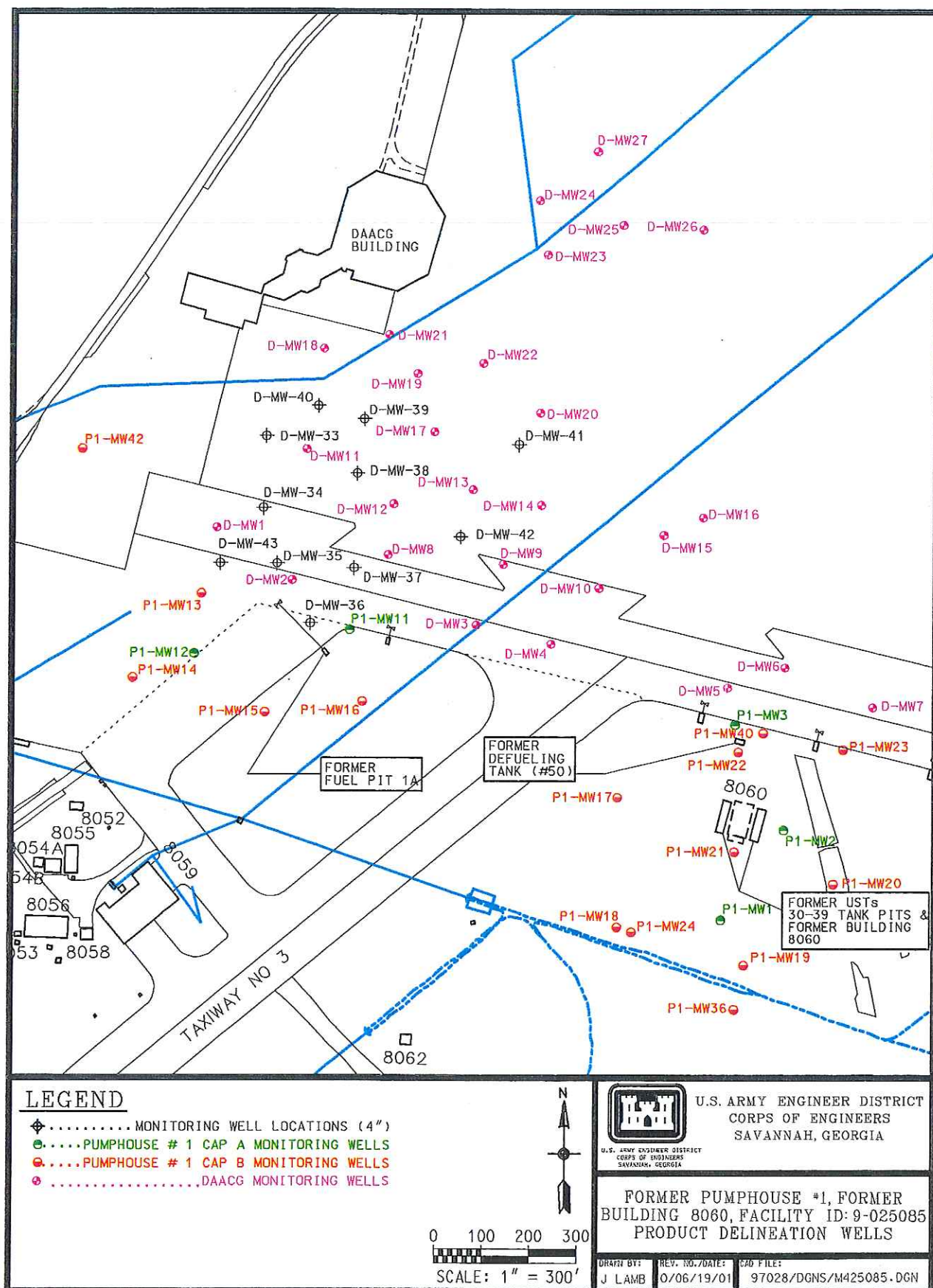


Figure A-1. Site Map for Pumphouse #1