FINAL

CORRECTIVE ACTION PLAN - PART A REPORT
FOR
UNDERGROUND STORAGE TANKS 36 & 37
FACILITY ID #9-089016
BUILDING 1510
FORT STEWART, GEORGIA

Prepared for:

U.S. Army Corps of Engineers - Savannah District
and
Fort Stewart Directorate of Public Works
Under Contract Number DACA21-95-D-0022
Delivery Order 0024

Prepared by:

Science Applications International Corporation
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37830

June 1999

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List of Abbreviations and Acronyms

ACE	Anderson Columbia Environmental, Inc.
ACL	alternate concentration limits
AMSL	above mean sea level
ARAR	applicable, relevant, and appropriate requirement
ASTM	American Society for Testing and Materials
ATL	alternate threshold level
BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
BTOC	below top of casing
CAP	Corrective Action Plan
COCs	chemicals of concern
DAF	dilution-attenation factor
DPW	Directorate of Public Works
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency

GA EPD	Georgia Environmental Protection Division
GRO	gasoline-range organics
HQ	hazard quotient
ID	inside diameter
IDW	investigation-derived waste
MCL	maximum contaminant level
MSL	mean sea level
ND	not detected
NRC	no regulatory criteria
OVA	organic vapor analyzer
OVM	organic vapor meter
PAH	polynuclear aromatic hydrocarbon
PVC	polyvinyl chloride
SAIC	Science Applications International Corporation
TPH	total petroleum hydrocarbon
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
USTMP	Underground Storage Tank Management Program

CORRECTIVE ACTION PLAN PART A

Facility Name: USTs 36 & 37, Building 1510 Street Address: McFarland Avenue and W. 8th Street

Facility ID: 9-089016 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 32° 16′ 08″ Longitude: 82° 05′ 30″

Submitted by UST Owner/Operator:
Name: Thomas C. Fry/ Environmental Branch
Company: U.S. Army/HQ 3d, Inf. Div (Mech)
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Prepared by Consultant/Contractor:
Name: Patricia A. Stoll
Company: SAIC
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City: Oak Ridge State: TN
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I. PLAN CERTIFICATION:

A. UST Owner/Operator Certification

I hereby certify that the information contained in this plan and in all the attachments is true, accurate, and the plan satisfies all criteria and requirements of rule 391-3-15-09 of the Georgia Rules for Underground Storage Tank Management.

Name: Thomas C. Fry
Signature: Thomas C. Fry Date: 07/09/99

B. Registered Professional Engineer or Professional Geologist Certification

I hereby certify that I have directed and supervised the field work and preparation of this plan, in accordance with State Rules and Regulations. As a registered professional geologist and/or professional engineer, I certify that I am a qualified groundwater professional, as defined by the Georgia State Board of Professional Geologists. All of the information and laboratory data in this plan and in all of the attachments are true, accurate, complete, and in accordance with applicable State Rules and Regulations.

Name: Patricia A. Stoll
Signature: Patricia A. Stoll
Date: 6/29/99

P. A. Stoll 6/29/99
Georgia Stamp or Seal

General: READ THE GUIDANCE DOCUMENT FOR CAP PART-A BEFORE COMPLETING THIS FORM. FAILURE TO READ THE GUIDANCE DOCUMENT WILL MOST LIKELY RESULT IN PREPARATION OF AN UNACCEPTABLE REPORT. All text, figures, and tables requested in their respective sections should be prepared strictly in accordance with the Georgia EPD CAP-A guidance document. Please fill out this form as provided. Do not change the size of the fields or alter the placement of each section on each page.
(Appendix I: All Report Figures)
(Appendix II: All Report Tables)

II. INITIAL RESPONSE REPORT

A. Initial Abatement

Were initial abatement actions initiated? YES ____ NO X
If Yes, please summarize. If No, please explain why not.

Actions were not required to abate imminent hazards and/or emergency conditions at the USTs 36 & 37 site. Therefore, contaminant migration and release prevention, fire and vapor migration, or emergency free product removal was not performed prior to, or during, the removal of USTs 36 & 37.

B. Free Product Removal

(Table 1: Summary of Free Product Removal – must include Free Product thickness in each well in which it was detected, and volume of product removed)

Free Product Detected? YES ____ NO X
If Yes, please summarize free product recovery efforts.

Continuing free product recovery proposed? YES ____ NO X
If yes, please indicate the method and frequency of removal.

C. Tank History

List current and former UST's operated at site based on owner/operator knowledge consistent with EPA 7530-1 Form). Systems must be illustrated on Figure 2 (Site Plan), as described in section D below.

CURRENT UST SYSTEMS (if applicable)

Tank ID Number	Capacity (gal)	Substance Stored	Age (yrs)	Meets 1998 Upgrade Standards (Yes/No)
N/A	N/A	N/A	N/A	N/A

FORMER UST SYSTEMS (if applicable)

Tank ID Number	Capacity (gal)	Substance Stored	Date Removed
36	25,000	diesel	9/25/95
37	6,000	gasoline	9/25/95

D. Initial Site Characterization

(Figure 1: Vicinity/Location Map)
(Figure 2: Site Plan)

1. Regulated Substance Released (gasoline, diesel, used oil, etc.): gasoline, diesel
   Discuss how this determination was made and circumstances of discovery.

   Anderson Columbia Environmental, Inc. (ACE) initiated characterization of petroleum-related contamination at the site during UST system closure activities on September 25, 1995. After removing the tanks, four soil samples were collected from the tank pit (Figure 7). Toluene, ethylbenzene, and xylenes were detected in three of the four soil samples (TK-36-S1, TK-37-S1, TK-37-S2), at concentrations below their respective soil threshold levels. Benzene was not detected in any of the four soil samples. No groundwater samples were collected during the tank removal.

2. Source(s) of Contamination: Unknown; piping leakage or tank overflow suspected
   Discuss how this determination was made.

   A detailed schematic diagram illustrating the former USTs 36 & 37 and ancillary piping as configured during operation is presented in Figure 2. No holes in the tank were reported during removal activities by ACE. Therefore, the source of contamination is believed to have been piping leakage and/or tank overflow.

   The closure activities were conducted in September 1995. A preliminary groundwater investigation of the former tank pit was conducted in September 1996. The investigation was extended to a CAP-Part A in May 1998 to include the ancillary piping. Two additional phases of the CAP-Part A investigation were conducted in November 1998 and February to determine the extent of contamination.

3. Local Water Resources

(Figure 3: Quadrangle Map – Public and Private drinking water and surface water)
(Appendix III: Water resources survey documentation, including, but not limited to: USGS database search, interview forms, and documentation of field survey)

a. *Site located in high/average* X *OR low* ____ *groundwater pollution susceptibility area?*

b. *Water Supplies within applicable radii?* YES X NO ____
If yes,

i. *Nearest public water supply located within:*	3000	*feet*
ii. *Nearest down-gradient public water supply located within:*	5900	*feet*
iii. *Nearest non-public water supply located within:*	>10,560	*feet*
iv. *Nearest down-gradient non-public water supply located within:*	>10,560	*feet*

c. *Surface Water Bodies and sewers:*

i. *Nearest surface water located within*	1900	*feet*
ii. *Nearest down-gradient surface water located within*	1900	*feet*
iii. *Nearest storm or sanitary sewer located within:*	90	*feet*
iv. *Depth to bottom of sewer at a point nearest the plume*	3.8	*feet*

4. Impacted Environmental Media

a. *Soil Impacted*
(Table 2: Soil Analysis Results)
(Figure 4: Soil Quality Map)
(Appendix IV: Soil Boring Logs)
(Appendix V: Soil Laboratory Reports)
(Appendix VI: ATL Calculations, if applicable)

Provide a brief discussion of soil sampling.

Continuous soil cores were collected at 1.5- or 2.0-foot intervals during the installation of twelve boreholes. Field headspace gas analyses were performed on each sample to determine the organic vapor concentration. Two soil samples were selected from each borehole for laboratory chemical analysis of BTEX, TPH-DRO, TPH-GRO, and PAH. In boreholes where organic vapors were detected, one sample was collected from the sample interval where the highest vapor concentration was recorded, and the other from the deepest sample interval with the lowest concentration. If organic vapors were not detected, one sample was collected from the sample interval nearest the midpoint of the boring, and the other from the sample interval located immediately above the water table. Refer to Attachment A for complete documentation of the technical approach implemented during this investigation.

i. *Soil contamination above applicable threshold levels?* YES X NO ____
If yes, indicate highest concentrations in soil along with locations and depths detected.

During the third phase of the CAP-Part A investigation in February 1999, benzene was detected in boring 16-11 at a concentration of 0.0102 mg/kg at a depth of 0.8 to 2.0 feet bgs, which is above the water table and directly below the concrete. This boring is located 50 feet southwest of the closest former dispenser island and 110 feet southwest of the former tank pit. Armored personnel carriers are parked in this area and drip pans are located under the vehicles to catch oil leaks. No other sample locations contained soil contamination above applicable soil threshold levels. This contamination may be related to motorpool operations and not the former UST and ancillary piping.

ii. *ATLs calculated?* YES ____ NO X
If yes, present ATLs.

iii. *If ATL's calculated, is soil contamination above ATL's?*
YES ____ NO ____ N/A X

b. *Groundwater Impacted*
(Table 3: Groundwater Analysis Results)
(Figure 5: Groundwater Quality Map)
(Appendix VII: Monitoring Well Details)
(Appendix VIII: Groundwater Laboratory Results)

Provide a brief discussion of groundwater sampling.

At each borehole location, except the vertical profile boring, one groundwater sample was collected from the temporary piezometer screened from ground surface to approximately 5.0 feet below the water table. At the vertical profile location (16-10), groundwater samples were collected every 5 feet below the water table until several groundwater sample intervals indicated a headspace gas measurement of zero. Chemical parameters for groundwater samples submitted for laboratory analysis included BTEX and PAH. Refer to Attachment A for complete documentation of the technical approach used to collect groundwater samples.

i. *Groundwater contamination above MCLs?* YES X NO ____
ii. *Groundwater contamination above In-Stream Water Quality Standards?*
YES X NO ____
If yes, indicate highest concentrations in groundwater along with the locations.

During the initial phase of the preliminary groundwater investigation in September 1996, groundwater contamination in the former tank pit did not exceed MCLs. In May 1998, the investigation was expanded to include the ancillary piping. Benzene was present in borings 16-03 and 16-05 at concentrations of 221J µg/L and 63 µg/L, respectively. Both of these borings were located along the ancillary piping associated with UST 36. Additional investigations were conducted in November 1998 and February 1999 in an effort to determine the horizontal and vertical extent of contamination. Benzene was present in borings 16-07 and 16-11 at concentrations of 83.3 µg/L and 5.9 µg/L, respectively.

c. *Surface Water Impacted?* YES ____ NO X
If Yes, indicate concentration(s) of surface water sample(s) taken from the surface water body/bodies impacted.

d. *Point of Withdrawal Impacted?* YES ____ NO ____ N/A X
If Yes, indicate concentration(s) of water sample(s) taken from withdrawal point(s).

5. Other Geologic/Hydrogeologic Data

a. *Depth to Groundwater (ft BTOC):* 5.4 – 7.75 *(Table 4: Groundwater Elevations)*
b. *Groundwater Flow Direction:* southwest *(Figure 6: Potentiometric Surface Map)*
c. *Hydraulic Gradient* 0.0039 ft/ft
d. *Geophysical Province:* coastal plain
e. *Unique geologic/hydrological conditions:* The Hawthorn Formation acts as a confining unit between the surficial and Floridan aquifers.

6. Corrective Action Completed or In-Progress (if applicable)
(Table 5: UST System Closure Sampling)
(Figure 7: UST System Closure Sampling)
(Appendix IX: Contaminated Soil Disposal Manifests)

a. *Underground Storage Tank (UST) System Closure:* N/A ____
If applicable, summarize UST system closure activities conducted.

ACE removed USTs 36 & 37 on September 25, 1995. The UST piping was drained into the tank, and all gasoline and diesel were subsequently removed using a vacuum truck and/or compressor-driven barrel vacuum device. A backhoe was used to excavate down to the tank top. All lines were capped except the fill and vent. After the tank atmosphere was tested with a combustible gas indicator, all accessible tank openings were capped and the tanks were lifted from the excavation pit. The ancillary piping was left in place.

b. Excavation and Treatment/Disposal of Backfill Materials and Native Soils
Check one: *No UST removal performed*
Returned to UST excavation X
Excavated soils treated or disposal off site ____
If soils were excavated, summarize excavation and treatment/disposal activities:

No contaminated soil was removed from the site; all soil was returned to the excavation.

7. Site Ranking:
Environmental Site Sensitivity Score: 2750
(Appendix X: Site Ranking Form)

8. Conclusions and Recommendations
Complete applicable section below, one section only

a. No Further Action Required (if applicable) N/A X
(provide justification)

b. Monitoring Only (if applicable) N/A X
(provide justification)

c. CAP-B (if applicable) N/A ____
(provide justification)

Benzene concentrations in groundwater exceeds the MCL of 5 µg/L and the horizontal extent of groundwater was not determined during the CAP-Part A investigation. However, the vertical extent of contamination was determined in the vertical profile boring.

III. MONITORING ONLY PLAN (if applicable): N/A X

A. Monitoring points

B. Period/Frequency of monitoring and reporting

C. Monitoring Parameters

D. Milestone Schedule

E. Scenarios for site closure or CAP-Part B

IV. SITE INVESTIGATION PLAN (if applicable): N/A _____
(Figure 8: Proposed additional boring/monitoring well location)

A. Proposed Investigation of Horizontal and Vertical Extent of Contamination In:

1. Soil N/A X

The horizontal and vertical extent of soil contamination was determined during the CAP-Part A investigation. No soil contamination above the applicable GUST soil threshold levels was observed during the CAP-Part A investigation except for one sample that was located just below the concrete and 50 feet from the former dispenser island. This contamination is believed to be associated with the motorpool operations and not the UST or ancillary piping. Contamination at the site is in the groundwater; thus, no soil sampling will be performed during the CAP-Part B investigation.

2. Groundwater

a. Free Product N/A _____

Seven monitoring wells will be installed as part of the CAP-Part B investigation. The wells will be screened across the water table with 3 to 5 feet of screen above the water table in order to detect the presence of free product. All monitoring wells will be completed flush with the ground surface.

b. Dissolved phase NA _____

One groundwater sample will be collected from each monitoring well and analyzed for BTEX and PAH.

3. Surface Water N/A X

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

A geotechnical soil sample was collected from the site during the CAP-Part A investigation and analyzed for permeability, porosity, particle size distribution, moisture content, bulk density, specific gravity, and total organic carbon (Tables V-A and C-3). Each of the groundwater samples collected will be analyzed for dissolved iron. A slug test will be performed in at least one of the monitoring wells to determine the in-situ hydraulic conductivity. This information will be utilized in the fate and transport modeling or remediation system design.

V. PUBLIC NOTICE

(Figure 9. Tax Map)
(Appendix XI: Copies of public notification letters & certified return receipts or newspaper notice if approved)

USTs 36 & 37 is located within the confines of Fort Stewart Military Reservation, a federal facility. The U.S. Government owns all of the property contiguous to the site. The Fort Stewart Directorate of Public Works (DPW) has complied with the public notice requirements defined by Georgia Environmental Protection Division (GA EPD) guidance by publishing an announcement in the *Savannah Morning News* on July 19 and 26, 1998.

VI. CLAIM FOR REIMBURSEMENT (for GUST Trust Fund sites only): N/A X

(Appendix XII: GUST Trust Fund Reimbursement Application and Claim for reimbursement)

Fort Stewart is a federally owned facility and has funded the investigation for the USTs 36 & 37, Building 1510, Facility ID #9-089016, using Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

APPENDIX I

REPORT FIGURES

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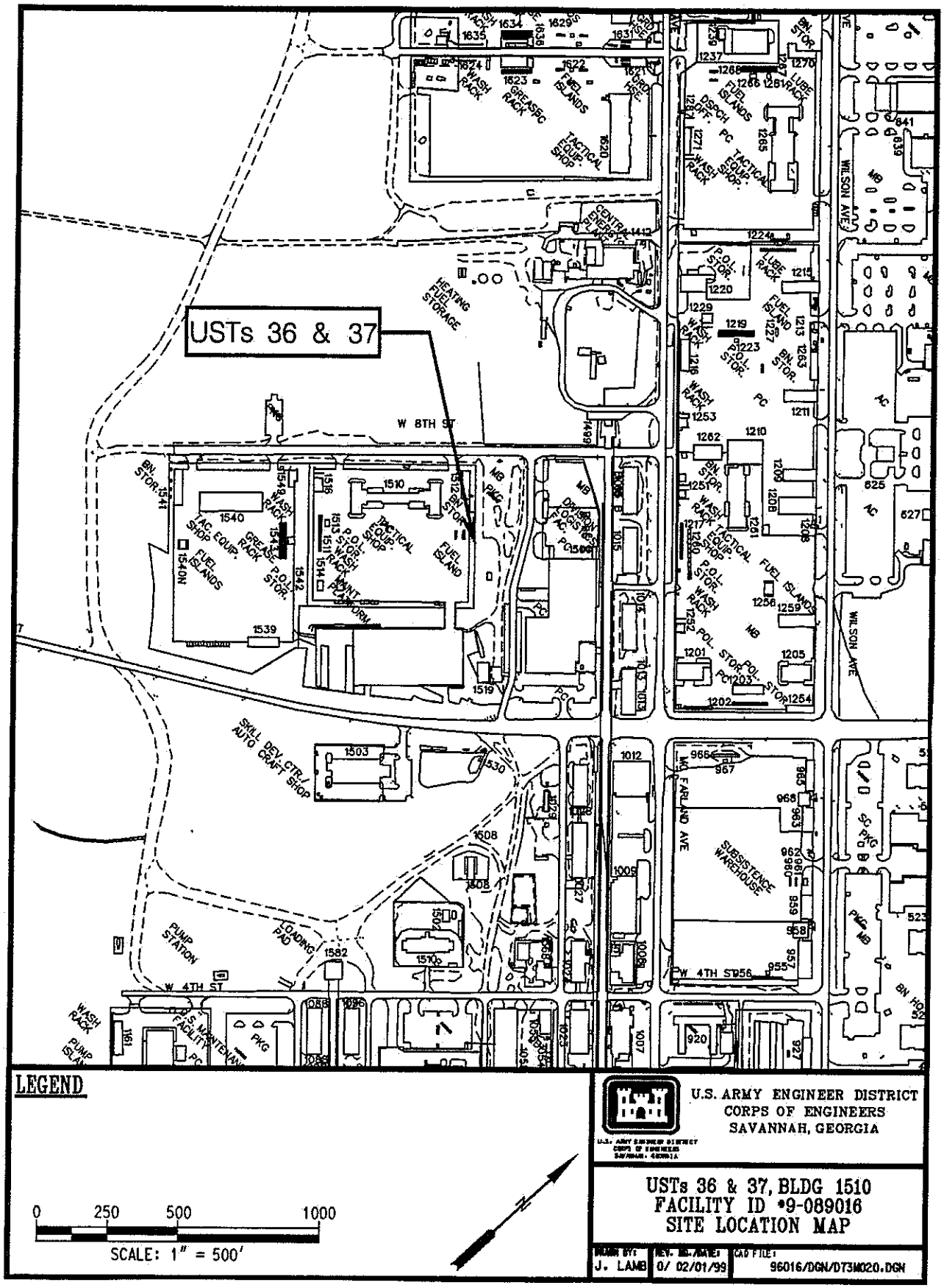

Figure 1. Location Map of USTs 36 & 37, Fort Stewart, Liberty County, Georgia

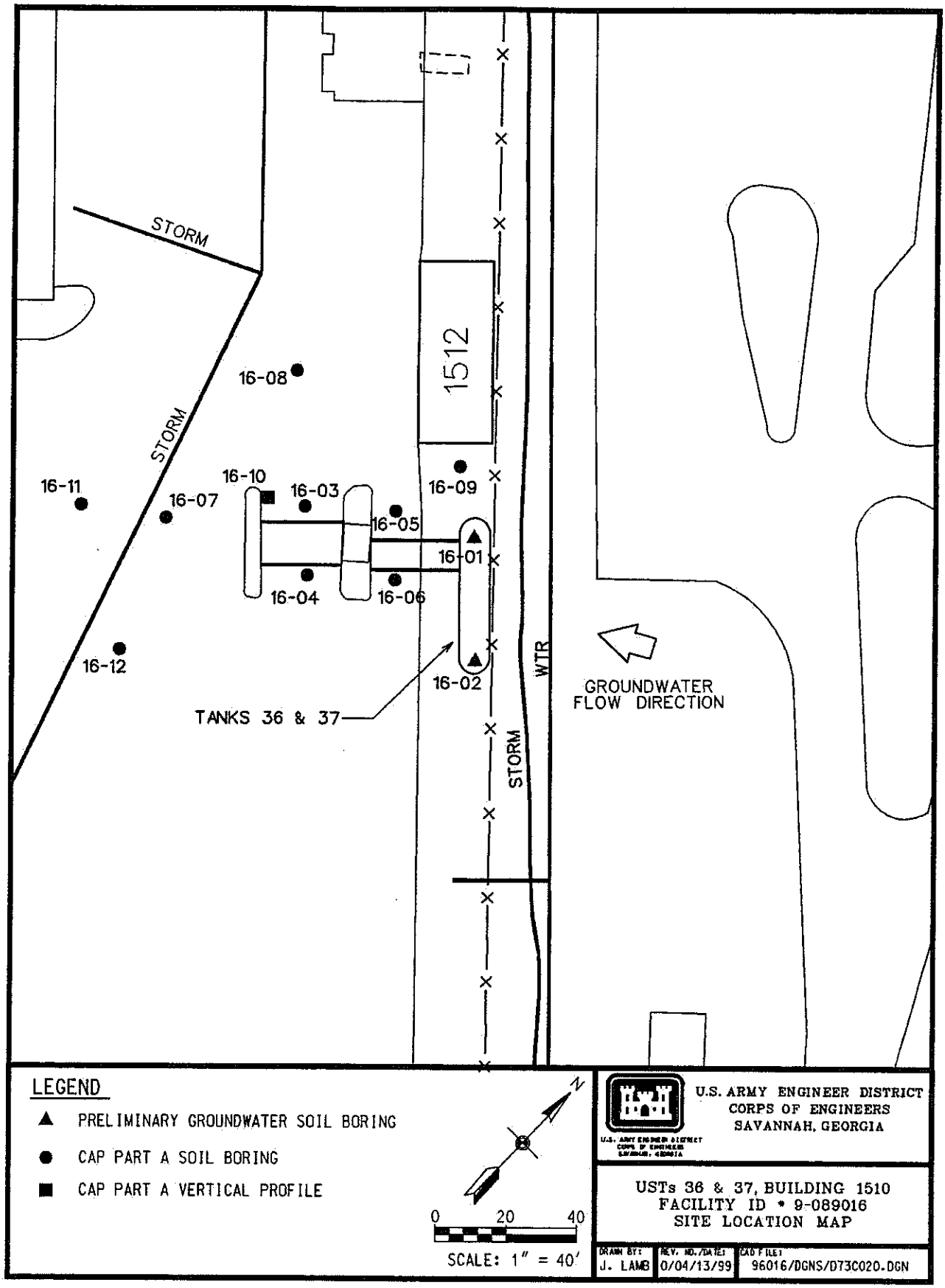

Figure 2. Site Plan for the USTs 36 & 37 Site Investigation

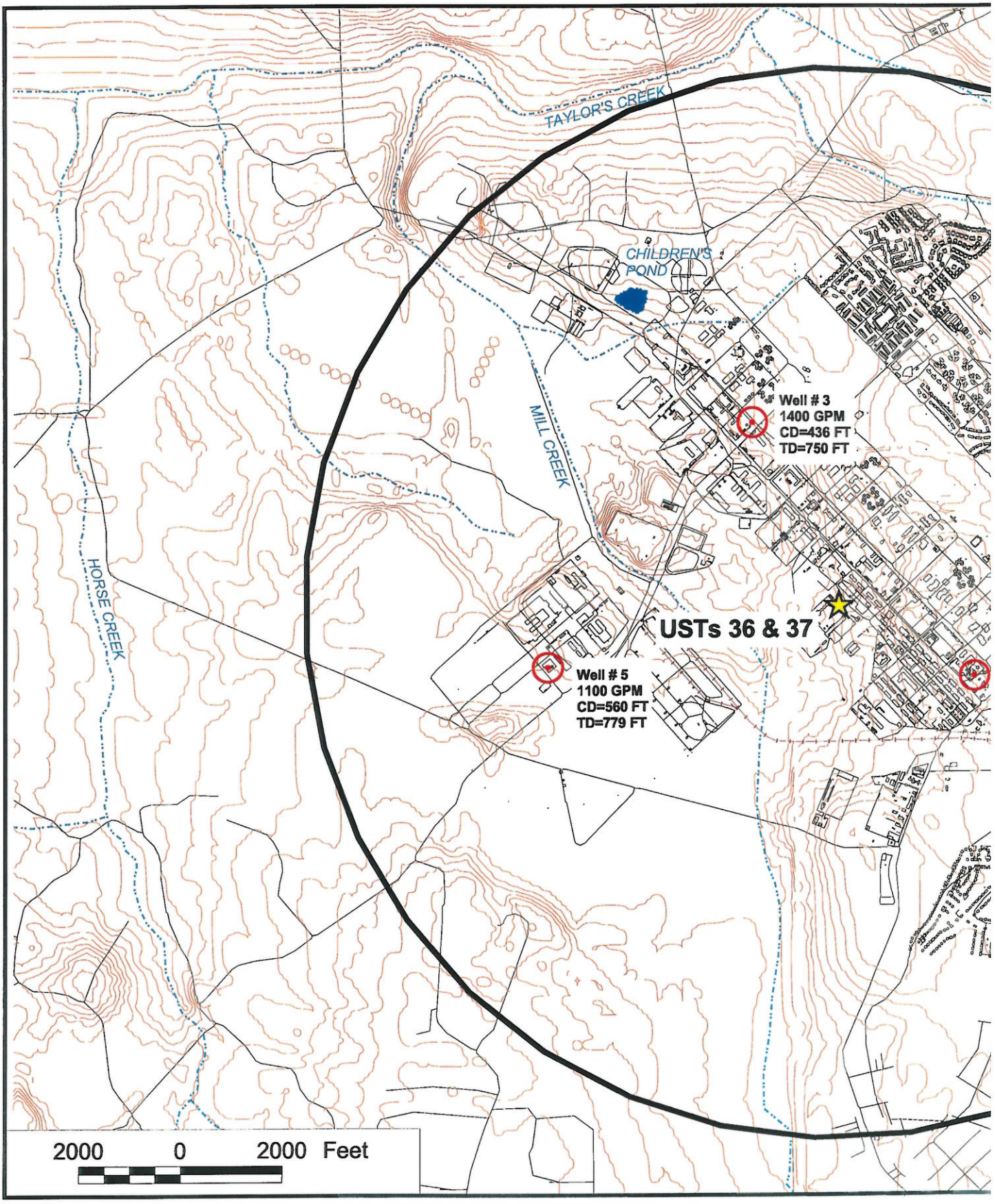

Figure 3. Map Showing Public and Private Drinking Water Source Bodies at Fort Stewart, Liberty County, Georgi

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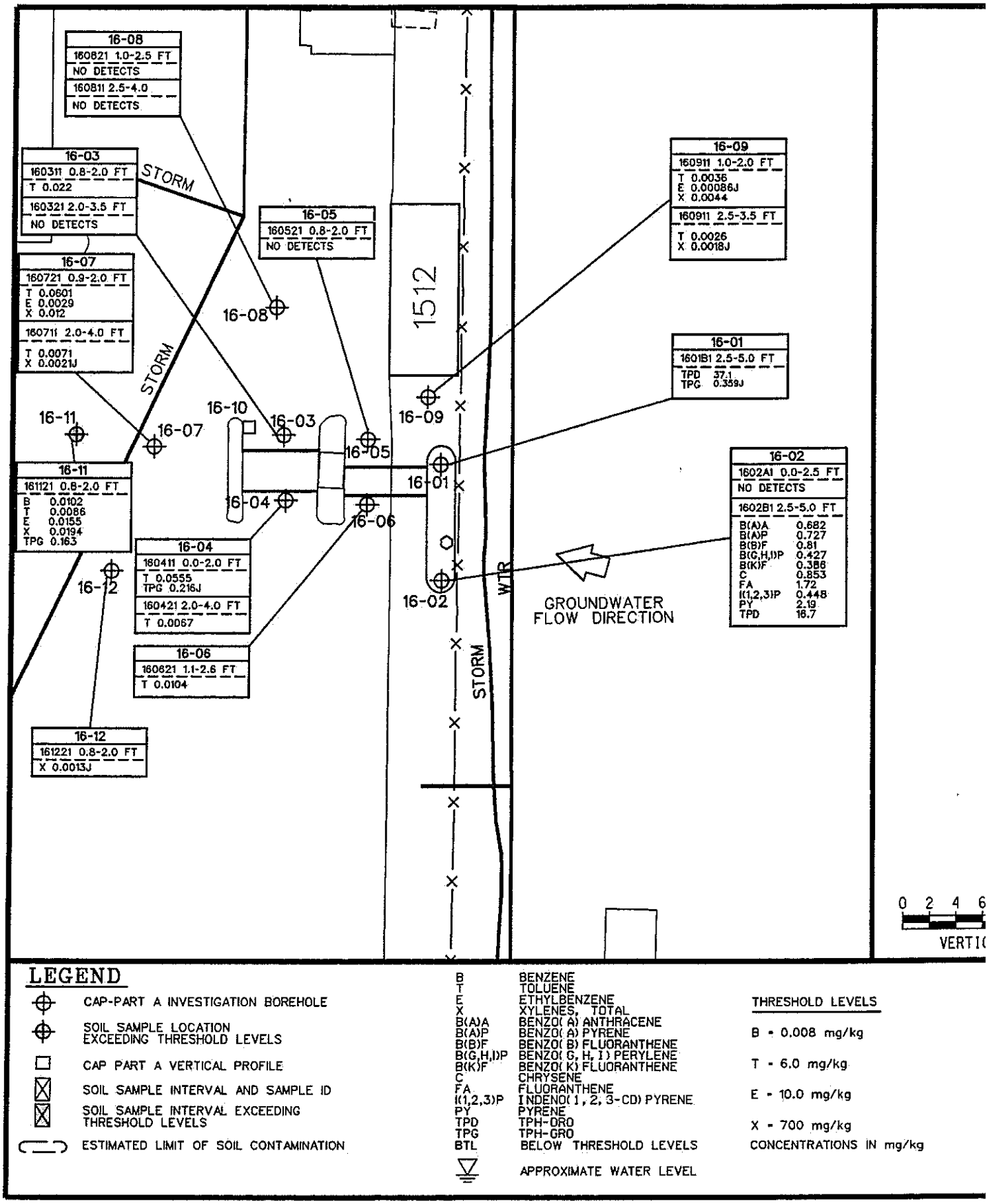

Figure 4. Soil Quali

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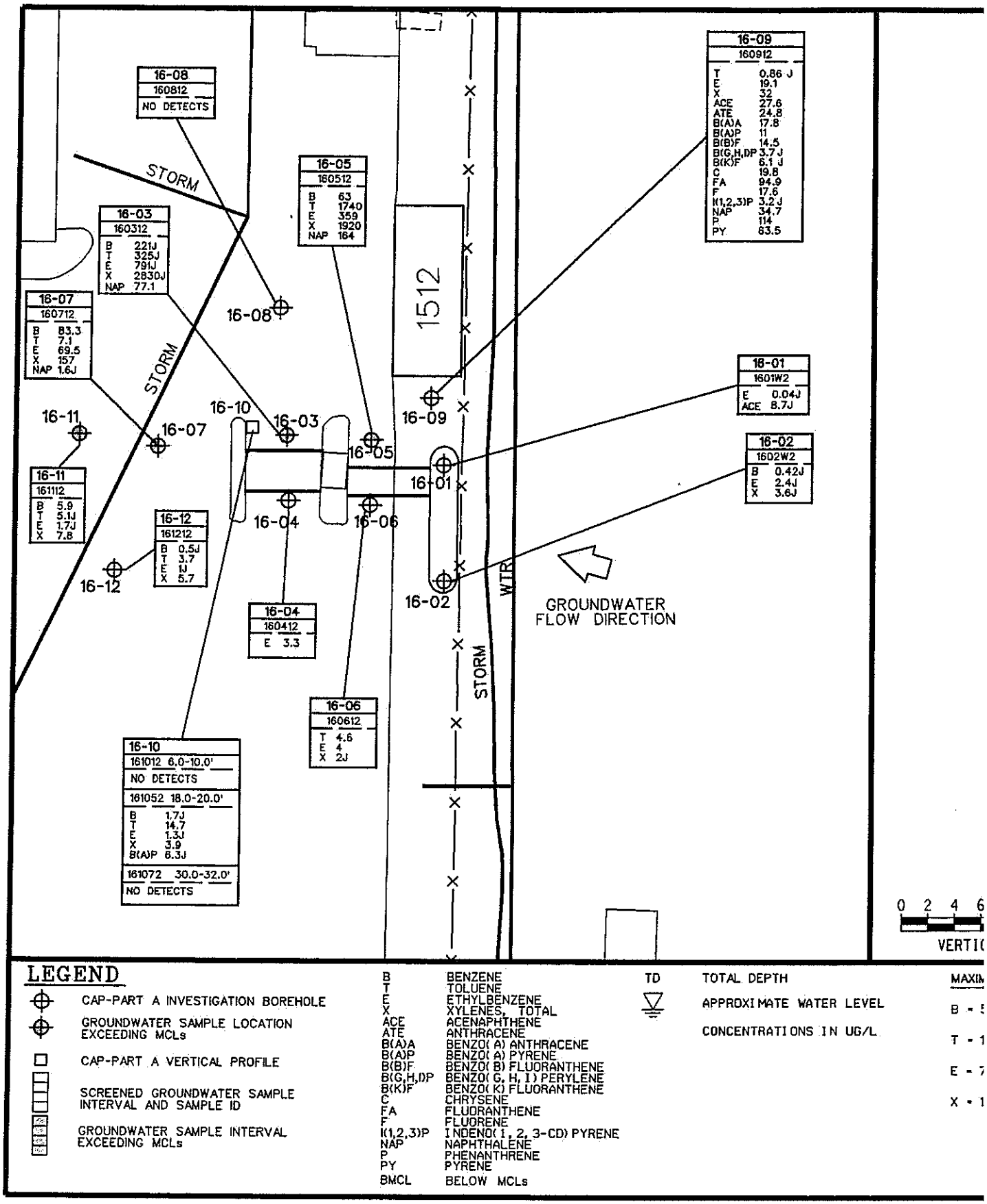

Figure 5. Groundwater Quality

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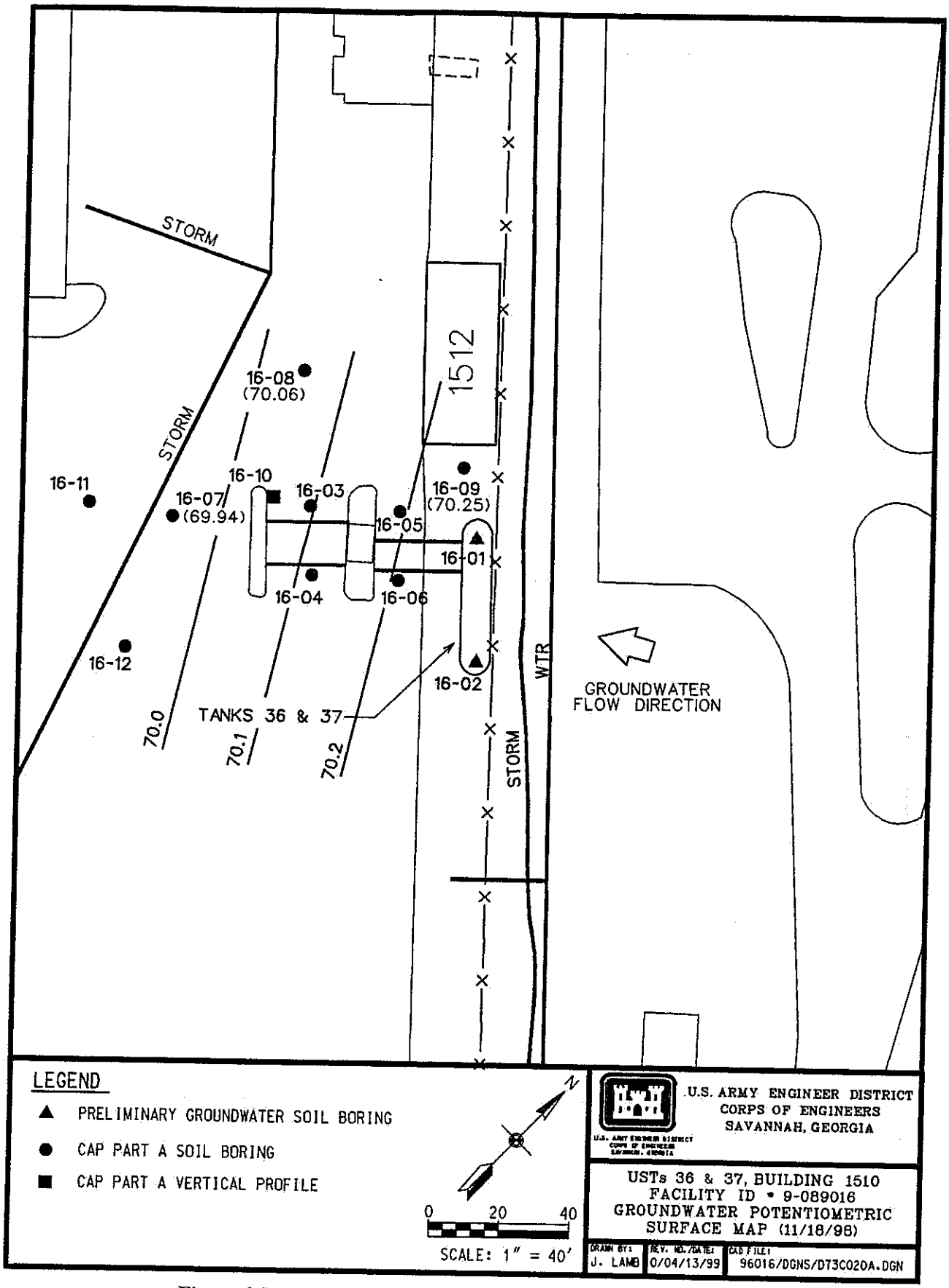

Figure 6. Potentiometric Surface Map of the USTs 36 & 37 Site

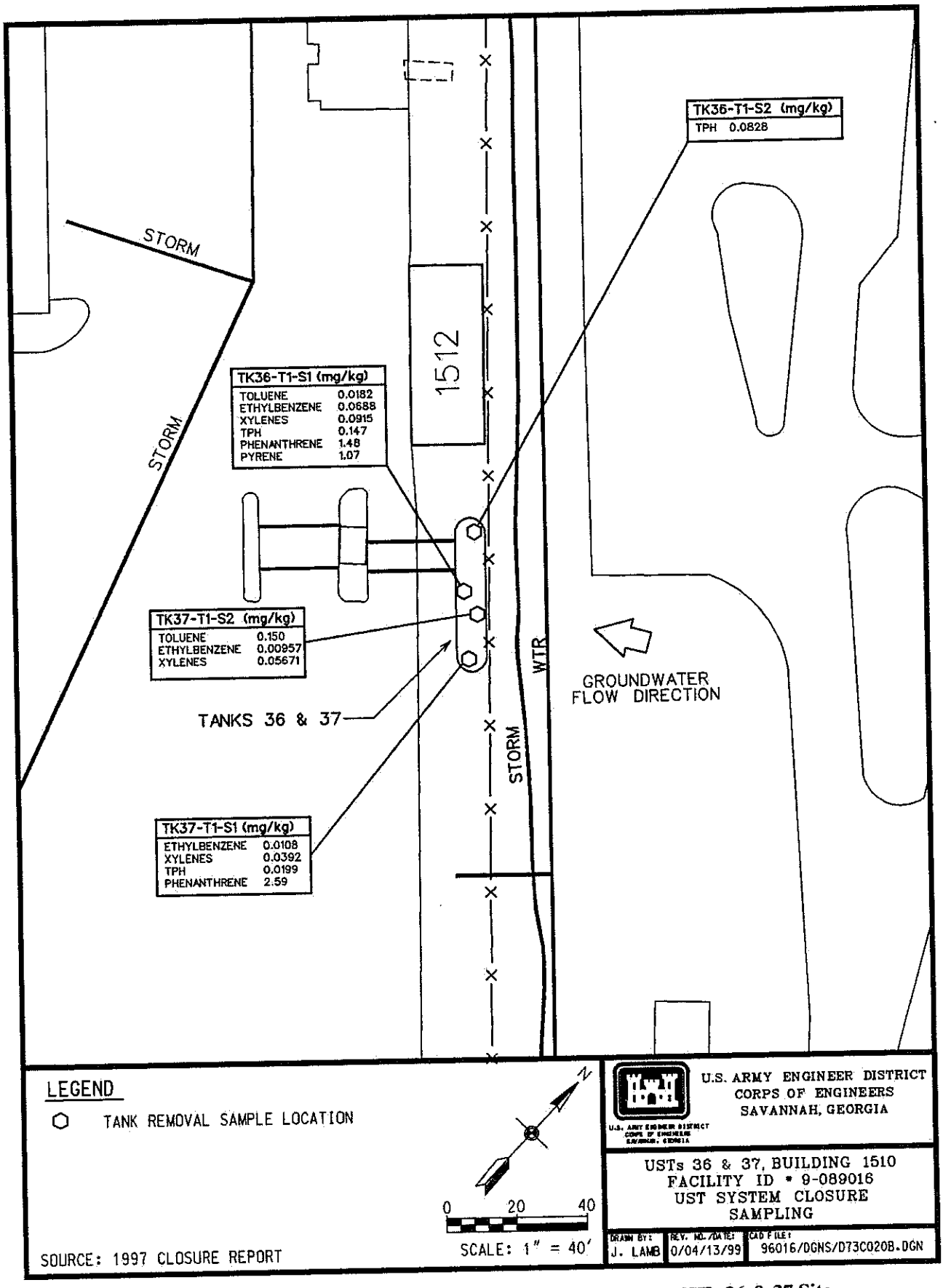

Figure 7. UST System Closure Sampling Locations at the USTs 36 & 37 Site

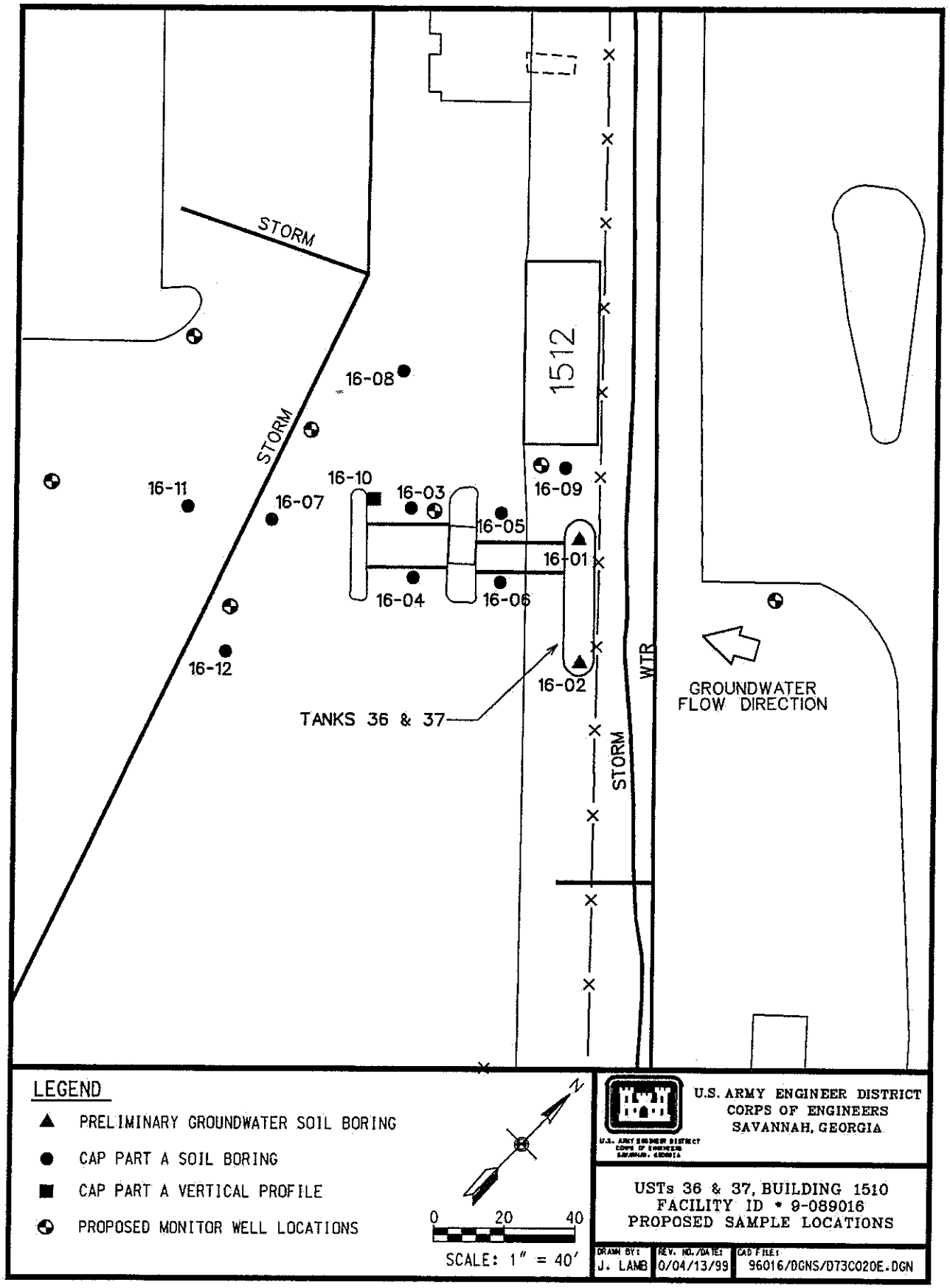

Figure 8. Proposed Additional Boring/Monitoring Well Locations

No tax map is available for Fort Stewart Military Reservation, which is a government owned facility.

Figure 9. Tax Map

APPENDIX II

REPORT TABLES

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TABLE 1: FREE PRODUCT REMOVAL

Monitoring Well Number: N/A				
Date of Measurement	Groundwater Elev. (ft AMSL)	Product Thickness (ft)	Corrected Water Elev. (ft AMSL)	Product Removed (gal)
No Free Product Detected				
			TOTAL	NONE

Monitoring Well Number: N/A				
Date of Measurement	Groundwater Elev. (ft AMSL)	Product Thickness (ft)	Corrected Water Elev. (ft AMSL)	Product Removed (gal)
No Free Product Detected				
			TOTAL	NONE

NOTE:
AMSL Above mean sea level.

TABLE 2a: SOIL ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH-DRO (mg/kg)	TPH-GRO (mg/kg)
16-01	1601B1	2.5' - 5.0'	9/6/96	0.006 U	0.006 U	0.006 U	0.006 U	ND	37.1 =	0.359 J
16-02	1602A1	0.0' - 2.5'	9/6/96	0.0053 U	0.0053 U	0.0053 U	0.0053 U	ND	0.43 U	0.106 U
16-02	1602B1	2.5' - 5.0'	9/6/96	0.0056 U	0.0056 U	0.0056 U	0.0056 U	ND	16.7 =	0.112 UJ
16-03	160311	0.8' - 2.0'	5/12/98	0.0022 U	0.022 =	0.0022 U	0.0064 U	0.022	0.3 UJ	1.08 U
16-03	160321	2.0' - 3.5'	5/12/98	0.0022 U	0.0022 U	0.0022 U	0.0067 U	ND	1.2 U	1.11 U
16-04	160411	0.0' - 2.0'	5/12/98	0.0023 U	0.0555 =	0.0023 U	0.0069 U	0.0555	1 U	0.216 J
16-04	160421	2.0' - 4.0'	5/12/98	0.0022 U	0.0067 =	0.0022 U	0.0067 U	0.0067	0.88 UJ	1.12 UJ
16-05	160521	0.8' - 2.0'	5/12/98	0.0022 U	0.0022 U	0.0022 U	0.0067 U	ND	1.5 UJ	1.12 UJ
16-06	160621	1.1' - 2.6'	5/12/98	0.0022 U	0.0104 =	0.0022 U	0.0067 U	0.0104	0.89 UJ	1.12 U
16-07	160711	2.0' - 4.0'	11/14/98	0.0023 U	0.0071 =	0.0023 U	0.0021 J	0.0092	1.3 U	0.115 U
16-07	160721	0.9' - 2.0'	11/14/98	0.0021 U	0.0601 =	0.0029 =	0.012 =	0.075	7.1 U	0.111 U
16-08	160811	2.5' - 4.0'	11/13/98	0.0024 U	0.0024 U	0.0024 U	0.0036 U	ND	0.96 U	0.119 U
16-08	160821	1.0' - 2.5'	11/13/98	0.0022 U	0.0022 U	0.0022 U	0.0032 U	ND	2.2 U	0.0538 U
16-09	160911	2.5' - 3.5'	11/13/98	0.0024 U	0.0026 =	0.0024 U	0.0018 J	0.0044	1.2 U	0.0595 UJ
16-09	160911	1.0' - 2.0'	11/13/98	0.0021 U	0.0036 =	0.00086 J	0.0044 =	0.00886	0.95 U	0.0526 U
16-11	161121	0.8' - 2.0'	2/20/99	0.0102 =	0.0086 =	0.0155 =	0.0194 =	0.0537	0.94 U	0.163 =
16-12	161221	0.8' - 2.0'	2/20/99	0.0036 U	0.0036 U	0.0036 U	0.0013 J	0.0013	0.25 U	0.112 U
Applicable Standards[1]				0.008	6	10	700	NRC	NRC	NRC

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

[1] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

BGS Below ground surface

BTEX Benzene, toluene, ethylbenzene, and xylene

ND Not detected

NRC No regulatory criteria

TPH Total petroleum hydrocarbon

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound was an estimated value.

R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

= Indicates that the compound was detected at the concentration reported.

TABLE 2b: SOIL ANALYTICAL RESULTS
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Sample ID	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)									Total PAHs (mg/kg)
				Benzo(a)anthrecene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,hi,)perylene	Benzo(k)fluoranthene	Chrysene	Flooranthene	Indeno(1,2,3-cd)pyrene	Pyrene	
16-01	1601B1	2.5' - 5.0'	9/6/96										ND
16-02	1602A1	0.0' - 2.5'	9/6/96										ND
16-02	1602B1	2.5' - 5.0'	9/6/96	0.682 =	0.727 =	0.81 =	0.427 =	0.386 =	0.853 =	1.72 =	0.448 =	2.19 =	8.243
16-03	160311	0.8' - 2.0'	5/12/98										ND
16-03	160321	2.0' - 3.5'	5/12/98										ND
16-04	160411	0.0' - 2.0'	5/12/98										ND
16-04	160421	2.0' - 4.0'	5/12/98										ND
16-05	160521	0.8' - 2.0'	5/12/98										ND
16-06	160621	1.1' - 2.6'	5/12/98										ND
16-07	160711	2.0' - 4.0'	11/14/98										ND
16-07	160721	0.9' - 2.0'	11/14/98										ND
16-08	160811	2.5' - 4.0'	11/13/98										ND
16-08	160821	1.0' - 2.5'	11/13/98										ND
16-09	160911	2.5' - 3.5'	11/13/98										ND
16-09	160911	1.0' - 2.0'	11/13/98										ND
16-11	161121	0.8' - 2.0'	2/20/99										ND
16-12	161221	0.8' - 2.0'	2/20/99										ND
Applicable Standards[1]				NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC		NRC

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

1 Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)
BGS Below ground surface
ND Not detected (refer to Appendix V, Table V-A, for complete list of PAH results)
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
= Indicates that the compound was detected at the concentration reported.

TABLE 3a: GROUNDWATER ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethyl - benzene (ug/L)	Xylenes (ug/L)	Total BTEX (ug/L)
16-01	1601W2	3.5' - 8.5'	9/6/96	5 U	5 U	0.04 J	5 U	0.04
16-02	1602W2	3.5' - 8.5'	9/6/96	0.42 J	5 U	2.4 J	3.6 J	6.42
16-03	160312	0.0' - 8.0'	5/12/98	221 J	325 J	791 J	2830 J	4167
16-04	160412	0.0' - 7.0'	5/12/98	2 U	2 U	3.3 =	6 U	33
16-05	160512	0.0' - 8.0'	5/12/98	63 =	1740 =	359 =	1920 =	4082
16-06	160612	0.0' - 8.0'	5/12/98	2 U	4.6 =	4 =	2 J	10.6
16-07	160712	0.0' - 8.0'	11/14/98	83.3 =	7.1 =	69.5 =	157 =	316.9
16-08	160812	0.0' - 8.5'	11/13/98	2 U	2 U	2 U	3 U	ND
16-09	160912	0.0' - 12.0'	11/13/98	2 U	0.86 J	19.1 =	32 =	51.96
16-10	161012	6.0' - 10.0'	11/13/98	2 U	2 U	2 U	3 U	ND
16-10	161052	18.0' - 20.0'	11/13/98	1.7 J	14.7 =	1.3 J	3.9 =	21.6
16-10	161072	30.0' - 32.0'	11/13/98	2 U	2 U	2 U	3 U	ND
16-11	161112	0.0' - 8.0'	2/20/99	5.9 =	5.1 J	1.7 J	7.8 =	20.5
16-12	161212	0.0' - 7.0'	2/20/99	0.5 J	3.7 =	1 J	5.7 =	10.9
Applicable Standards[1]				5	1000	700	10,000	NRC

NOTE:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

[1] U.S. Environmental Protection Agency maximum contaminant level
BTEX Benzene, toluene, ethylbenzene, and xylene
BGS Below ground surface
ND Not detected
NRC No regulatory criteria

Laboratory Qualifiers

U Indicates the compound was not detected at the concentration reported.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates the value for the compound is an estimated value.
= Indicates the compound was detected at the concentration reported.

TABLE 3b: GROUNDWATER ANALYTICAL RESULTS
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Sample ID	Screened Interval (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)													Total PAHs (ug/L)
				Acenaphthene	Anthracene	Benzo(a)anthrecene	Benzo(a)pyrene	Benzo(b)fluranthene	Benzo(g,h,I)perylene	Benzo(k)fluoranthene	Chrysene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	
16-01	1601W2	3.5' - 8.5'	9/6/96	8.7 J													8.7
16-02	1602W2	3.5' - 8.5'	9/6/96															ND
16-03	160312	0.0' - 8.0'	5/12/98												77.1 =			77.1
16-04	160412	0.0' - 7.0'	5/12/98															ND
16-05	160512	0.0' - 8.0'	5/12/98												164 =			164
16-06	160612	0.0' - 8.0'	5/12/98															ND
16-07	160712	0.0' - 8.0'	11/14/98												1.6 J			1.6
16-08	160812	0.0' - 8.5'	11/13/98															ND
16-09	160912	0.0' - 12.0'	11/13/98	27.6 =	24.8 =	17.8 =	11 =	14.5 =	3.7 J	6.1 J	19.8 =	94.9 =	17.6 =	3.2 J	34.7 =	114 =	63.5 =	383.8
16-10	161012	6.0' - 10.0'	11/13/98															ND
16-10	161052	18.0' - 20.0'	11/13/98				6.3 J											6.3
16-10	161072	30.0' - 32.0'	11/13/98															R
16-11	161112	0.0' - 8.0'	2/20/99															ND
16-12	161212	0.0' - 7.0'	2/20/99															ND
Applicable Standards[1]				NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	NRC	

NOTE:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

[1] U.S. Environmental Protection Agency maximum contaminant level

BGS Below ground surface

ND Not detected (refer to Appendix VIII, Table VIII-A, for complete list of PAH results)

NRC No regulatory criteria

PAH Polynuclear aromatic hydrocarbon

R Laboratory analytical data for the sample was rejected during data validiation

Laboratory Qualifiers

U Indicates the compound was not detected at the concentration reported.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates the value for the compound is an estimated value.

= Indicates the compound was detected at the concentration reported.

TABLE 4: GROUNDWATER ELEVATIONS

Well Number	Date Measured	Ground Surface Elev. (ft MSL)	Top of Casing Elev. (ft MSL)	Depth of Screened Interval (ft BGS)	Depth of Free Product (ft BTOC)	Water Depth (ft BTOC)	Product Thickness (ft)	Specific Gravity Adjustment	Corrected Groundwater Elev. (ft MSL)
16-03	5/10/98	74.53	76.82	0.0 – 8.0	N/A	5.96	N/A	N/A	70.86
16-04	5/10/98	74.39	76.40	0.0 – 7.0	N/A	5.52	N/A	N/A	70.88
16-05	5/10/98	74.68	76.47	0.0 – 8.0	N/A	5.40	N/A	N/A	71.07
16-06	5/10/98	74.61	77.57	0.0 – 8.0	N/A	6.53	N/A	N/A	71.04
16-07	11/18/98	74.41	76.33	0.0 – 8.0	N/A	6.39	N/A	N/A	69.94
16-08	11/18/98	74.41	76.59	0.0 – 8.5	N/A	6.53	N/A	N/A	70.06
16-09	11/18/98	74.71	78.00	0.0 – 12.0	N/A	7.75	N/A	N/A	70.25
16-10	Vertical profile boring, no temporary piezometer was installed								

NOTE:

MSL	Mean sea level
BGS	Below ground surface
BTOC	Below top of casing
N/A	Not applicable

TABLE 5a: UST SYSTEM CLOSURE[1] - SOIL ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)
TK-36-S1	unknown	9/27/95	0.00188 U	0.0182 =	0.0688 =	0.0915 =	0.1785	0.147 =
TK-36-S2	unknown	9/27/95	0.00127 U	0.00127 U	0.00127 U	0.00127 U	ND	0.0828 =
TK-37-S1	unknown	9/27/95	0.00133 U	0.00133 U	0.0108 =	0.0392 =	0.05	0.0199 =
TK-37-S2	unknown	9/27/95	0.00126 U	0.150 =	0.00957 =	0.05671 =	0.21628	0.0126 U
Applicable Standards[1]			0.008	6	10	700	NRC	NRC

TABLE 5b: UST SYSTEM CLOSURE[1] - SOIL ANALYTICAL RESULTS
(POLYNUCLEAR AROMATIC HYDROCARBONS)

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (mg/kg)		
			Phenanthrene	Pyrene	Total PAHs (mg/kg)
TK-36-S1	unknown	9/27/95	1.48 =	1.07 =	2.55
TK-36-S2	unknown	9/27/95			ND
TK-37-S1	unknown	9/27/95	2.59 =		2.59
TK-37-S2	unknown	9/27/95			ND
Applicable Standards[2]			NRC	NRC	NRC

NOTE:

[1] Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1995)

[2] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

BGS Below ground surface
BTEX Benzene, toluene, ethylbenzene, and xylene
ND Not detected
NRC No regulatory criteria
PAH Polynuclear aromatic hydrocarbon

Laboratory Qualifiers

U Indicates the compound was not detected at the concentration reported.
UJ Indicates that the compound was not detected above an approximated sample quantitation limit.
J Indicates the value for the compound is an estimated value.
= Indicates the compound was detected at the concentration reported.

TABLE 6a: UST SYSTEM CLOSURE[1] - GROUNDWATER ANALYTICAL RESULTS
(VOLATILE ORGANIC COMPOUNDS)

Sample Location	Depth (ft BGS)	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethyl – benzene (ug/L)	Xylenes (ug/L)	Total BTEX (ug/L)
			No groundwater samples were collected.				
Applicable Standards[2]			5	1,000	700	10,000	NRC

TABLE 6b: UST SYSTEM CLOSURE[1] - GROUNDWATER ANALYTICAL RESULTS
(POLYNUCLEAR ANALYTICAL RESULTS)

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)									Total PAHs (ug/L)
			No groundwater samples were collected.									
Applicable Standards[1]												

NOTE:

[1]	Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1995)
[2]	U.S. Environmental Protection Agency maximum contaminant levels
BGS	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylene
NRC	No regulatory criteria.
PAH	Polynuclear aromatic hydrocarbons

Laboratory Qualifiers

U	Indicates the compound was not detected at the concentration reported.
UJ	Indicates that the compound was not detected above an approximated sample quantitation limit.
J	Indicates the value for the compound is an estimated value.
=	Indicates the compound was detected at the concentration reported.

APPENDIX III

WATER RESOURCES SURVEY DOCUMENTATION

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WATER RESOURCES SURVEY DOCUMENTATION

1.0 LOCAL WATER RESOURCES

As required by the GA EPD UST CAP-Part A guidance, a water resource survey documenting information for public and non-public water supply wells, surface water bodies, underground utilities, and potential receptors was conducted for the Fort Stewart UST investigation sites. The information presented in this appendix provides the supporting documentation for Section II.D.3 of the CAP-Part A Form.

1.1 WATER SUPPLY WELL SURVEY

The water supply well survey was conducted using the following GA EPD guidelines/requirements:

- Fort Stewart is located in an area of average or higher groundwater pollution susceptibility.
- Locate all public supply wells as defined by GA EPD that exist within 2 miles of the investigation sites.
- Locate all non-public supply wells that exist within 0.5 miles of the investigation sites.
- Locate all supply wells nearest the investigation sites.
- Locate all wells downgradient of the investigation sites.

A total of seven groundwater supply wells are located within a 2-mile radius of the Fort Stewart garrison area. Six of these wells are located within the confines of the garrison area. The other well is located at Wright Army Airfield, approximately 1.2 miles northeast of the garrison area. All of the groundwater supply wells are classified as public wells that supply water to Fort Stewart for drinking and nondrinking purposes. These wells are approximately 450 feet deep and draw groundwater from the Principal Artesian (also known as the Floridan) aquifer. Chlorine and fluoride are added into the groundwater at the well heads prior to being pumped into storage tanks and/or water towers, according to Fort Stewart DPW personnel. The location of these wells, along with a 500-foot radius drawn around each well, is shown in Figure 3.

1.2 SURFACE WATER BODIES

Surface water(s) in the State of Georgia, as defined by Rules and Regulations for Water Quality Control, Chapter 391-3-6, shall mean any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs producing 100,000 gallons per day, and all other bodies of surface water, natural or artificial, lying within or forming part of the boundaries of the state, which are not entirely confined and retained completely upon the property of a single individual, partnership, or corporation. The surface water body survey was conducted using the following GA EPD guidelines/requirements:

- surface water bodies that exist within 1 mile of the investigation sites,
- all surface water bodies nearest the investigation sites if these bodies lie outside the 1-mile radius of concern,

- all surface water bodies downgradient of the investigation sites, and
- the storm and sanitary sewers adjacent to the investigation sites.

Several surface water bodies are located within a 1-mile radius of the Fort Stewart garrison area. These are shown in Figure 3 and include Mill Creek, Taylors Creek, Peacock Creek, Childpen's Pond, and two unnamed ponds. Mill Creek extends along the western side of the garrison area and flows into Taylors Creek located approximately 0.75 miles northwest of the garrison area. Taylors Creek then flows northward approximately 3.5 miles to its confluence with Canoochee Creek. Peacock Creek originates near the east corner of the garrison area and flows southward from the garrison. Mill Creek, Taylors Creek, and Peacock Creek all have natural streambeds and exhibit perennial flow.

Childpen's Pond is located at the northwest end of the garrison area. The two unnamed ponds are located at the northwest end of the facility golf course in the vicinity of Childpen's Pond. All of the ponds are isolated water bodies that are relatively small in size, measuring less than 500 feet in diameter.

Typically, surface water run-off from the UST site moves over the existing concrete and asphalt cover to the Fort Stewart storm water drainage system. Since petroleum contamination at the sites primarily impacts surficial groundwater, the surface water run-off pathway is not a viable contaminant transport mechanism because of the concrete acting as a barrier and the location of the nearest surface water body.

2.0 POTENTIAL RECEPTOR SURVEY SUMMARY OF THE USTS 36 & 37 SITE

A field potential receptor survey was conducted for the USTs 36 & 37 site in May 1998. The site and adjacent areas were surveyed for locations of surface water bodies, utility lines, and basements. Basements do not exist in the buildings adjacent to the site. Additional information, provided by DPW, was used to determine the location of the nearest public and non-public water supply wells and downgradient surface water bodies not located during the field survey.

2.1 Water Supply Wells Near the USTs 36 & 37 Site

The USTs 36 & 37 site is located approximately 3000 feet northwest (side gradient) of Well #1 and 5900 feet northeast (upgradient) of Well #5. Therefore, the USTs 36 & 37 site is classified as being located greater than 500 feet to a withdrawal point. There are no other public or non-public supply wells located downgradient of the site within a 2-mile radius.

2.2 Surface Water Bodies Near the USTs 36 & 37 Site

At the closest point to the site, Mill Creek is located approximately 1900 feet southwest (downgradient) of the site. In the direction of groundwater flow, a storm water drainage ditch is located approximately 1200 feet southwest of the site. Based on the distances between the UST and the nearest surface water body, the site is classified as being located greater than 500 feet to a downgradient surface water body.

2.3 Underground Utility Lines Near the USTs 36 & 37 Site

A storm drain is located about 40 feet southwest of boring 16-03 (i.e., area of highest contamination). The invert elevation of this line is estimated to be approximately 69.9 feet AMSL or 3.8 feet bgs, which is above the water table, thus the storm drain line is not considered a preferential pathway. In addition, there is a water line located upgradient of the former tank pit.

Science Applications International Corporation

CONTACT REPORT

INDIVIDUAL CONTACTED, TITLE: Pam Babbs	ORIGINATOR: Patty Stoll
ORGANIZATION: Fort Stewart DPW - Water Resources	DATE CONTACTED: October 10, 1998
PHONE: 912 - 767 - 2281	TIME CONTACTED: 11:00 am
ADDRESS:	CONTACT TYPE: telephone

SUBJECT: Update Supply Well Information for Fort Stewart Supply Wells for Water Resources Survey

DISCUSSION:

During a telephone conversation with Pam Babbs on October 10, 1998 the following information on the supply wells at Fort Stewart was provided.

Well No.1 1750 gpm, CD = 451 ft, TD = 816 ft
Well No.2 1400 gpm, CD = 470 ft, TD = 808 ft
Well No.3 1400 gpm, CD = 436 ft, TD = 750 ft
Well No.5 1100 gpm, CD = 560 ft, TD = 779 ft
Well No.6A 500 gpm, CD = 374 ft, TD = 472 ft
Well No.6B 500 gpm, CD = 393 ft, TD = 508 ft
Evans Well 190 gpm, CD = 404 ft, TD = 600 ft

COMMENTS, ACTIONS, DATES

Incorporate new pumping rate data into the CAP Part A and B reports being prepared for Fort Stewart.

DISTRIBUTION: Melanie Little (Fort Stewart DPW)
Central Records (SAIC)
Project File (SAIC)

Science Applications International Corporation

CONTACT REPORT

INDIVIDUAL CONTACTED, TITLE: Jeff Barnes	ORIGINATOR: Patty Stoll
ORGANIZATION: Georgia Department of Natural Resources	DATE CONTACTED: October 1, 1997
PHONE: 912 - 353 - 3225	TIME CONTACTED: 11:00 am
ADDRESS:	CONTACT TYPE: telephone

SUBJECT: Update Supply Well Information for Liberty County Supply Wells for Water Resources Survey

DISCUSSION:	COMMENTS, ACTIONS, DATES
During a telephone conversation with the Ga DNR, regarding drinking water wells in Liberty County, it was suggested I contact Mr. Jeff Barnes. After being transfered to Mr. Jeff Barnes and explaining our needs, he agreed to send a printout of the permitted drinking water systems in Liberty County. On October 17, 1997 we received the list of permitted drinking water systems in Liberty County.	Review list of permitted drinking water supply wells for proximity to Fort Stewart CAP Part A and B sites.

DISTRIBUTION: Melanie Little (Fort Stewart DPW)
Central Records (SAIC)
Project File (SAIC)

APPENDIX IV

SOIL BORING LOGS

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HTRW DRILLING LOG

HOLE NUMBER 16-01

PROJECT: Fort Stewart USTs

INSPECTOR J. King

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0–1	SAND, fine to medium grained, soft, non plastic, moist to wet, strong brown (7.5YR5/6) to brown (7.5YR4/4)	N/A			RAN 5.0', REC 2.5'
	3–4		141.2ppm		Soil Sample 1601B1	▽ WET BELOW 4.0 FT BGS
	8					PUSHED TO 8.5 FT BGS AND PULLED BACK TO 5.5 FT BGS TO EXPOSE SCREEN AND COLLET
	9					GROUND WATER SAMPLE 1601W2 INSTALLED TEMPORARY PIEZOMETER SCREENED FROM 3.5 FT TO 8.5 FT BGS

HTRW DRILLING LOG

HOLE NUMBER 16-02

PROJECT: Fort Stewart USTs | INSPECTOR J. King | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0–2	SAND, fine to medium grained, unconsolidated, very soft, nonplastic, moist, yellowish red (5 YR 4/6)	3.4 ppm		Soil Sample 1602A1	RAN 5.0, Rec 5.0
	3–5		9.1 ppm		Soil Sample 1602B1	▽ wet below 4.0 ft bgs
	6–8					PUSHED TO 8.5 FT BGS AND PULLED BACK TO 5.5 FT TO EXPOSE SCREEN AND COLLECT GROUNDWATER SAMPLE 1602W2
	9–10					INSTALLED TEMPORARY PIEZOMETER SCREENED FROM 3.5 TO 8.5 FT BGS

HTRW DRILLING LOG

HOLE NUMBER 16-03

PROJECT: Fort Stewart USTs | INSPECTOR J. K. Ledbetter | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1–2	Sandy SILT(ML), 40% fine to medium grained sand, soft, dry, Subrounded, yellowish brown (10YR5/4), mottled with brownish yellow (10YR6/6)	0.0 ppm		Soil Sample 160311	
	2–3	Silty SAND(SM), 10% silt, fine to medium grained sand, soft, dry, very pale brown (10YR7/4)	0.0 ppm		Soil Sample 160321	∇ Wet below = 3.5 FT BGS
	4–8	Silty SAND(SM), 30% silt, fine to medium grained, wet, soft, black (10YR2/1)				COLLECTED GROUNDWATER SAMPLE 160312 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 8.0 FT BGS
	8–10					PUSHED TO 8.0 FT BGS TO SET TEMPORARY PIEZOMETER SCREENED AT 0.0 TO 8.0 FT BGS

HTRW DRILLING LOG

HOLE NUMBER 16-04

PROJECT: Fort Stewart USTs | INSPECTOR H. Brown | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	Concrete				
	2	Silty SAND, fine to medium grained, soft, moist, very dark brown (10YR2/2)	2.8ppm		Soil Sample 160411	
	3	Silty SAND with clay, medium grained. soft, moist, very dark brown (10YR2/2) with light brownish gray (10YR6/2) clay	0.8ppm		Soil Sample 160421	
	4					
	5	Silty SAND, medium grained, soft, moist, very dark brown (10YR2/2)				▼ Wet below 4.5 FT BGS
		as above, wet, black (10YR2/1)	0ppm			
	6					COLLECTED GROUNDWATER SAMPLE 160412 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 7.0 FT BGS
	7					End of drilling 7.0 FT BGS Set piezometer
	8					INSTALLED TEMPORARY PIEZOMETER SCREENED FROM 0.0FT TO 7.0FT BGS.
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 16-05

PROJECT: Fort Stewart USTs

INSPECTOR J. K. Ledbetter

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	Sandy SILT (ML), 15%, fine to medium grained, subrounded, soft, dry, dark brown (10YR3/3)	10.7 ppm		Soil sample 160521	
	2					▽ wet below 2.0 ft bgs
	3					
	4	NO RECOVERY				
	5					
	6					COLLECTED GROUNDWATER SAMPLE 160512 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 8.0 FT BGS
	7					
	8					Pushed to 8.0 FT BGS to set temporary piezometer screened at 0.0 to 8.0 ft BGS
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 16-06

PROJECT: Fort Stewart USTs | INSPECTOR J. K. Ledbetter | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	1	CONCRETE				
	2	Sandy SILT (ML), 10% fine to medium grained sand, subrounded, soft, dry. (10YR 3/3), dark brown, mottled yellowish brown, (10YR 5/4)	0.0 ppm		Soil Sample 1600621	▽ wet below = 2.6 FT BGS
	3					
	4	SILT (ML), soft, wet, black (10YR 2/1)				
	5					
	6					COLLECTED GROUNDWATER SAMPLE 1600612 FROM TEMPORARY PIEZOMETER SCREENED AT 0.0 TO 8.0 FT BGS
	7					
	8					END OF DRILLING AT 8.0 FT BGS AND SET TEMPORARY PIEZOMETER
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 16-07

PROJECT: Fort Stewart USTs | INSPECTOR J. Shiflet | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	CONCRETE				
	1	silty SAND (SP), fine to coarse grained, dark brown with slightly tan mottling	14.1ppm		Soil Sample 160721	
	2					
	3		14.0ppm		Soil Sample 160711	
	4	SHELBY TUBE SAMPLE		Soil Sample 160731		▽ wet below 4.5 ft BGS
	5					
	6	NO RECOVERY				
	7					
	8					END OF DRILLING AT 8.0 FT BGS AND SET TEMPORARY PIEZOMETER
	9					COLLECTED GROUNDWATER SAMPLE 160712 FROM TEMPORARY PIEZOMETER SCREENED AT 0.0 TO 8.0 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 16-08

PROJECT: Fort Stewart USTs

INSPECTOR J. Shiflet

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0–1	CONCRETE				
	1–2	SAND (SP), fine to coarse grained, subrounded, brown to light tan	55.0 ppm		Soil sample 160821	
	2–4	Silty SAND (SM), fine to coarse grained, dark gray to black	34.7 ppm		Soil sample 160811	▽ = wet below 4.0 ft bgs
	4–8					COLLECTED GROUNDWATER SAMPLE 160812 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 8.5 FT BGS
	8–10					END OF DRILLING AT 8.5 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 16-09

PROJECT: Fort Stewart USTs

INSPECTOR J. Shiflet

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	SAND(SP), fine to coarse grained, subrounded, dry, light orange to brown				
	1		7.3 ppm		Soil sample 160921	
	2					
	3		11.3 ppm		Soil sample 160911	▽ = Wet below 3.3 ft bgs
	3	Silty SAND(SM), fine to medium grained, saturated, dark brown				
	4					
	5					
	6					
	7					COLLECTED GROUNDWATER SAMPLE 160912 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 12.0 FT BGS
	8					
	9					
	10					END OF DRILLING AT 12.0 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 16-10

PROJECT: Fort Stewart USTs | INSPECTOR K. Ledbetter | SHEET 1 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithlogic description				
	2					
	4					
	6					
	8		24.0ppm		Groundwater Sample 161012	PUSHED TO 10.0 FT BGS AND PULLED BACK TO 6.0 FT BGS TO EXPOSE SCREEN
	10					REFUSAL AT 10.0 FT BGS CAUSED BY DENSE SILT. DRILL ADJACENT HOLE WITH AUGER RIG AND POWER PUNCH
	12					
	14					
	16					
	18		0.0ppm		Groundwater Sample 161052	DRILLED TO 18.0 FT BGS. PUSHED POWER PUNCH TO 20.0 FT BGS AND PULLED BACK TO 18.0 FT TO EXPOSE SCREEN
	20					

HTRW DRILLING LOG

HOLE NUMBER 16-10

PROJECT: Fort Stewart USTs

INSPECTOR K. Ledbetter

SHEET 2 OF 2

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	22	Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithlogic description				
	24					
	26					
	28					
	30		0.0 ppm		Groundwater Sample 161072	DRILLED TO 30.0 FT BGS. PUSHED POWER PUNCH TO 32.0 FT BGS AND PULLED BACK TO 30.0 FT BGS TO EXPOSE SCREEN
	32	END OF DRILLING AT 32.0 FT				
	34					
	36					
	38					
	40					

HTRW DRILLING LOG

HOLE NUMBER 16-11

PROJECT: Fort Stewart USTs | INSPECTOR K. Ledbetter | SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
		CONCRETE				
	1	Silty SAND (SM), 20% silt, fine to medium grained, soft, dry, dark brown (10 YR 3/3)	19.5ppm		Soil Sample 161121	
	2					
		Silty SAND (SM), 10% silt, fine grained, soft to firm, dry to wet, light gray (10YR 7/2)				▽ = WET BELOW 2.3 FT BGS
	3					
	4					
	5					
	6					COLLECTED GROUNDWATER SAMPLE 161112 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 8.0 FT BGS
	7					
	8					PUSHED TO 8.0 FT BGS TO SET TEMPORARY PIEZOMETER.
	9					
	10					

HTRW DRILLING LOG

HOLE NUMBER 16-12

PROJECT: Fort Stewart USTs

INSPECTOR K. Ledbetter

SHEET 1 OF 1

ELEV. (A)	DEPTH (B)	DESCRIPTION OF MATERIALS (C)	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX	ANALYTICAL SAMPLE NO. (F)	REMARKS (G)
	0	CONCRETE				
	1	Silty SAND (SM), 25% silt, very fine grained, soft, dry, pale brown (10YR 6/3)	1.4 ppm		Soil Sample 161221	
	2	Sandy SILT (ML), 20% very fine grained sand, moist, brown (10YR 4/3)				▽ = WET BELOW 1.9 FT BGS
	3					
	4					
	5					COLLECTED GROUNDWATER SAMPLE 161212 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 7.0 FT BGS
	6					
	7					PUSH TO 7.0 FTBGS TO SET TEMPORARY PIEZOMETER
	8					
	9					
	10					

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APPENDIX V

SOIL LABORATORY REPORTS

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TABLE V-A. Summary of Soil Analytical Results

Station:	Georgia UST	16-01	16-02	16-02	16-03	16-03
Sample ID:	Soil	1601B1	1602A1	1602B1	160311	160321
Sample Interval (ft BGS):	Threshold	2.5' - 5.0'	0.0' - 2.5'	2.5' - 5.0'	0.8' - 2.0'	2.0' - 3.5'
Collection Date:	Level[1]	06-Sep-96	06-Sep-96	06-Sep-96	12-May-98	12-May-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds						
Benzene	0.008	0.006 U	0.0053 U	0.0056 U	0.0022 U	0.0022 U
Toluene	6	0.006 U	0.0053 U	0.0056 U	0.022 =	0.0022 U
Ethylbenzene	10	0.006 U	0.0053 U	0.0056 U	0.0022 U	0.0022 U
Xylenes, Total	700	0.006 U	0.0053 U	0.0056 U	0.0064 U	0.0067 U
Polynuclear Aromatic Hydrocarbons						
2-Chloronaphthalene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Acenaphthene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Acenaphthylene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Anthracene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Benzo(a)anthracene	NRC	0.394 U	0.348 U	0.682 =	0.358 U	0.370 U
Benzo(a)pyrene	NRC	0.394 U	0.348 U	0.727 =	0.358 U	0.370 U
Benzo(b)fluoranthene	NRC	0.394 U	0.348 U	0.81 =	0.358 U	0.370 U
Benzo(g,h,i)perylene	NRC	0.394 U	0.348 U	0.427 =	0.358 U	0.370 U
Benzo(k)fluoranthene	NRC	0.394 U	0.348 U	0.386 =	0.358 U	0.370 U
Chrysene	NRC	0.394 U	0.348 U	0.853 =	0.358 U	0.370 U
Dibenzo(a,h)anthracene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Fluoranthene	NRC	0.394 U	0.348 U	1.72 =	0.358 U	0.370 U
Fluorene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Indeno(1,2,3-cd)pyrene	NRC	0.394 U	0.348 U	0.448 =	0.358 U	0.370 U
Naphthalene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Phenanthrene	NRC	0.394 U	0.348 U	0.364 U	0.358 U	0.370 U
Pyrene	NRC	0.394 U	0.348 U	2.19 =	0.358 U	0.370 U
Other Analytes						
Lead	NRC					4.2 =
Total Organic Carbon	NRC					
TPH-Diesel Range Organics	NRC	37.1 =	0.43 U	16.7 =	0.3 UJ	1.2 U
TPH-Gasoline Range Organics	NRC	0.359 J	0.106 U	0.112 UJ	1.08 U	1.11 U

NOTE:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Analytical data for UST closure was submitted in the July 1997 Closure Report and is summarized in Appendix II.

Analytical data for QA/QC samples 160313 (duplicate) and 160713 (duplicate) are included in this appendix, but not summarized in this table.

Elevated PAH detection limits are a result of associated organic content such as TPH. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

[1] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

Bold values exceed soil threshold levels

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound was an estimated value.

= Indicates that the compound was detected at the concentration reported.

TABLE V-A. Summary of Soil Analytical Results (continued)

Station:	Georgia UST	16-04	16-04	16-05	16-06	16-07	16-07
Sample ID:	Soil	160411	160421	160521	160621	160711	160721
Sample Interval (ft BGS):	Threshold	0.0' - 2.0'	2.0' - 4.0'	0.8' - 2.0'	1.1' - 2.6'	2.0' - 4.0'	0.9' - 2.0'
Collection Date:	Level[1]	12-May-98	12-May-98	12-May-98	12-May-98	14-Nov-98	14-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds							
Benzene	0.008	0.0023 U	0.0022 U	0.0022 U	0.0022 U	0.0023 U	0.0021 U
Toluene	6	0.0555 =	0.0067 =	0.0022 U	0.0104 =	0.0071 =	0.0601 =
Ethylbenzene	10	0.0023 U	0.0022 U	0.0022 U	0.0022 U	0.0023 U	0.0029 =
Xylenes, Total	700	0.0069 U	0.0067 U	0.0067 U	0.0067 U	0.0021 J	0.012 =
Polynuclear Aromatic Hydrocarbons							
2-Chloronaphthalene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Acenaphthene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Acenaphthylene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Anthracene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(a)anthracene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(a)pyrene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(b)fluoranthene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(g,h,i)perylene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Benzo(k)fluoranthene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Chrysene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Dibenzo(a,h)anthracene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Fluoranthene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Fluorene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Indeno(1,2,3-cd)pyrene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Naphthalene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Phenanthrene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Pyrene	NRC	0.379 U	0.374 U	0.374 U	0.374 U	0.383 U	1.48 U
Other Analytes							
Lead	NRC		31.2 =	27.6 =	17.1 =		29.9 =
Total Organic Carbon	NRC						9310 =
TPH-Diesel Range Organics	NRC	1 U	0.88 UJ	1.5 UJ	0.89 UJ	1.3 U	7.1 U
TPH-Gasoline Range Organics	NRC	0.216 J	1.12 UJ	1.12 UJ	1.12 U	0.115 U	0.111 U

NOTE:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Analytical data for UST closure was submitted in the July 1997 Closure Report and is summarized in Appendix II.

Analytical data for QA/QC samples 160313 (duplicate) and 160713 (duplicate) are included in this appendix, but not summarized in this table.

Elevated PAH detection limits are a result of associated organic content such as TPH. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

[1] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

Bold values exceed soil threshold levels

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound was an estimated value.

= Indicates that the compound was detected at the concentration reported.

TABLE V-A. Summary of Soil Analytical Results (continued)

Station:	Georgia UST	16-08	16-08	16-09	16-09	16-11	16-12
Sample ID:	Soil	160811	160821	160911	160911	161121	161221
Sample Interval (ft BGS):	Threshold	2.5' - 4.0'	1.0' - 2.5'	2.5' - 3.5'	1.0' - 2.0'	0.8' - 2.0'	0.8' - 2.0'
Collection Date:	Level[1]	13-Nov-98	13-Nov-98	13-Nov-98	13-Nov-98	20-Feb-99	20-Feb-99
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Volatile Organic Compounds							
Benzene	0.008	0.0024 U	0.0022 U	0.0024 U	0.0021 U	**0.0102** =	0.0036 U
Toluene	6	0.0024 U	0.0022 U	0.0026 =	0.0036 =	0.0086 =	0.0036 U
Ethylbenzene	10	0.0024 U	0.0022 U	0.0024 U	0.00086 J	0.0155 =	0.0036 U
Xylenes, Total	700	0.0036 U	0.0032 U	0.0018 J	0.0044 =	0.0194 =	0.0013 J
Polynuclear Aromatic Hydrocarbons							
2-Chloronaphthalene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Acenaphthene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Acenaphthylene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Anthracene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(a)anthracene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(a)pyrene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(b)fluoranthene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(g,h,i)perylene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Benzo(k)fluoranthene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Chrysene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Dibenzo(a,h)anthracene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Fluoranthene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Fluorene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Indeno(1,2,3-cd)pyrene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Naphthalene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Phenanthrene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Pyrene	NRC	0.397 U	0.358 U	0.397 U	0.351 U	1.43 U	0.374 U
Other Analytes							
Lead	NRC		2.1 =		1.8 =	28.1 =	4.3 =
Total Organic Carbon	NRC						
TPH-Diesel Range Organics	NRC	0.96 U	2.2 U	1.2 U	0.95 U	0.94 U	0.25 U
TPH-Gasoline Range Organics	NRC	0.119 U	0.0538 U	0.0595 UJ	0.0526 U	0.163 =	0.112 U

NOTE:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Analytical data for UST closure was submitted in the July 1997 Closure Report and is summarized in Appendix II.

Analytical data for QA/QC samples 160313 (duplicate) and 160713 (duplicate) are included in this appendix, but not summarized in this table.

Elevated PAH detection limits are a result of associated organic content such as TPH. During extraction of the PAH compounds, all other organic compounds are extracted, causing a wide range of organic compounds to be present; thus, the target PAHs become small peaks in the chromatograph. As a result, the laboratory dilutes the concentrate, in turn elevating the detection limit.

[1] Georgia Department of Natural Resources Applicable Soil Threshold Levels (Table A, Column 2)

Bold values exceed soil threshold levels

NRC No regulatory criteria

Laboratory Qualifiers

U Indicates that the compound was not detected above the reported sample quantitation limit.

UJ Indicates that the compound was not detected above an approximated sample quantitation limit.

J Indicates that the value for the compound was an estimated value.

= Indicates that the compound was detected at the concentration reported.

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1D

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1601B1

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: 69087S

Matrix: (soil/water) SOIL Lab Sample ID: 9609087-08

Sample wt/vol: 5.0 (g/mL) g Lab File ID: B1Z316

% Moisture: 16 decanted: (Y/N) N Date Received: 09/08/96

Extraction: (SepF/Cont/Sonc) PURGETRAP Date Extracted:N/A

Concentrated Extract Volume: 10(ml) Date Analyzed: 09/11/96

Injection Volume: _____(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
71-43-2	Benzene	6.0	U
108-88-3	Toluene	6.0	U
100-41-4	Ethylbenzene	6.0	U
1339-20-70	Xylenes (total)	6.0	U

U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1601B1

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69087S

Matrix: (soil/water) SOIL Lab Sample ID: 9609087-08

Sample wt/vol: 30.2 (g/mL) g Lab File ID: 2L215

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: 16 decanted: (Y/N) N Date Extracted: 09/10/96

Concentrated Extract Volume: 1(mL) Date Analyzed: 09/17/96

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
91-20-3	naphthalene	394	U
91-58-7	2-chloronaphthalene	394	U
209-96-8	acenaphthylene	394	U
83-32-9	acenaphthene	394	U
86-73-7	fluorene	394	U
85-01-8	phenanthrene	394	U
120-12-7	anthracene	394	U
206-44-0	fluoranthene	394	U
129-00-0	pyrene	394	U
56-55-3	benzo(a)anthracene	394	U
218-01-9	chrysene	394	U
205-99-2	benzo(b)fluoranthene	394	U
207-08-9	benzo(k)fluoranthene	394	U
50-32-8	benzo(a)pyrene	394	U
193-39-5	indeno(1,2,3-cd)pyrene	394	U
53-70-3	dibenz(a,h)anthracene	394	U
191-24-2	benzo(g,h,i)perylene	394	U

U

FORM I SV-1 3/90

044

FORM 1
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1601B1DL1

Lab Name: GENERAL ENGINEERING LABOR Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69087S

Matrix: (soil/water) SOIL Lab Sample ID: 9609087-08

Sample wt/vol: 30.0 (g/mL) g Lab File ID: 2L20032

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: 16 decanted: (Y/N) N Date Extracted: 09/10/96

Concentrated Extract Volume: 1(mL) Date Analyzed: 09/18/96

Injection Volume: 1.0(uL) Dilution Factor: 20.0 use

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) mg/Kg	Q	
	----------Diesel Range Organics	37.1		=

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1601B1

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: 69087S

Matrix: (soil/water) SOIL Lab Sample ID: 9609087-08

Sample wt/vol: 5.0 (g/mL) g Lab File ID: A1Z316

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: not dec. 16 Date Analyzed: 09/11/96

GC Column: J&W DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
----------	Gasoline Range Organics	359	J CDS

1D

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602A1

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: 69086S

Matrix: (soil/water) SOIL Lab Sample ID: 9609086-05

Sample wt/vol: 5.0 (g/mL) g Lab File ID: B2Y112

% Moisture: 6 decanted: (Y/N) N Date Received: 09/08/96

Extraction: (SepF/Cont/Sonc) PURGETRAP Date Extracted:N/A

Concentrated Extract Volume: 10(ml) Date Analyzed: 09/09/96

Injection Volume: _____(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
71-43-2	Benzene	5.3	U
108-88-3	Toluene	5.3	U
100-41-4	Ethylbenzene	5.3	U
1330-20-7	Xylenes (total)	5.3	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602A1

Lab Name: GENERAL ENGINEERING LABS. Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69086S

Matrix: (soil/water) SOIL Lab Sample ID: 9609086-05

Sample wt/vol: 30.6 (g/mL) g Lab File ID: 1K617

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/12/96

Concentrated Extract Volume: 1(mL) Date Analyzed: 09/15/96

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
91-20-3	naphthalene	348	U
91-58-7	2-chloronaphthalene	348	U
209-96-8	acenaphthylene	348	U
83-32-9	acenaphthene	348	U
86-73-7	fluorene	348	U
85-01-8	phenanthrene	348	U
120-12-7	anthracene	348	U
206-44-0	fluoranthene	348	U
129-00-0	pyrene	348	U
56-55-3	benzo(a)anthracene	348	U
218-01-9	chrysene	348	U
205-99-2	benzo(b)fluoranthene	348	U
207-08-9	benzo(k)fluoranthene	348	U
50-32-8	benzo(a)pyrene	348	U
193-39-5	indeno(1,2,3-cd)pyrene	348	U
53-70-3	dibenz(a,h)anthracene	348	U
191-24-2	benzo(g,h,i)perylene	348	U

U

FORM 1
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602A1

Lab Name: GENERAL ENGINEERING LABOR Contract:

b Code: Case No.: SAS No.: SDG No.: 69086S

Matrix: (soil/water) SOIL Lab Sample ID: 9609086-05

Sample wt/vol: 30.3 (g/mL) g Lab File ID: 1L20012

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/11/96

Concentrated Extract Volume: 1(mL) Date Analyzed: 09/17/96

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) mg/Kg	Q	
	----------Diesel Range Organics	0.43	JB	UF01,F01

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602A1

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: 69086S

Matrix: (soil/water) SOIL Lab Sample ID: 9609086-05

Sample wt/vol: 5.0 (g/mL) g Lab File ID: A1A39

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: not dec. 6 Date Analyzed: 09/18/96

GC Column: J&W DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
	----------Gasoline Range Organics	106	U

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1D

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602B1

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: 69087S

Matrix: (soil/water) SOIL Lab Sample ID: 9609087-06

Sample wt/vol: 5.0 (g/mL) g Lab File ID: B1Z313

% Moisture: 11 decanted: (Y/N) N Date Received: 09/08/96

Extraction: (SepF/Cont/Sonc) PURGETRAP Date Extracted:N/A

Concentrated Extract Volume: 10(ml) Date Analyzed: 09/11/96

Injection Volume: _____(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
71-43-2	Benzene	5.6	U
108-88-3	Toluene	5.6	U
100-41-4	Ethylbenzene	5.6	U
1339-20-70	Xylenes (total)	5.6	U

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602B1

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69087S

Matrix: (soil/water) SOIL Lab Sample ID: 9609087-06

Sample wt/vol: 30.9 (g/mL) g Lab File ID: 2L213

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: 11 decanted: (Y/N) N Date Extracted: 09/10/96

Concentrated Extract Volume: 1(mL) Date Analyzed: 09/17/96

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
91-20-3	naphthalene	364	U
91-58-7	2-chloronaphthalene	364	U
209-96-8	acenaphthylene	364	U
83-32-9	acenaphthene	364	U
86-73-7	fluorene	364	U
85-01-8	phenanthrene	364	U
120-12-7	anthracene	364	U
206-44-0	fluoranthene	1720	
129-00-0	pyrene	2190	
56-55-3	benzo(a)anthracene	682	
218-01-9	chrysene	853	
205-99-2	benzo(b)fluoranthene	810	
207-08-9	benzo(k)fluoranthene	386	
50-32-8	benzo(a)pyrene	727	
193-39-5	indeno(1,2,3-cd)pyrene	448	
53-70-3	dibenz(a,h)anthracene	364	U
191-24-2	benzo(g,h,i)perylene	427	

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FORM 1
FID ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602B1

Lab Name: GENERAL ENGINEERING LABOR Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69087S

Matrix: (soil/water) SOIL Lab Sample ID: 9609087-06

Sample wt/vol: 30.3 (g/mL) g Lab File ID: 2L20014

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: 11 decanted: (Y/N) N Date Extracted: 09/10/96

Concentrated Extract Volume: 1(mL) Date Analyzed: 09/18/96

Injection Volume: 1.0(uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) mg/Kg	Q	
	----------Diesel Range Organics	16.7		=

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602B1

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: 69087S

Matrix: (soil/water) SOIL Lab Sample ID: 9609087-06

Sample wt/vol: 5.0 (g/mL) g Lab File ID: A1Z313

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: not dec. 11 Date Analyzed: 09/11/96

GC Column: J&W DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	
	---------- Gasoline Range Organics	112	U	U5 CD5

An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Tu. . Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GØØØ7

PROJECT NAME: Fort Stewart UST Sites

PROJECT NUMBER: 0003

PROJECT MANAGER: Chris Potter

Sampler (Signature): [signature] (Printed Name): SHARON STOLLER

LABORATORY NAME: GEL

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO:(803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX, GRO	BTEX	PAH, Lead, DRO	PAH	Lead	DRO	PAH, LEAD, TPH	PAH, TPH	PAH, D20					No. of Bottles/Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
1504B1	9/7/96	0902	SOIL	1								1					2	Ø ppm	
1507B1	9/7/96	1015	SOIL	1								1					2	Ø ppm	
1504A1	9/7/96	0900	SOIL	1		1											2	17.4 ppm	
1508A1	9/7/96	1133	SOIL	1		1											2	22.7 ppm	
1508B1	9/7/96	1137	SOIL	1								1					2	23.5 ppm	
Ø504B1	9/7/96	Ø845	SOIL		1					1							2	6.8 ppm	
Ø503B1	9/7/96	1040	SOIL		1						1						2	Ø ppm	
Ø503D1	9/7/96	1100	SOIL		1					1							2	Ø ppm	
Ø504D1	9/7/96	Ø855	SOIL		1						1						2	2.9 ppm	
1505A1	9/6/96	1109	SOIL	1								1					2	Ø ppm	
1602A1	9/6/96	1625	SOIL	1								1					2	3.4 ppm	
3904E1	9/6/96	Ø920	SOIL	1		1											2	1959 ppm	OVA readings were questionable
1502A1	9/6/96	1522	SOIL	1								1					2	1.5 ppm	

V-19

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
[signature]	9/9/96		
COMPANY NAME: SAIC	1340	COMPANY NAME:	
RECEIVED BY: Raymle Reed	Date/Time 9/8/96	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1310	COMPANY NAME:	
RELINQUISHED BY: Raymle Reed	Date/Time 9/8/96	RECEIVED BY: [signature]	Date/Time 09-09-96
COMPANY NAME: GEL	1630	COMPANY NAME: GEL	1630

TOTAL NUMBER OF CONTAINERS: 52

Cooler ID: #125

Cooler Temperature: 3°C

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: G0008

PROJECT NAME: Fort Stewart UST Sites

PROJECT NUMBER: 0003

PROJECT MANAGER: Chris Potter

Sampler (Signature): Sharon Stoller (Printed Name): SHARON STOLLER

LABORATORY NAME: GEL

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO:(803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX, GRO	BTEX	PAH, Lead, DRO	PAH	Lead	DRO	PAH, LEAD TPH	PAH, TPH	PAH, D20				No. of Bottles/Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
1502B1	9/6/96	1526	SOIL	1		1										2	17.4 ppm	
1505A3	9/6/96	1110	SOIL	1								1				2	0 ppm	
1501C1	9/6/96	0950	SOIL	1		1										2	>1999 ppm	
3904C1	9/6/96	0905	SOIL	1								1				2	1999 ppm	OVA readings were questionable
1602B1	9/6/96	1625	SOIL	1		1										2	9.1 ppm	
4001B1	9/6/96	1100	SOIL		1						1					2	29.0 ppm	
1505B3	9/6/96	1115	SOIL	1		1										2	0 ppm	
1601B1	9/6/96	1450	SOIL	1		1										2	141.2 ppm	
1506B1	9/6/96	1320	SOIL	1		1										2	0 ppm	
1501B1	9/6/96	0938	SOIL	1								1				2	0 ppm	
1505B1	9/6/96	1112	SOIL	1		1										2	0 ppm	
0201E1	9/6/96	1535	SOIL		1					1						2	68.5 ppm	
0202A1	9/6/96	1315	SOIL		1					1						2	1999 ppm	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Sharon Stoller	1310 9/8/96		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY: Raynal E Reed	Date/Time 9/8/96	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1310	COMPANY NAME:	
RELINQUISHED BY: Raynal E Reed	Date/Time 9/8/96	RECEIVED BY:	Date/Time 09.9.96
COMPANY NAME: GEL	1630	COMPANY NAME: GEL	16:30

TOTAL NUMBER OF CONTAINERS: 52

Cooler ID: #125

Cooler Temperature: 4.0°C

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-04

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J5010

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 7 Date Analyzed: 05/23/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	Benzene	2.2	U	U
108-88-3	Toluene	22.0		=
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.4	U	U

FORM I VOA

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DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 1V216

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 7 decanted: (Y/N) N Date Extracted: 05/18/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/27/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	358	U
91-58-7	2-chloronaphthalene	358	U
208-96-8	acenaphthylene	358	U
83-32-9	acenaphthene	358	U
86-73-7	fluorene	358	U
85-01-8	phenanthrene	358	U
120-12-7	anthracene	358	U
206-44-0	fluoranthene	358	U
129-00-0	pyrene	358	U
56-55-3	benzo(a)anthracene	358	U
218-01-9	chrysene	358	U
205-99-2	benzo(b)fluoranthene	358	U
207-08-9	benzo(k)fluoranthene	358	U
50-32-8	benzo(a)pyrene	358	U
193-39-5	indeno(1,2,3-cd)pyrene	358	U
53-70-3	dibenz(a,h)anthracene	358	U
191-24-2	benzo(g,h,i)perylene	358	U

FORM I SV-1

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DATA VALIDATION

FORM 1 Science Applications13-MAY-1998 SAMPLE NO.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-04

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 5C50044

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 7 decanted: (Y/N) N Date Extracted:05/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/24/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Diesel Range Organics	0.30	JB

UJ F01, F06

240

DATA VALIDATION COPY

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-04

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3J6016

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 7 Date Analyzed: 05/23/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	1080	U	U

FORM I VOA

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

160313

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4021S

Matrix: (soil/water) SOIL Lab Sample ID: 9805396-12

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J4061

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 7 Date Analyzed: 05/22/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
71-43-2	Benzene	2.2	U	U
108-88-3	Toluene	26.0		
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.4	U	U

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FORM I VOA

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

160313

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4021S

Matrix: (soil/water) SOIL Lab Sample ID: 9805396-12

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4U218

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 7 decanted: (Y/N) N Date Extracted: 05/15/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/20/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	358	U
91-58-7	2-chloronaphthalene	358	U
208-96-8	acenaphthylene	358	U
83-32-9	acenaphthene	358	U
86-73-7	fluorene	358	U
85-01-8	phenanthrene	358	U
120-12-7	anthracene	358	U
206-44-0	fluoranthene	358	U
129-00-0	pyrene	358	U
56-55-3	benzo(a)anthracene	358	U
218-01-9	chrysene	358	U
205-99-2	benzo(b)fluoranthene	358	U
207-08-9	benzo(k)fluoranthene	358	U
50-32-8	benzo(a)pyrene	358	U
193-39-5	indeno(1,2,3-cd)pyrene	358	U
53-70-3	dibenz(a,h)anthracene	358	U
191-24-2	benzo(g,h,i)perylene	358	U

Qual.

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7/22/98

FORM I SV-1

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DUPLICATE

FORM 1
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Science Applications13-MAY-1998 SAMPLE NO.

160313

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4021S

Matrix: (soil/water) SOIL Lab Sample ID: 9805396-12

Sample wt/vol: 30.1 (g/mL) G Lab File ID: 5D40040

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 7 decanted: (Y/N) N Date Extracted:05/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/29/98

Injection Volume: 1.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Diesel Range Organics	7.8	B

Qual.
= FDB

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RWM 7/22/98

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

160313

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4021S

Matrix: (soil/water) SOIL Lab Sample ID: 9805396-12

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3J4037

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 7 Date Analyzed: 05/22/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	----------Gasoline Range Organics____	1080	U

Qual.

U

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RLM 7/22/98

DATA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-20

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J707

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 10 Date Analyzed: 05/24/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	2.2	U
108-88-3	Toluene	2.2	U
100-41-4	Ethylbenzene	2.2	U
1330-20-7	Xylenes (total)	6.7	U

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FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-20

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V306

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 10 decanted: (Y/N) N Date Extracted: 05/22/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/27/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	370	U
91-58-7	2-chloronaphthalene	370	U
208-96-8	acenaphthylene	370	U
83-32-9	acenaphthene	370	U
86-73-7	fluorene	370	U
85-01-8	phenanthrene	370	U
120-12-7	anthracene	370	U
206-44-0	fluoranthene	370	U
129-00-0	pyrene	370	U
56-55-3	benzo(a)anthracene	370	U
218-01-9	chrysene	370	U
205-99-2	benzo(b)fluoranthene	370	U
207-08-9	benzo(k)fluoranthene	370	U
50-32-8	benzo(a)pyrene	370	U
193-39-5	indeno(1,2,3-cd)pyrene	370	U
53-70-3	dibenz(a,h)anthracene	370	U
191-24-2	benzo(g,h,i)perylene	370	U

FORM 1 Science Applications13-MAY-1998 SAMPLE NO.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-20

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 5C50034

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 10 decanted: (Y/N) N Date Extracted:05/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	Diesel Range Organics	1.2	JB

u F01, F06

215

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4024S

Matrix: (soil/water) SOIL Lab Sample ID: 9805400-20

Sample wt/vol: 5.0 (g/mL) G Lab File ID: AK1012

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 10 Date Analyzed: 05/25/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	----------Gasoline Range Organics____	1110	U

u

FORM I VOA

198

DATA VALIDATION COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4024S

Method Type: Total Metals

Sample ID: 9805400-20

Client ID: 160321

Contract: SAIC00598 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 5/13/98 Level: LOW

% Solids: 90.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	4.2	mg/kg			P	0.10	TJA61 Trace ICPAES	980520-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4021S

Matrix: (soil/water) SOIL Lab Sample ID: 9805396-13

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J4046

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 13 Date Analyzed: 05/22/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual.
71-43-2	Benzene	2.3	U	U
108-88-3	Toluene	55.5		=
100-41-4	Ethylbenzene	2.3	U	U
1330-20-7	Xylenes (total)	6.9	U	U

kem 7/27/98

DATA VALIDATION COPY

FORM I VOA

31

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4021S

Matrix: (soil/water) SOIL Lab Sample ID: 9805396-13

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 4U219

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 13 decanted: (Y/N) N Date Extracted: 05/15/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/20/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	379	U
91-58-7	2-chloronaphthalene	379	U
208-96-8	acenaphthylene	379	U
83-32-9	acenaphthene	379	U
86-73-7	fluorene	379	U
85-01-8	phenanthrene	379	U
120-12-7	anthracene	379	U
206-44-0	fluoranthene	379	U
129-00-0	pyrene	379	U
56-55-3	benzo(a)anthracene	379	U
218-01-9	chrysene	379	U
205-99-2	benzo(b)fluoranthene	379	U
207-08-9	benzo(k)fluoranthene	379	U
50-32-8	benzo(a)pyrene	379	U
193-39-5	indeno(1,2,3-cd)pyrene	379	U
53-70-3	dibenz(a,h)anthracene	379	U
191-24-2	benzo(g,h,i)perylene	379	U

Qual

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RLM 7/22/98

FORM 1 Science Applications13-MAY-1998 SAMPLE NO.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4021S

Matrix: (soil/water) SOIL Lab Sample ID: 9805396-13

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 5D40025

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 13 decanted: (Y/N) N Date Extracted:05/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/29/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	----------Diesel Range Organics	1.0	JB

Qual.
U-FB1, FB6

DATA VALIDATION COPY

RLM
7/22/98

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4021S

Matrix: (soil/water) SOIL Lab Sample ID: 9805396-13

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3J4023

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 13 Date Analyzed: 05/22/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	Qual
	Gasoline Range Organics	216	J	J

DATA VALIDATION COPY

Rcm 7/22/98

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-13

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J5029

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 11 Date Analyzed: 05/23/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	Benzene	2.2	U	U
108-88-3	Toluene	6.7		
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.7	U	

FORM I VOA

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DATA VALIDATION COPY

1B

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 1V407

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 11 decanted: (Y/N) N Date Extracted: 05/18/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/28/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	374	U
91-58-7	2-chloronaphthalene	374	U
208-96-8	acenaphthylene	374	U
83-32-9	acenaphthene	374	U
86-73-7	fluorene	374	U
85-01-8	phenanthrene	374	U
120-12-7	anthracene	374	U
206-44-0	fluoranthene	374	U
129-00-0	pyrene	374	U
56-55-3	benzo(a)anthracene	374	U
218-01-9	chrysene	374	U
205-99-2	benzo(b)fluoranthene	374	U
207-08-9	benzo(k)fluoranthene	374	U
50-32-8	benzo(a)pyrene	374	U
193-39-5	indeno(1,2,3-cd)pyrene	374	U
53-70-3	dibenz(a,h)anthracene	374	U
191-24-2	benzo(g,h,i)perylene	374	U

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FORM 1 Science Applications13-MAY-1998 SAMPLE NO.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-13

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 5D20013

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 11 decanted: (Y/N) N Date Extracted:05/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/27/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	0.88	JB	UJ FØ1, FØ6

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-13

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3J7012

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 11 Date Analyzed: 05/25/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	Gasoline Range Organics	1120	U

UJ GØ2

use

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4022S

Method Type: Total Metals

Sample ID: 9805398-13

Client ID: 160421

Contract: SAIC00598 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 5/13/98 Level: LOW

% Solids: 89.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	31.2	mg/kg		=	P	0.10	TJA61 Trace ICPAES	980520-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160521

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-15

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J5022

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 11 Date Analyzed: 05/23/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	2.2	U
108-88-3	Toluene	2.2	U
100-41-4	Ethylbenzene	2.2	U
1330-20-7	Xylenes (total)	6.7	U

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FORM I VOA

DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160521

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL

Lab Sample ID: 9805398-15

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: 1V409

Level: (low/med) LOW

Date Received: 05/13/98

% Moisture: 11 decanted: (Y/N) N

Date Extracted: 05/18/98

Concentrated Extract Volume: 1.00(mL)

Date Analyzed: 05/28/98

Injection Volume: 1.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	374	U
91-58-7	2-chloronaphthalene	374	U
208-96-8	acenaphthylene	374	U
83-32-9	acenaphthene	374	U
86-73-7	fluorene	374	U
85-01-8	phenanthrene	374	U
120-12-7	anthracene	374	U
206-44-0	fluoranthene	374	U
129-00-0	pyrene	374	U
56-55-3	benzo(a)anthracene	374	U
218-01-9	chrysene	374	U
205-99-2	benzo(b)fluoranthene	374	U
207-08-9	benzo(k)fluoranthene	374	U
50-32-8	benzo(a)pyrene	374	U
193-39-5	indeno(1,2,3-cd)pyrene	374	U
53-70-3	dibenz(a,h)anthracene	374	U
191-24-2	benzo(g,h,i)perylene	374	U

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FORM 1 Science Applications13-MAY-1998 SAMPLE NO.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160521

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-15

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 5D20017

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 11 decanted: (Y/N) N Date Extracted:05/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/27/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q
	Diesel Range Organics	1.5	JB

UJ F01, F06

242

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160521

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-15

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3J7014

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 11 Date Analyzed: 05/25/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	1120	U	UJ G02

use

FORM I VOA

105

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4022S

Method Type: Total Metals

Sample ID: 9805398-15

Client ID: 160521

Contract: SAIC00598 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 5/13/98 Level: LOW

% Solids: 89.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	27.6	mg/kg		=	P	0.10	TJA61 Trace ICPAES	980520-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-18

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2J5038

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 11 Date Analyzed: 05/23/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	Benzene	2.2	U	U
108-88-3	Toluene	10.4		
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.7	U	U

FORM I VOA

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DATA COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 1V412

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 11 decanted: (Y/N) N Date Extracted: 05/18/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 05/28/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	374	U
91-58-7	2-chloronaphthalene	374	U
208-96-8	acenaphthylene	374	U
83-32-9	acenaphthene	374	U
86-73-7	fluorene	374	U
85-01-8	phenanthrene	374	U
120-12-7	anthracene	374	U
206-44-0	fluoranthene	374	U
129-00-0	pyrene	374	U
56-55-3	benzo(a)anthracene	374	U
218-01-9	chrysene	374	U
205-99-2	benzo(b)fluoranthene	374	U
207-08-9	benzo(k)fluoranthene	374	U
50-32-8	benzo(a)pyrene	374	U
193-39-5	indeno(1,2,3-cd)pyrene	374	U
53-70-3	dibenz(a,h)anthracene	374	U
191-24-2	benzo(g,h,i)perylene	374	U

U

DATA VALIDATION COPY

FORM 1 Science Applications13-MAY-1998 SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-18

Sample wt/vol: 30.3 (g/mL) G Lab File ID: 5D20020

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: 11 decanted: (Y/N) N Date Extracted:05/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/28/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	0.89	JB	UJ F01, F06

243

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4022S

Matrix: (soil/water) SOIL Lab Sample ID: 9805398-18

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 3K1015

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. 11 Date Analyzed: 05/25/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	1120	U	U

FORM I VOA

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4022S

Method Type: Total Metals

Sample ID: 9805398-18

Client ID: 160621

Contract: SAIC00598 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 5/13/98 Level: LOW

% Solids: 89.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	17.1	mg/kg		—	P	0.10	TJA61 Trace ICPAES	980520-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GAB7426

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9405
PROJECT NUMBER: 01-0331-04-~~9305~~-200
PROJECT MANAGER: Patty Stoll
Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
151691	5/11/96	1703	So. 1				1	1					2
151661	5/11/96	1324					1	1					2
151681	5/11/96	1625					1	1					2
151641	5/11/96	1306					1	1					2
151621	5/11/96	950					1	1					2
160313	5/12/96	1615					1	1					2
160411	5/12/96	1635					1	1					2
710311	5/11/96	1550					1	1					2
770531	5/12/96	1444					1	1					2
770561	5/12/96	1510					1	1					2
770551	5/12/96	1502					1	1					2
770541	5/12/96	1455					1	1					2
770311	5/12/96	1640	↓				1	1					2

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory
LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417
PHONE NO: (803) 556-8171
OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/13/96 1140		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
[illegible]	5-13-96 1140		
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 52
Cooler ID: # 202
Cooler Temperature: 4°C
FEDEX NUMBER:

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

1 of 2 3

CHAIN OF CUSTODY RECORD

COC NO.: GAB027

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9905

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
710211	5/11/96	1420	Soil				1	1					2	
670211	5/11/96	1025					1	1					2	
770591	5/12/96	1554					1	1					2	
720111	5/11/96	1130					1	1					2	
110311	5/12/96	1615					1	1					2	
720221	5/11/96	1555					1	1					2	
770571	5/12/96	1515					1	1					2	
670111	5/11/96	1115					1	1					2	
770581	5/12/96	1532					1	1					2	
670113	5/11/96	1115					1	1					2	
670121	5/11/96	1115					1		1				2	
770521	5/12/96	1435					1		1				2	
720211	5/12/96	930					1		1				2	

RELINQUISHED BY: Laura Lumley	Date/Time 5/13/96	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
COMPANY NAME: SAIC	1140	COMPANY NAME:		Cooler ID: #133	FEDEX NUMBER:
RECEIVED BY: Pat Hochuli	Date/Time 5-13-96	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	1140	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: 64[illegible]

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9805

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Donna Lumley (Printed Name) Donna Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
940121	5/11/96	1650	Soil	1							1			2	
940511	5/11/96	1535		1		1					1			3	
610221	5/12/96	1450		1							1			2	
740921	5/11/96	1740		1							1			2	
610121	5/12/96	1750		1							1			2	
740511	5/12/96	1420		1							1			2	
740421	5/11/96	1900		1							1			2	
740221	5/11/96	1050		1							1			2	
740121	5/11/96	955		1							1			2	
740321	5/11/96	1625		1							1			2	
770111	5/12/96	1240					1	1						2	
160321	5/12/96	1615					1		1					2	
770321	5/12/96	1645					1					1		2	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4/0C
Donna Lumley	5/13/96				
COMPANY NAME: SAIC	1140	COMPANY NAME:		Cooler ID: #30	FEDEX NUMBER:
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	5.13.96 1140	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6013S

Matrix: (soil/water) SOIL Lab Sample ID: 9811523-04

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8K115

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: not dec. 13 Date Analyzed: 11/23/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	benzene	2.3	U	U
108-88-3	toluene	7.1		=
100-41-4	ethylbenzene	2.3	U	U
1330-20-7	xylenes (total)	2.1	J	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6013S

Matrix: (soil/water) SOIL Lab Sample ID: 9811523-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5V217

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: 13 decanted: (Y/N) N Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/24/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	383	U
91-58-7	2-chloronaphthalene	383	U
208-96-8	acenaphthylene	383	U
83-32-9	acenaphthene	383	U
86-73-7	fluorene	383	U
85-01-8	phenanthrene	383	U
120-12-7	anthracene	383	U
206-44-0	fluoranthene	383	U
129-00-0	pyrene	383	U
56-55-3	benzo(a)anthracene	383	U
218-01-9	chrysene	383	U
205-99-2	benzo(b)fluoranthene	383	U
207-08-9	benzo(k)fluoranthene	383	U
50-32-8	benzo(a)pyrene	383	U
193-39-5	indeno(1,2,3-cd)pyrene	383	U
53-70-3	dibenz(a,h)anthracene	383	U
191-24-2	benzo(g,h,i)perylene	383	U

U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6013S

Matrix: (soil/water) SOIL Lab Sample ID: 9811523-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21C4010

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: 13 decanted: (Y/N) N Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/19/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	1.3	JB	U F01, F06

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160711

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6013S

Matrix: (soil/water) SOIL Lab Sample ID: 9811523-04

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K3014

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: not dec. 13 Date Analyzed: 11/25/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 2.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	115	U	U

FORM I VOA

DUPLICATE

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160713

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6013S

Matrix: (soil/water) SOIL Lab Sample ID: 9811523-09

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8K120

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: not dec. 8 Date Analyzed: 11/23/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	benzene	2.2	U	U = 5
108-88-3	toluene	34.7		
100-41-4	ethylbenzene	1.0	J	
1330-20-7	xylenes (total)	4.1		

FORM I VOA OLM03.0

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DUPLICATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160713

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6013S

Matrix: (soil/water) SOIL Lab Sample ID: 9811523-09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5V222

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: 8 decanted: (Y/N) N Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/24/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	362	U
91-58-7	2-chloronaphthalene	362	U
208-96-8	acenaphthylene	362	U
83-32-9	acenaphthene	362	U
86-73-7	fluorene	362	U
85-01-8	phenanthrene	362	U
120-12-7	anthracene	362	U
206-44-0	fluoranthene	362	U
129-00-0	pyrene	362	U
56-55-3	benzo(a)anthracene	362	U
218-01-9	chrysene	362	U
205-99-2	benzo(b)fluoranthene	362	U
207-08-9	benzo(k)fluoranthene	362	U
50-32-8	benzo(a)pyrene	362	U
193-39-5	indeno(1,2,3-cd)pyrene	362	U
53-70-3	dibenz(a,h)anthracene	362	U
191-24-2	benzo(g,h,i)perylene	362	U

U

DUPLICATE

FORM 1 Science Applications16-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160713

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6013S

Matrix: (soil/water) SOIL Lab Sample ID: 9811523-09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21C4060

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: 8 decanted: (Y/N) N Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

Injection Volume: 1.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	8.6	B	U F01, F07

8.6 ÷ 2 = 4.3

FORM I SV

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DUPLICATE

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160713

DATA VALIDATION

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6013S

Matrix: (soil/water) SOIL Lab Sample ID: 9811523-09

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K3019

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: not dec. 8 Date Analyzed: 11/25/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 2.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	109	U	UJ GD2

USP

FORM I VOA

245

DATA VALIDATION COPY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
160721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6014S

Matrix: (soil/water) SOIL Lab Sample ID: 9811525-05

Sample wt/vol: 5.2 (g/mL) G Lab File ID: 8K238

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: not dec. 10 Date Analyzed: 11/25/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	benzene	2.1	U	U
108-88-3	toluene	60.1		=
100-41-4	ethylbenzene	2.9		=
1330-20-7	xylenes (total)	12.0		=

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6014S

Matrix: (soil/water) SOIL Lab Sample ID: 9811525-05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 5W103

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: 10 decanted: (Y/N) N Date Extracted: 11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/30/98

Injection Volume: 1.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	1480	U
91-58-7	2-chloronaphthalene	1480	U
208-96-8	acenaphthylene	1480	U
83-32-9	acenaphthene	1480	U
86-73-7	fluorene	1480	U
85-01-8	phenanthrene	1480	U
120-12-7	anthracene	1480	U
206-44-0	fluoranthene	1480	U
129-00-0	pyrene	1480	U
56-55-3	benzo(a)anthracene	1480	U
218-01-9	chrysene	1480	U
205-99-2	benzo(b)fluoranthene	1480	U
207-08-9	benzo(k)fluoranthene	1480	U
50-32-8	benzo(a)pyrene	1480	U
193-39-5	indeno(1,2,3-cd)pyrene	1480	U
53-70-3	dibenz(a,h)anthracene	1480	U
191-24-2	benzo(g,h,i)perylene	1480	U

U

DATA VALIDATION COPY

FORM 1 Science Applications16-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6014S

Matrix: (soil/water) SOIL Lab Sample ID: 9811525-05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 21C4042

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: 10 decanted: (Y/N) N Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics_____	7.1	B	U F01, F07

FORM I SV

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DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160721

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6014S

Matrix: (soil/water) SOIL Lab Sample ID: 9811525-05

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K5032

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: not dec. 10 Date Analyzed: 11/28/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 2.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	111	U	U

FORM I VOA

Form 1: Inorganic Analyses Data Sheet

DATA VALIDATION COPY

SDG No.: FS6014S

Method Type: Total Metals

Sample ID: 9811525-05

Client ID: 160721

Contract: SAIC01498 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 11/16/98 Level: LOW

% Solids: 90.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	29.9	mg/kg		=	P	0.16	TJA61 Trace2 ICPAES	981201-2

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION COPY

Client: Science Applications International Corp.
P.O. Box 2502
800 Oak Ridge Turnpike
Oak Ridge, Tennessee 37831
Contact: Ms. Lorene Rollins
Project Description: CAP-Part A for UST Sites

cc: SAIC01498

Report Date: December 01, 1998

Sample ID	: 160721
Lab ID	: 9811525-05
Matrix	: Soil
Date Collected	: 11/14/98
Date Received	: 11/16/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
TOTAL ORGANIC CARBON (TOC)		9310	= FD3	24.1	100	mg/kg	1.0	LS	11/30/98	1634	136819	1

M = Method	Method-Description
M 1	SW846 9060 Modified

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis at (843) 769-7391.

Reviewed By

DATA VALIDATION

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-04

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J524

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. 16 Date Analyzed: 11/20/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	benzene	2.4	U	U
108-88-3	toluene	2.4	U	
100-41-4	ethylbenzene	2.4	U	
1330-20-7	xylenes (total)	3.6	U	

1B

DATA VALIDATION COPY

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V112

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: 16 decanted: (Y/N) N Date Extracted: 11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	397	U
91-58-7	2-chloronaphthalene	397	U
208-96-8	acenaphthylene	397	U
83-32-9	acenaphthene	397	U
86-73-7	fluorene	397	U
85-01-8	phenanthrene	397	U
120-12-7	anthracene	397	U
206-44-0	fluoranthene	397	U
129-00-0	pyrene	397	U
56-55-3	benzo(a)anthracene	397	U
218-01-9	chrysene	397	U
205-99-2	benzo(b)fluoranthene	397	U
207-08-9	benzo(k)fluoranthene	397	U
50-32-8	benzo(a)pyrene	397	U
193-39-5	indeno(1,2,3-cd)pyrene	397	U
53-70-3	dibenz(a,h)anthracene	397	U
191-24-2	benzo(g,h,i)perylene	397	U

U

DATA VALIDATION COPY

FORM 1 Science Applications14-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 11D1026

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: 16 decanted: (Y/N) N Date Extracted:11/20/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	0.96	JB	U F01, F06

FORM I SV

DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-04

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K2015

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. 16 Date Analyzed: 11/24/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 2.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	119	U	U

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DATA VALIDATION COPY

EPA SAMPLE NO.

160821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-02

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J522

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. 7 Date Analyzed: 11/20/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	benzene	2.2	U
108-88-3	toluene	2.2	U
100-41-4	ethylbenzene	2.2	U
1330-20-7	xylenes (total)	3.2	U

U

DATA VALIDATED COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V110

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: 7 decanted: (Y/N) N Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	358	U
91-58-7	2-chloronaphthalene	358	U
208-96-8	acenaphthylene	358	U
83-32-9	acenaphthene	358	U
86-73-7	fluorene	358	U
85-01-8	phenanthrene	358	U
120-12-7	anthracene	358	U
206-44-0	fluoranthene	358	U
129-00-0	pyrene	358	U
56-55-3	benzo(a)anthracene	358	U
218-01-9	chrysene	358	U
205-99-2	benzo(b)fluoranthene	358	U
207-08-9	benzo(k)fluoranthene	358	U
50-32-8	benzo(a)pyrene	358	U
193-39-5	indeno(1,2,3-cd)pyrene	358	U
53-70-3	dibenz(a,h)anthracene	358	U
191-24-2	benzo(g,h,i)perylene	358	U

U

DATA VALIDATION COPY

FORM 1 Science Applications14-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 11D1022

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: 7 decanted: (Y/N) N Date Extracted:11/20/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	2.2	B	U FD1, FD7

FORM I SV

255

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-02

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K1029

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. 7 Date Analyzed: 11/23/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	53.8	U	U

FORM I VOA

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6008S

Method Type: Total Metals

Sample ID: 9811477-02

Client ID: 160821

Contract: SAIC01498 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 11/14/98 Level: LOW

% Solids: 93.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.1	mg/kg	=		P	0.16	TJA61 Trace ICPAES	981124-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-03

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J604

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. 16 Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	benzene	2.4	U
108-88-3	toluene	2.6	
100-41-4	ethylbenzene	2.4	U
1330-20-7	xylenes (total)	1.8	J

U = U
J = J

DATA VALIDATION COPY

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V111

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: 16 decanted: (Y/N) N Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	397	U
91-58-7	2-chloronaphthalene	397	U
208-96-8	acenaphthylene	397	U
83-32-9	acenaphthene	397	U
86-73-7	fluorene	397	U
85-01-8	phenanthrene	397	U
120-12-7	anthracene	397	U
206-44-0	fluoranthene	397	U
129-00-0	pyrene	397	U
56-55-3	benzo(a)anthracene	397	U
218-01-9	chrysene	397	U
205-99-2	benzo(b)fluoranthene	397	U
207-08-9	benzo(k)fluoranthene	397	U
50-32-8	benzo(a)pyrene	397	U
193-39-5	indeno(1,2,3-cd)pyrene	397	U
53-70-3	dibenz(a,h)anthracene	397	U
191-24-2	benzo(g,h,i)perylene	397	U

U

DATA VALIDATION COPY

FORM 1 Science Applications14-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-03

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 11D1025

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: 16 decanted: (Y/N) N Date Extracted:11/20/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics_____	1.2	JB	U F01, F06

FORM I SV

256

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-03

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K1031

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. 16 Date Analyzed: 11/23/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics_____	59.5	U	UJ GD2

USE

FORM I VOA

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-01

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J521

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. 5 Date Analyzed: 11/20/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	benzene	2.1	U
108-88-3	toluene	3.6	
100-41-4	ethylbenzene	0.86	J
1330-20-7	xylenes (total)	4.4	

FORM I VOA OLM03.0

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DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V109

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: 5 decanted: (Y/N) N Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	351	U
91-58-7	2-chloronaphthalene	351	U
208-96-8	acenaphthylene	351	U
83-32-9	acenaphthene	351	U
86-73-7	fluorene	351	U
85-01-8	phenanthrene	351	U
120-12-7	anthracene	351	U
206-44-0	fluoranthene	351	U
129-00-0	pyrene	351	U
56-55-3	benzo(a)anthracene	351	U
218-01-9	chrysene	351	U
205-99-2	benzo(b)fluoranthene	351	U
207-08-9	benzo(k)fluoranthene	351	U
50-32-8	benzo(a)pyrene	351	U
193-39-5	indeno(1,2,3-cd)pyrene	351	U
53-70-3	dibenz(a,h)anthracene	351	U
191-24-2	benzo(g,h,i)perylene	351	U

U

FORM 1 Science Applications14-NOV-1998 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

160921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 11D1021

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: 5 decanted: (Y/N) N Date Extracted:11/20/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	0.95	JB	U F01, F0L

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6008S

Matrix: (soil/water) SOIL Lab Sample ID: 9811477-01

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 1K1028

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. 5 Date Analyzed: 11/23/98

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	52.6	U	U

FORM I VOA

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DATA VALIDATION COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6008S

Method Type: Total Metals

Sample ID: 9811477-01

Client ID: 160921

Contract: SAIC01498 Lab Code: GEL Case No.: SAS No.: -

Matrix: SOIL Date Received: 11/14/98 Level: LOW

% Solids: 95.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	1.8	mg/kg	=		P	0.15	TJA61 Trace ICPAES	981124-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1 of 3

CHAIN OF CUSTODY RECORD

COC NO.: GA010

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
160921	11/13/98	1600	Soil			1			1				2	9811477-01
160821	11/13/98	1500				1			1				2	-02
160911	11/13/98	1600				1	1						2	-03
160811	11/13/98	1500				1	1						2	-04
800613	11/13/98	1615		1				1					2	-05
800711	11/13/98	1215		1				1					2	-06
840611	11/13/98	915		1				1					2	-07
840811	11/13/98	1030		1				1					2	-08
800611	11/13/98	1615		1				1					2	-09
860711	11/13/98	1745		1				1					2	-10
840621	11/13/98	915		1				1					2	-11
800721	11/13/98	1215		1				1					2	-12
840421	11/13/98	1030		1				1					2	-13

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/14/98	[illegible]	11/14/98
COMPANY NAME: SAIC	1105	COMPANY NAME: Fed Ex	1330
RECEIVED BY: Carol Sandel	Date/Time 11/14/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: General Engineering	1105	COMPANY NAME:	
RELINQUISHED BY: Carol Sandel	Date/Time 11/14/98	RECEIVED BY:	Date/Time
COMPANY NAME: General Engineering	1330	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #712

Cooler Temperature:

FEDEX NUMBER:

NOTE: COOLER RECEIPT CHECKLIST INDICATES A COOLER TEMPERATURE OF 3°-5°C UPON ARRIVAL AT THE LABORATORY.

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

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1 of 2

CHAIN OF CUSTODY RECORD 981152J

COC NO.: GA015

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

REQUESTED PARAMETERS

	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
01	670511	11/15/96	1530	Soi			1	1						2
02	670411	11/15/96	1730				1	1						2
03	680511	11/14/96	1030				1	1						2
04	160711	11/14/96	1615				1	1						2
05	680313	11/14/96	1745				1	1						2
06	680411	11/14/96	915				1	1						2
07	680311	11/14/96	1745				1	1						2
08	770611	11/15/96	1015				1	1						2
09	160713	11/14/96	1615				1	1						2
10	770811	11/15/96	1100				1	1						2
11	770711	11/15/96	915				1	1						2
12	670611	11/15/96	1430				1	1						2
13	670313	11/15/96	1630	↓			1	1						2

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY: Laura Lumley	Date/Time 11/16/98	RECEIVED BY:	Date/Time 11-16-98
COMPANY NAME: SAIC	1230	COMPANY NAME: GEL	1600
RECEIVED BY:	Date/Time 11-16-98	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1230	COMPANY NAME:	
RELINQUISHED BY:	Date/Time 11-16-98	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	1600	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #713

Cooler Temperature: 4°

FEDEX NUMBER:

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9811524
9811522
1013

CHAIN OF CUSTODY RECORD

COC NO.: GA016

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	PAH, TPH, Lead, Ethylene Glycol	TPH, Lead, Ethylene Glycol	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
02	670421	11/15/96	1730	Soil			1			1						2	
03	680321	11/14/96	1745				1					1				2	
04	670321	11/15/96	1630				1					1				2	
05	160721	11/14/96	1615				1					1				2	
06	200422	11/14/96	1345													2	
07	200311	11/14/96	1215		1									1		2	
04	670312	11/15/96	1630	Water	2	2									1	1	
05	670412	11/15/96	1730		2	2										4	
06	670414	11/15/96	1730		2											4	
07	670512	11/15/96	1530		2											2	
08	670612	11/15/96	1430		2											2	
09	670732	11/14/96	1740		2											2	
10	670712	11/14/96	1610		2											2	

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature:
Laura Lumley	11/16/96		11-16-98		5°
COMPANY NAME: SAIC	1230	COMPANY NAME: GEL	1600	Cooler ID: #266	FEDEX NUMBER:
RECEIVED BY: Bob Lockhart	Date/Time 11-16-98	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	1230	COMPANY NAME:			
RELINQUISHED BY: Bob Lockhart	Date/Time 11-16-98	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	1600	COMPANY NAME:			

V-90

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-02

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 2Y315

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: not dec. 7 Date Analyzed: 03/03/99

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(ml) Soil Aliquot Volume: _____(uL

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	benzene	10.2	
108-88-3	toluene	8.6	
100-41-4	ethylbenzene	15.5	
1330-20-7	xylenes (total)	19.4	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I415

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: 7 decanted: (Y/N) N Date Extracted: 02/24/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/25/99

Injection Volume: 1.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	1430	U
91-58-7	2-chloronaphthalene	1430	U
208-96-8	acenaphthylene	1430	U
83-32-9	acenaphthene	1430	U
86-73-7	fluorene	1430	U
85-01-8	phenanthrene	1430	U
120-12-7	anthracene	1430	U
206-44-0	fluoranthene	1430	U
129-00-0	pyrene	1430	U
56-55-3	benzo(a)anthracene	1430	U
218-01-9	chrysene	1430	U
205-99-2	benzo(b)fluoranthene	1430	U
207-08-9	benzo(k)fluoranthene	1430	U
50-32-8	benzo(a)pyrene	1430	U
193-39-5	indeno(1,2,3-cd)pyrene	1430	U
53-70-3	dibenz(a,h)anthracene	1430	U
191-24-2	benzo(g,h,i)perylene	1430	U

U

161121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 3A3A021

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: 7 decanted: (Y/N) N Date Extracted:03/01/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 03/03/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	0.94	B	U F01, F07

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-02

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 1Y205

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: not dec. 7 Date Analyzed: 03/02/99

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
	----------Gasoline Range Organics	163		=

FORM I VOA

Form 1: Inorganic Analyses Data Sheet

SDG No.: FSA08S

Method Type: Total Metals

Sample ID: 9902818-02

Client ID: 161121

Contract: SAIC00299 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 2/21/99 Level: LOW

% Solids: 93.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	28.1	mg/kg	=		P	0.15	TJA61 Trace2 ICPAES	990303-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-01

Sample wt/vol: 3.2 (g/mL) G Lab File ID: 2Y314

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: not dec. 11 Date Analyzed: 03/03/99

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(ml) Soil Aliquot Volume: _____(uL

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
71-43-2	benzene	3.6	U	U
108-88-3	toluene	3.6	U	
100-41-4	ethylbenzene	3.6	U	
1330-20-7	xylenes (total)	1.3	J	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I414

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: 11 decanted: (Y/N) N Date Extracted: 02/24/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/25/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

DATA VALIDATION COPY

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
91-20-3	naphthalene	374	U
91-58-7	2-chloronaphthalene	374	U
208-96-8	acenaphthylene	374	U
83-32-9	acenaphthene	374	U
86-73-7	fluorene	374	U
85-01-8	phenanthrene	374	U
120-12-7	anthracene	374	U
206-44-0	fluoranthene	374	U
129-00-0	pyrene	374	U
56-55-3	benzo(a)anthracene	374	U
218-01-9	chrysene	374	U
205-99-2	benzo(b)fluoranthene	374	U
207-08-9	benzo(k)fluoranthene	374	U
50-32-8	benzo(a)pyrene	374	U
193-39-5	indeno(1,2,3-cd)pyrene	374	U
53-70-3	dibenz(a,h)anthracene	374	U
191-24-2	benzo(g,h,i)perylene	374	U

U

FORM 1 Science Applications21-FEB-1999 SA
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

161221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-01

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 3A3A020

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: 11 decanted: (Y/N) N Date Extracted:03/01/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 03/03/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) MG/KG	Q	
	----------Diesel Range Organics	0.25	JB	U F01, F06

FORM I SV

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA08S

Matrix: (soil/water) SOIL Lab Sample ID: 9902818-01

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 1Y1016

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: not dec. 11 Date Analyzed: 03/01/99

GC Column: J&W DB-624(FID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
	----------Gasoline Range Organics_____	112	U

u

FORM I VOA

Form 1: Inorganic Analyses Data Sheet

SDG No.: FSA08S

Method Type: Total Metals

Sample ID: 9902818-01

Client ID: 161221

Contract: SAIC00299 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 2/21/99 Level: LOW

% Solids: 89.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	4.3	mg/kg	=		P	0.16	TJA61 Trace2 ICPAES	990303-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D0350

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-1593-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	GRO	PAH, TPH	PAH, TPH, Lead	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	Oil & Grease	Total Phenols	DH	VOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
D03501	2/20/99	1500	water									2	2	1	2	7	99028 14-01 *24 HR. TURN tb.
161112	2/20/99	1600		2												2	99028 17 -01
161212	2/20/99	1530		2												2	-02
762212	2/20/99	930		2												2	-03
800612	2/20/99	1410		2												2	-04
800824	2/20/99	1400		2												2	-05
841312	2/20/99	1720		2												2	-06
841412	2/20/99	1800		2												2	-07
TB 0004	2/20/99	745	↓	2												2	-08
161221	2/20/99	1510	Soil	1		1			1							3	99028 18 - 01
161121	2/20/99	1550		1		1			1							3	-02
841311	2/20/99	1652		1												2	-03
841411	2/20/99	1745	↓	1												2	-04

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	2/21/99	Broucia P	2/22/99
COMPANY NAME: SAIC	1045	COMPANY NAME: GEL	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	2/21/99		
COMPANY NAME: GEL	1045	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
	2/21/99		
COMPANY NAME: GEL	1745	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: # 93058 4C

Cooler Temperature:

FEDEX NUMBER:

V-101

PERMEABILITY TEST ANALYSIS (ASTM D5084)

Project : Fort Stewart

Location of Project : CAP Part A

Description of Soil : Black Silty Sand

Job # : 98066
Date of Testing: 12/16-17/98
Tested by: BV/CA
Boring # :
Sample # : 160731
Sample Depth :

Sample Type (Undisturbed or Remolded)
Standard Proctor:
Maximim Dry Density: _____ pcf
Optimum Moisture Content: _____ %

% Sample Compaction: _____ %
Sample Dry Density: _____ pcf
Sample Moisture Content: _____ %
Sample Wet Density: _____ pcf

Sample Permeation:

De-Aired Water
% Saturation: 96 %
Cell Pressure: 60 psi
Lower Pressure: 56.5 psi
Upper Pressure: 55 psi
Gradient: 20.70

Sample Dimensions		
	Before	After
Length (cm)	5.10	5.00
Diameter (cm)	4.80	4.70
Water Content (%)	12.8	
Weight (g)	151.2	159.7

Constant Head Calculation:

$$K = [V(t_1,t_2)\, LR_T]/[P_B A t] \text{ (cm/sec)}$$

$V(t_1,t_2)$ = Volume of flow from t_1 to t_2 (cm^2)
L = Length of Sample = 5.10 cm
A = Area of Sample = 18.1 cm^2
t = $t_2 - t_1$ (sec)
P_B = Bias Pressure = 1.5 psi x 70.37 cm/psi $_{(cm - H2O)}$ 105.56 cm
R_T = Temperature correction = 0.953

t_2 (sec)	t_1 (sec)	$(t_2 - t_1)$ (sec)	V (cm^3)	$[LR_T]/[P_B A]$ (cm^3)	K (cm/sec)
20	10	10	0.5	2.54E-03	1.27E-04
30	20	10	0.7	2.54E-03	1.78E-04
40	30	10	0.8	2.54E-03	2.04E-04
50	40	10	0.5	2.54E-03	1.27E-04

K_{avg} = 1.59E-04 cm/sec

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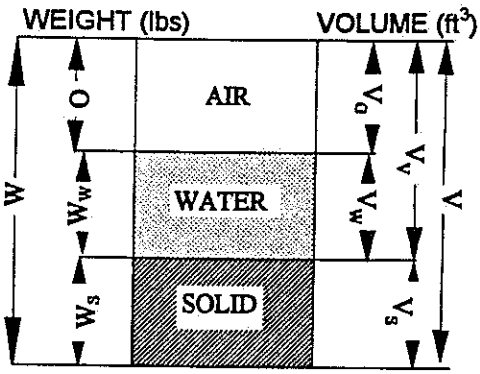
SPECIFIC GRAVITY AND POROSITY

PROJECT: Fort Stewart
LOCATION OF PROJECT: CAP Part A
DESCRIPTION OF SOIL: Black Silty Sand
TESTED BY: FB

JOB NO.: 98066
SAMPLE NO: 160731
DEPTH OF SAMPLE:
DATE OF TESTING: 12/15/98



W = 0.91958
W_W = W - W_S = 0.10414
W_S = Y_d*V = 0.8154

V = 0.00638
V_W = W_W/Y_W = 0.0017
V_S = W_S/G_S*Y_W = 0.0049
V_G = V - (V_S +V_W) = -0.00020
V_V = V_G +V_W 0.0015

MEASUREMENTS OF TUBE/CAN

HEIGHT= 8.5 cm
DIAMETER= 5.2 cm

CALCULATED VOLUME OF TUBE/CAN

V= 180.52 cm^3
0.00638 ft^3

WT. OF TUBE/CAN + WET SOIL= 595.12 g
WEIGHT OF TUBE/CAN= 178 g
WEIGHT OF WET SOIL= 417.12 g
W = 0.91958 lb

MOISTURE CONTENT

M_{CWS} = 30.98 g
M_{CDS} = 29.21 g
M_W = 1.77 g
M_C = 15.35 g
M_S = 13.86 g
w = 12.8 %

Wet Density, Y_m = W / V

Dry Density, Y_d = W_s / V or Y_d = Y_m / (1+ w)

double check	Y_d = Y_m / (1+ w)
Y_d = W_s / V	Y_m= 144.23 lbs/ft^3
Y_d= 127.90 lbs/ft^3	Y_d= 127.90 lbs/ft^3

Void Ratio, e = V_V/V_S
e = 0.2984

Porosity, n = V_V /V
n = 0.23

Specific Gravity = 2.66

Degree of Saturation, S = V_W/V_V
S = 1.1383

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GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project: Fort Stewart	Job No.: 98066
Project Location: Cap Part A	Sample No.: 160731
Sample Description: Black Silty Sand	Sample Depth:
	Boring No.:
Tested By: FB	Date of Testing: 12/10/98

Mcws	Mcds	Mc : A4	Mw	Ms	w%	Mws	Ms
30.98	29.21	15.35	1.77	13.86	12.8	200.00	177.35

Sieve No.	Diam. (mm)	Wt. retained	% retained	E % retained	% passing
3	76.2	0	0.00	0.00	100.00
2	50.8	0	0.00	0.00	100.00
1 1/2	25.4	0	0.00	0.00	100.00
3/4	19.05	0	0.00	0.00	100.00
3/8	9.51	0	0.00	0.00	100.00
4	4.76	0	0.00	0.00	100.00
10	2.00	0.33	0.19	0.19	99.81
20	0.841	1.02	0.58	0.76	99.24
40	0.42	2.66	1.50	2.26	97.74
60	0.25	37.32	21.04	23.30	76.70
140	0.106	110.18	62.13	85.43	14.57
200	0.074	1.24	0.70	86.13	13.87
pan	—	0.2	0.11	86.24	13.76
total		152.95			

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APPENDIX VI

ALTERNATE THRESHOLD LEVEL (ATL) CALCULATIONS

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The benzene concentrations in soil exceeded its respective soil threshold level in one soil sample located 50 feet away from the former dispenser island and is related to motorpool operations and not the UST and ancillary piping. Armored personnel carriers are parked in the area and have drip pans underneath the vehicles to catch oil leaks. Thus, no alternate threshold levels were calculated since the one detection is not related to a release from the former UST system.

The maximum benzene concentration in groundwater was 221J µg/L in May 1998. The alternate concentration limit for benzene was calculated to be 22 µg/L based on the results of fate and transport modeling, which is presented in Attachment C. In addition, ACLs were calculated for toluene and several PAH compounds as shown in Table VI-A.

Table VI-A. ACLs for groundwater COPCs

Chemical	Regulatory Level[1] (µg/L)	DAF (storm drain)[2]	ACL[3] (µg/L)
Benzene	5	4.4	22
Toluene	1000	4.4	4,400
Benzo(a)anthracene	0.092[a]	4.4	0.4
Benzo(a)pyrene	0.2	4.4	0.88
Benzo(b)fluoranthene	0.092[a]	4.4	0.4
Benzo(k)fluoranthene	0.92[a]	4.4	4.0
Chrysene	9.2[a]	4.4	40
Indeno(1,2,3-cd)pyrene	0.092[a]	4.4	0.4

[1] Regulatory levels are MCLs unless otherwise noted.
[2] DAF = Maximum Observed Concentration ÷ Predicted Concentration at the Receptor
= 221 ÷ 49.7 ≈ 4.4 for benzene at the storm drain.
[3] ACL = Regulatory Level × DAF.
[a] Values presented are risk-based values. No MCLs are available for these chemicals.

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APPENDIX VII

MONITORING WELL DETAILS

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Monitoring wells were not installed as part of the preliminary groundwater or CAP-Part A investigations. Temporary piezometers were installed at the USTs 36 & 37 site for the determination of free product. Refer to Figures 4 and 5 (Appendix I) for locations and screened intervals.

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APPENDIX VIII

GROUNDWATER LABORATORY RESULTS

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TABLE VIII-A. Summary of Groundwater Analytical Results

Station:		In Stream	16-01	16-02	16-03	16-04	16-05
Sample ID:	Federal	Water	1601W2	1602W2	160312	160412	160512
Screened Interval (ft BGS)	SDWA	Quality	3.5' - 8.5'	3.5' - 8.5'	0.0' - 8.0'	0.0' - 7.0'	0.0' - 8.0'
Collection Date:	MCLs	Standards	06-Sep-96	06-Sep-96	12-May-98	12-May-98	12-May-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS							
Benzene	5	71.28	5 U	0.42 J	**221 J**	2 U	**63** =
Toluene	1000	200000	5 U	5 U	325 J	2 U	**1740** =
Ethylbenzene	700	28718	0.041 J	2.4 J	791 J	3.3 =	359 =
Xylenes, Total	10000	NRC	5 U	3.6 J	2830 J	6 U	1920 =
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Acenaphthene	NRC	NRC	8.7 J	10 U	20 U	20 U	20 U
Acenaphthylene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Anthracene	NRC	110000	10 U	10 U	20 U	20 U	20 U
Benzo(a)anthracene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Benzo(a)pyrene	0.2	0.0311	10 U	10 U	20 U	20 U	20 U
Benzo(b)fluoranthene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Benzo(g,h,i)perylene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Benzo(k)fluoranthene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Chrysene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Dibenzo(a,h)anthracene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Fluoranthene	NRC	370	10 U	10 U	20 U	20 U	20 U
Fluorene	NRC	14000	10 U	10 U	20 U	20 U	20 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	10 U	10 U	20 U	20 U	20 U
Naphthalene	NRC	NRC	10 U	10 U	77.1 =	20 U	164 =
Phenanthrene	NRC	NRC	10 U	10 U	20 U	20 U	20 U
Pyrene	NRC	11000	10 U	10 U	20 U	20 U	20 U

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Analytical data for QA/QC samples 160414 (duplicate), 160616 (equipment rinsate), 160814 (duplicate), 160916 (equipment rinsate), and 161014 (duplicate) are included in this appendix, but not summarized in this table.

[1] U.S. Environmental Protection Agency Safe Drinking Water Act Maximum Contaminant Level

[2] GA EPD water quality standards (Chapter 391-3-6.03)

Bold values exceed MCLs

Laboratory Qualifiers

U	Indicates the compound was not detected at the concentration reported.
UJ	Indicates that the compound was not detected above an approximated sample quantitation limit.
J	Indicates the value for the compound is an estimated value.
=	Indicates the compound was detected at the concentration reported.
R	Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

TABLE VIII-A. Summary of Groundwater Analytical Results (continued)

Station:		In Stream	16-06	16-07	16-08	16-09	16-10
Sample ID:	Federal	Water	160612	160712	160812	160912	161012
Screened Interval (ft BGS)	SDWA	Quality	0.0' - 8.0'	0.0' - 8.0'	0.0' - 8.5'	0.0' - 12.0'	6.0' - 10.0'
Collection Date:	MCLs	Standards	12-May-98	14-Nov-98	13-Nov-98	13-Nov-98	13-Nov-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS							
Benzene	5	71.28	2 U	**83.3** =	2 U	2 U	2 U
Toluene	1000	200000	4.6 =	7.1 =	2 U	0.86 J	2 U
Ethylbenzene	700	28718	4 =	69.5 =	2 U	19.1 =	2 U
Xylenes, Total	10000	NRC	2 J	157 =	3 U	32 =	3 U
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	NRC	20 U	10.5 U	10.1 U	10.5 U	11.8 U
Acenaphthene	NRC	NRC	20 U	10.5 U	10.1 U	27.6 =	11.8 U
Acenaphthylene	NRC	NRC	20 U	10.5 U	10.1 U	10.5 U	11.8 U
Anthracene	NRC	110000	20 U	10.5 U	10.1 U	24.8 =	11.8 U
Benzo(a)anthracene	NRC	0.0311	20 U	10.5 U	10.1 U	17.8 =	11.8 U
Benzo(a)pyrene	0.2	0.0311	20 U	10.5 U	10.1 U	11 =	11.8 U
Benzo(b)fluoranthene	NRC	NRC	20 U	10.5 U	10.1 U	14.5 =	11.8 U
Benzo(g,h,i)perylene	NRC	NRC	20 U	10.5 U	10.1 U	3.7 J	11.8 U
Benzo(k)fluoranthene	NRC	0.0311	20 U	10.5 U	10.1 U	6.1 J	11.8 U
Chrysene	NRC	0.0311	20 U	10.5 U	10.1 U	19.8 =	11.8 U
Dibenzo(a,h)anthracene	NRC	0.0311	20 U	10.5 U	10.1 U	10.5 U	11.8 U
Fluoranthene	NRC	370	20 U	10.5 U	10.1 U	94.9 =	11.8 U
Fluorene	NRC	14000	20 U	10.5 U	10.1 U	17.6 =	11.8 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	20 U	10.5 U	10.1 U	3.2 J	11.8 U
Naphthalene	NRC	NRC	20 U	1.6 J	10.1 U	34.7 =	11.8 U
Phenanthrene	NRC	NRC	20 U	10.5 U	10.1 U	114 =	11.8 U
Pyrene	NRC	11000	20 U	10.5 U	10.1 U	63.5 =	11.8 U

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Analytical data for QA/QC samples 160414 (duplicate), 160616 (equipment rinsate), 160814 (duplicate), 160916 (equipment rinsate), and 161014 (duplicate) are included in this appendix, but not summarized in this table.

[1] U.S. Environmental Protection Agency Safe Drinking Water Act Maximum Contaminant Level

[2] GA EPD water quality standards (Chapter 391-3-6.03)

Bold values exceed MCLs

Laboratory Qualifiers

U	Indicates the compound was not detected at the concentration reported.
UJ	Indicates that the compound was not detected above an approximated sample quantitation limit.
J	Indicates the value for the compound is an estimated value.
=	Indicates the compound was detected at the concentration reported.
R	Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

TABLE VIII-A. Summary of Groundwater Analytical Results (continued)

Station:		In Stream	16-10	16-10	16-11	16-12
Sample ID:	Federal	Water	161052	161072	161112	161212
Screened Interval (ft BGS)	SDWA	Quality	18.0' - 20.0'	30.0' - 32.0'	0.0' - 8.0'	0.0' - 7.0'
Collection Date:	MCLs	Standards	13-Nov-98	13-Nov-98	20-Feb-99	20-Feb-99
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS						
Benzene	5	71.28	1.7 J	2 U	5.9 =	0.5 J
Toluene	1000	200000	14.7 =	2 U	5.1 J	3.7 =
Ethylbenzene	700	28718	1.3 J	2 U	1.7 J	1 J
Xylenes, Total	10000	NRC	3.9 =	3 U	7.8 =	5.7 =
POLYNUCLEAR AROMATIC HYDROCARBONS						
2-Chloronaphthalene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Acenaphthene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Acenaphthylene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Anthracene	NRC	110000	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(a)anthracene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(a)pyrene	0.2	0.0311	6.3 J	12 R	11.2 UJ	10.2 UJ
Benzo(b)fluoranthene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(g,h,i)perylene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(k)fluoranthene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Chrysene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Dibenzo(a,h)anthracene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Fluoranthene	NRC	370	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Fluorene	NRC	14000	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Indeno(1,2,3-cd)pyrene	NRC	0.0311	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Naphthalene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Phenanthrene	NRC	NRC	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Pyrene	NRC	11000	11.9 UJ	12 R	11.2 UJ	10.2 UJ

NOTES:

September 1996 and May 1998 sampling was performed prior to the new CAP-Part A guidance that was published in May 1998, thus the new SW-846 analytical methods were not used during that sampling event.

November 1998 and February 1999 sampling was performed in accordance with the CAP-Part A guidance that was published in May 1998.

Analytical data for QA/QC samples 160414 (duplicate), 160616 (equipment rinsate), 160814 (duplicate), 160916 (equipment rinsate), and 161014 (duplicate) are included in this appendix, but not summarized in this table.

[1] U.S. Environmental Protection Agency Safe Drinking Water Act Maximum Contaminant Level

[2] GA EPD water quality standards (Chapter 391-3-6.03)

Bold values exceed MCLs

Laboratory Qualifiers

U	Indicates the compound was not detected at the concentration reported.
UJ	Indicates that the compound was not detected above an approximated sample quantitation limit.
J	Indicates the value for the compound is an estimated value.
=	Indicates the compound was detected at the concentration reported.
R	Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1601W2

Lab Name: GENERAL ENGINEERING LABOR Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69092W

Matrix: (soil/water) WATER Lab Sample ID: 9609092-02

Sample wt/vol: 20 (g/ml) ml Lab File ID: 1Z310

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: not dec. _____ Date Analyzed: 09/11/96

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l		Q	
71-43-2	benzene	5	5.0	U	U
108-88-3	toluene		~~0.23~~	JB	U FB1, FB6
100-41-4	ethylbenzene		0.041	J	J
1330-20-7	xylenes (total)		5.0	U	U

MM 12/18/96

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1601W2

Lab Name: GENERAL ENGINEERING LABOR Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69090W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9609090-09

Sample wt/vol: 500 (g/mL) mL Lab File ID: 2K219

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 09/09/96

Concentrated Extract Volume: 0.5(mL) Date Analyzed: 09/10/96

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
91-20-3	naphthalene	10.0	U
91-58-7	2-chloronaphthalene	10.0	U
209-96-8	acenaphthylene	10.0	U
83-32-9	acenaphthene	8.7	J
86-73-7	fluorene	10.0	U
85-01-8	phenanthrene	10.0	U
120-12-7	anthracene	10.0	U
206-44-0	fluoranthene	10.0	U
129-00-0	pyrene	10.0	U
56-55-3	benzo(a)anthracene	10.0	U
218-01-9	chrysene	10.0	U
205-99-2	benzo(b)fluoranthene	10.0	U
207-08-9	benzo(k)fluoranthene	10.0	U
50-32-8	benzo(a)pyrene	10.0	U
193-39-5	indeno(1,2,3-cd)pyrene	10.0	U
53-70-3	dibenz(a,h)anthracene	10.0	U
191-24-2	benzo(g,h,i)perylene	10.0	U

UUUJU

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602W2

Lab Name: GENERAL ENGINEERING LABOR Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69092W

Matrix: (soil/water) WATER Lab Sample ID: 9609092-07

Sample wt/vol: 20 (g/ml) ml Lab File ID: 1Z315

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: not dec. _____ Date Analyzed: 09/11/96

GC Column: DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l		Q	
71-43-2	benzene	5	0.42	J	J
108-88-3	toluene		~~1.5~~	JB	U FB1, FB6
100-41-4	ethylbenzene		2.4	J	J
1330-20-7	xylenes (total)		3.6	J	J

MAP 12/18/96

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

1602W2

Lab Name: GENERAL ENGINEERING LABOR Contract:

Lab Code: Case No.: SAS No.: SDG No.: 69090W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9609090-04

Sample wt/vol: 500 (g/mL) mL Lab File ID: 2K214

Level: (low/med) LOW Date Received: 09/08/96

% Moisture: _____ decanted: (Y/N)___ Date Extracted:09/09/96

Concentrated Extract Volume: 0.5(mL) Date Analyzed: 09/10/96

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
91-20-3	naphthalene	10.0	U
91-58-7	2-chloronaphthalene	10.0	U
209-96-8	acenaphthylene	10.0	U
83-32-9	acenaphthene	10.0	U
86-73-7	fluorene	10.0	U
85-01-8	phenanthrene	10.0	U
120-12-7	anthracene	10.0	U
206-44-0	fluoranthene	10.0	U
129-00-0	pyrene	10.0	U
56-55-3	benzo(a)anthracene	10.0	U
218-01-9	chrysene	10.0	U
205-99-2	benzo(b)fluoranthene	10.0	U
207-08-9	benzo(k)fluoranthene	10.0	U
50-32-8	benzo(a)pyrene	10.0	U
193-39-5	indeno(1,2,3-cd)pyrene	10.0	U
53-70-3	dibenz(a,h)anthracene	10.0	U
191-24-2	benzo(g,h,i)perylene	10.0	U

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FORM I SV-1 3/90

Science Applications International Corporation — An Employee-Owned Company

800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: G0013

PROJECT NAME: Fort Stewart UST Sites

PROJECT NUMBER: 0003

PROJECT MANAGER: Chris Potter

Sampler (Signature): Sharon Stoller (Printed Name): Sharon Stoller

LABORATORY NAME: GEL

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO:(803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX, GRO	BTEX	PAH, Lead, DRO	PAH	Lead	DRO	PAH, LEAD, TPH	PAH, TPH	PAH, DRO	TPH			No. of Bottles/Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
0401R5	9/7/96	0840	WATER				2	1					2			5		
0101W2	9/6/96	1205	WATER				2									2		
0102W2	9/6/96	1020	WATER				2									2		
1601W2	9/6/96	1520	WATER				2									2		

VIII-11

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: SAIC	9/9/96 1310	COMPANY NAME:	
RECEIVED BY: Raymond E Reed	Date/Time 9/8/96	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	13:10	COMPANY NAME:	
RELINQUISHED BY: Raymond E Reed	Date/Time 9/8/96	RECEIVED BY:	Date/Time 9-9-96
COMPANY NAME: GEL	16:30	COMPANY NAME: GEL	16:30

TOTAL NUMBER OF CONTAINERS: 11

Cooler ID: #76

Cooler Temperature: 3

SAIC An Employee-Owned Company
Science Applications International Corporation

800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4800

CHAIN OF CUSTODY RECORD

COC NO.: G00015

PROJECT NAME: Fort Stewart UST Sites

PROJECT NUMBER: 0003

PROJECT MANAGER: Chris Potter

Sampler (Signature) (Printed Name)

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX, GRO	BTEX	PAH, Lead, DRO	PAH	Lead	DRO	PAH, LEAD, TPH	PAH, TPH	PAH, DRO	TPH			No. of Bottles/Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
1501W2	9/6/96	1006	WATER				(3)	1								5	7777 ppm	
0201W4	9/6/96	1550	WATER				2									2	0 ppm	
4001W2	9/6/96	1135	WATER				2									2	52 ppm	
1602W2	9/6/96	1638	WATER				2									2	193 ppm	

555 9/9/96

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: SAIC	9/8/96 1310	COMPANY NAME:	
RECEIVED BY: Raynal E Reed	Date/Time 9/8/96	RELINQUISHED BY:	Date/Time
COMPANY NAME: GeL	13:10	COMPANY NAME:	
RELINQUISHED BY: Raynal E Reed	Date/Time 9/8/96	RECEIVED BY:	Date/Time 9.9.96
COMPANY NAME: GEL	16:30	COMPANY NAME: GEL	16:30

LABORATORY NAME: GEL

LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417

PHONE NO:(803) 556-8171

TOTAL NUMBER OF CONTAINERS: 10

Cooler ID: #30

Cooler Temperature: 2°C

VIII-12

SAIC An Employee-Owned Company
Science Applications International Corporation
800 Oak Ridge Tu... , Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GØ18

PROJECT NAME: Fort Stewart UST Sites

PROJECT NUMBER: 0003

PROJECT MANAGER: Chris Potter

Sampler (Signature): Sharon Stoller (Printed Name): Sharon Stoller

LABORATORY NAME: GEL

LABORATORY ADDRESS: 2040 Savage Road, Charleston, SC 29417

PHONE NO:(803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX, GRO	BTEX	PAH, Lead, DRO	PAH	Lead	DRO	No. of Bottles/Vials:	OVA SCREENING	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
TBØØØ8	9/6/96	Ø759	WATER		2					2		
16Ø1W2	9/6/96	1500			2					2		
Ø1Ø2W2	9/6/96	1020			2					2		
15Ø6W4	9/6/96	1340			2					2		
15Ø2W2	9/6/96	1535			2					2		
Ø2Ø2W2	9/6/96	1335			2					2		sample water only, not product
16Ø2W2	9/6/96	1638			2					2		
~~Ø1ØA1~~ Sh 9/6/96												
~~15W4~~ 4Ø1W2	9/6/96	1135			2					2		
15Ø1W2	9/6/96	1ØØ6			2					2		
Ø2Ø1W2	9/6/96	1550			2					2		
~~Sh 9/6/96~~ 16ØER6	9/6/96	1550		2	2					2		
3904W2	9/6/96	945			2					2		

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Sharon Stoller	9/8/96 1310		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY: Raymond E Reed	Date/Time 9/8/96 1310	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: Raymond E Reed	Date/Time 9/8/96 1630	RECEIVED BY:	Date/Time 09-09-96 16:30
COMPANY NAME: GEL		COMPANY NAME: GEL	

TOTAL NUMBER OF CONTAINERS: 84

Cooler ID: #237

Cooler Temperature: 5°

VIII-13

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805390-01

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J3018

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/20/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 10.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	221	J	A05
108-88-3	Toluene	325	↓	↓
100-41-4	Ethylbenzene	791	↓	↓
1330-20-7	Xylenes (total)	2830	J	A05, F01, F08

A05

FORM I VOA

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4016W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805387-01

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 1U120

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/14/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/18/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	77.1	
91-58-7	2-chloronaphthalene	20.0	U
208-96-8	acenaphthylene	20.0	U
83-32-9	acenaphthene	20.0	U
86-73-7	fluorene	20.0	U
85-01-8	phenanthrene	20.0	U
120-12-7	anthracene	20.0	U
206-44-0	fluoranthene	20.0	U
129-00-0	pyrene	20.0	U
56-55-3	benzo(a)anthracene	20.0	U
218-01-9	chrysene	20.0	U
205-99-2	benzo(b)fluoranthene	20.0	U
207-08-9	benzo(k)fluoranthene	20.0	U
50-32-8	benzo(a)pyrene	20.0	U
193-39-5	indeno(1,2,3-cd)pyrene	20.0	U
53-70-3	dibenz(a,h)anthracene	20.0	U
191-24-2	benzo(g,h,i)perylene	20.0	U

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FORM I SV-1 OLM03.0

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4019W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805392-05

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J4012

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/21/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	2.0	U	U
108-88-3	Toluene	2.0	U	U
100-41-4	Ethylbenzene	3.3		
1330-20-7	Xylenes (total)	6.0	U	U

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DATA VALIDATION COPY

EPA SAMPLE NO.

160412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4017W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805388-05

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 2U319

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/14/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/20/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	20.0	U
91-58-7	2-chloronaphthalene	20.0	U
208-96-8	acenaphthylene	20.0	U
83-32-9	acenaphthene	20.0	U
86-73-7	fluorene	20.0	U
85-01-8	phenanthrene	20.0	U
120-12-7	anthracene	20.0	U
206-44-0	fluoranthene	20.0	U
129-00-0	pyrene	20.0	U
56-55-3	benzo(a)anthracene	20.0	U
218-01-9	chrysene	20.0	U
205-99-2	benzo(b)fluoranthene	20.0	U
207-08-9	benzo(k)fluoranthene	20.0	U
50-32-8	benzo(a)pyrene	20.0	U
193-39-5	indeno(1,2,3-cd)pyrene	20.0	U
53-70-3	dibenz(a,h)anthracene	20.0	U
191-24-2	benzo(g,h,i)perylene	20.0	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

160414

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4019W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805392-15

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J4025

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/21/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(ml) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	2.0	U	U
108-88-3	Toluene	2.0	U	U
100-41-4	Ethylbenzene	2.8		=
1330-20-7	Xylenes (total)	6.0	U	U

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FORM I VOA

DUPLICATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160414

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4016W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805387-20

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 1U218

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/14/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/19/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	20.0	U
91-58-7	2-chloronaphthalene	20.0	U
208-96-8	acenaphthylene	20.0	U
83-32-9	acenaphthene	20.0	U
86-73-7	fluorene	20.0	U
85-01-8	phenanthrene	20.0	U
120-12-7	anthracene	20.0	U
206-44-0	fluoranthene	20.0	U
129-00-0	pyrene	20.0	U
56-55-3	benzo(a)anthracene	20.0	U
218-01-9	chrysene	20.0	U
205-99-2	benzo(b)fluoranthene	20.0	U
207-08-9	benzo(k)fluoranthene	20.0	U
50-32-8	benzo(a)pyrene	20.0	U
193-39-5	indeno(1,2,3-cd)pyrene	20.0	U
53-70-3	dibenz(a,h)anthracene	20.0	U
191-24-2	benzo(g,h,i)perylene	20.0	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805390-09

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J3039

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/21/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 10.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	63.0	
108-88-3	Toluene	1740	
100-41-4	Ethylbenzene	359	
1330-20-7	Xylenes (total)	1920	

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4017W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805388-08

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 2U322

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/14/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/21/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	164	
91-58-7	2-chloronaphthalene	20.0	U
209-96-8	acenaphthylene	20.0	U
83-32-9	acenaphthene	20.0	U
86-73-7	fluorene	20.0	U
85-01-8	phenanthrene	20.0	U
120-12-7	anthracene	20.0	U
206-44-0	fluoranthene	20.0	U
129-00-0	pyrene	20.0	U
56-55-3	benzo(a)anthracene	20.0	U
218-01-9	chrysene	20.0	U
205-99-2	benzo(b)fluoranthene	20.0	U
207-08-9	benzo(k)fluoranthene	20.0	U
50-32-8	benzo(a)pyrene	20.0	U
193-39-5	indeno(1,2,3-cd)pyrene	20.0	U
53-70-3	dibenz(a,h)anthracene	20.0	U
191-24-2	benzo(g,h,i)perylene	20.0	U

CII

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DATA VALIDATION COPY

EPA SAMPLE NO.

160612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805390-11

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J3031

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/21/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	Benzene	2.0	U
108-88-3	Toluene	4.6	
100-41-4	Ethylbenzene	4.0	
1330-20-7	Xylenes (total)	2.0	J

U U U J

FORM I VOA

25

COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4017W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805388-07

Sample wt/vol: 250.0 (g/mL) ML Lab File ID: 2U321

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:05/14/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 05/20/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	20.0	U
91-58-7	2-chloronaphthalene	20.0	U
209-96-8	acenaphthylene	20.0	U
83-32-9	acenaphthene	20.0	U
86-73-7	fluorene	20.0	U
85-01-8	phenanthrene	20.0	U
120-12-7	anthracene	20.0	U
206-44-0	fluoranthene	20.0	U
129-00-0	pyrene	20.0	U
56-55-3	benzo(a)anthracene	20.0	U
218-01-9	chrysene	20.0	U
205-99-2	benzo(b)fluoranthene	20.0	U
207-08-9	benzo(k)fluoranthene	20.0	U
50-32-8	benzo(a)pyrene	20.0	U
193-39-5	indeno(1,2,3-cd)pyrene	20.0	U
53-70-3	dibenz(a,h)anthracene	20.0	U
191-24-2	benzo(g,h,i)perylene	20.0	U

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DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE

EPA SAMPLE NO.

160616

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4018W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805390-03

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2J309

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: not dec. _____ Date Analyzed: 05/20/98

GC Column: J&W DB-624(PID) ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	Benzene	2.0	U	U
108-88-3	Toluene	2.0	U	U
100-41-4	Ethylbenzene	4.1		=
1330-20-7	Xylenes (total)	6.0 ~~1.4~~	J	U F01, F06

FORM I VOA

RINSATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160616

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4016W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9805387-18

Sample wt/vol: 1020 (g/mL) ML Lab File ID: 1U216

Level: (low/med) LOW Date Received: 05/13/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted: 05/14/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 05/19/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	9.8	U
91-58-7	2-chloronaphthalene	9.8	U
208-96-8	acenaphthylene	9.8	U
83-32-9	acenaphthene	9.8	U
86-73-7	fluorene	9.8	U
85-01-8	phenanthrene	9.8	U
120-12-7	anthracene	9.8	U
206-44-0	fluoranthene	9.8	U
129-00-0	pyrene	9.8	U
56-55-3	benzo(a)anthracene	9.8	U
218-01-9	chrysene	9.8	U
205-99-2	benzo(b)fluoranthene	9.8	U
207-08-9	benzo(k)fluoranthene	9.8	U
50-32-8	benzo(a)pyrene	9.8	U
193-39-5	indeno(1,2,3-cd)pyrene	9.8	U
53-70-3	dibenz(a,h)anthracene	9.8	U
191-24-2	benzo(g,h,i)perylene	9.8	U

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CHAIN OF CUSTODY RECORD

COC NO.: GAB 019

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9805

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
160212	5/12/98	1700	water		2								2
610112	5/12/98	1635			2								2
710114	5/11/98	1450			2								2
710112	5/11/98	1375			2								2
720112	5/11/98	1150			2								2
670214	5/11/98	1055			2								2
710212	5/11/98	1450	↓		1								1

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/13/98 1140		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: EEL	5/13/98 1140	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler ID: # 424

Cooler Temperature: 4°C

FEDEX NUMBER:

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CHAIN OF CUSTODY RECORD

COC NO.: GAB002

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9805

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
160616	5/12/98	1520	water		2								2
610212	5/12/98	1525			2								2
160414	5/12/98	1910			2								2
160412	5/12/98	1910			2								2
770312	5/12/98	1730			2								2
160612	5/12/98	1600			2								2
160512	5/12/98	1435			2								2

5/12/98

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	5/13/98 1140		
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY:	Date/Time 5-13-98 1140	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler Temperature: 4° C

Cooler ID: #477

FEDEX NUMBER:

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2062

CHAIN OF CUSTODY RECORD

COC NO.: [illegible]

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9405

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature) [signature] (Printed Name) Linda Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
760112	5/11/98	1550	water	2									2
660112	5/11/98	1130		2									2
660212	5/11/98	1525		2									2
710512	5/11/98	1245		2									2
670914	5/11/98	1055		2									2
670212	5/11/98	1055		2									2
670112	5/11/98	1005		2									2
610912	5/12/98	1505		2									2
710412	5/11/98	1130		2									2
700112	5/11/98	1000		2									2
740416	5/11/98	1910		2									2
760412	5/12/98	1025		2									2
160412	5/12/98	1910		2									2

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

No Preservative

No Preservative

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
[signature]	5/13/98		
COMPANY NAME: SAIC	1140	COMPANY NAME:	
RECEIVED BY: [signature]	Date/Time 5-13-98	RELINQUISHED BY:	Date/Time
COMPANY NAME:	1140	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler Temperature: 4°C

Cooler ID: #136

FEDEX NUMBER:

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3 of 4

CHAIN OF CUSTODY RECORD

COC NO.: 1 of 3

PROJECT NAME: Fort Stewart New CAP Part A UST Investigation 9405

PROJECT NUMBER: 01-0331-04-~~9305~~-200

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
770112	5/12/98	1330	water	2			2						2	
760312	5/11/98	1945		2			2						2	
770125	5/12/98	1300		2			2						2	
710112	5/11/98	1325		2									2	
710212	5/11/98	1450		2									2	
720212	5/11/98	1030		2									2	
~~720112~~														
720112	5/11/98	1150		2									2	
710214	5/11/98	1450		2									2	
760212	5/11/98	1615		2									2	
760416	5/12/98	950		2									2	
160414	5/12/98	1910		2									2	
700212	5/11/98	1130	↓	2									2	

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
Laura Lumley	5/13/98 1140			Cooler ID: 136	FEDEX NUMBER:
COMPANY NAME: SAIC		COMPANY NAME:			
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time		
COMPANY NAME:	5-13-98 1140	COMPANY NAME:			
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time		
COMPANY NAME:		COMPANY NAME:			

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DATA VALIDATION COPY

EPA SAMPLE NO.

160712

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6012W

Matrix: (soil/water) WATER Lab Sample ID: 9811524-17

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1K229

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: not dec. _____ Date Analyzed: 11/25/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	83.3		=
108-88-3	toluene	7.1		=
100-41-4	ethylbenzene	69.5		=
78-93-3	xylenes (total)	157	B	= FD8

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DATA VALIDATION COPY

160712

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6010W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811519-12

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 7V218

Level: (low/med) LOW Date Received: 11/16/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/17/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/24/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	1.6	J
91-58-7	2-chloronaphthalene	10.5	U
208-96-8	acenaphthylene	10.5	U
83-32-9	acenaphthene	10.5	U
86-73-7	fluorene	10.5	U
85-01-8	phenanthrene	10.5	U
120-12-7	anthracene	10.5	U
206-44-0	fluoranthene	10.5	U
129-00-0	pyrene	10.5	U
56-55-3	benzo(a)anthracene	10.5	U
218-01-9	chrysene	10.5	U
205-99-2	benzo(b)fluoranthene	10.5	U
207-08-9	benzo(k)fluoranthene	10.5	U
50-32-8	benzo(a)pyrene	10.5	U
193-39-5	indeno(1,2,3-cd)pyrene	10.5	U
53-70-3	dibenz(a,h)anthracene	10.5	U
191-24-2	benzo(g,h,i)perylene	10.5	U

J
U

1A

DATA VALIDATION COPY

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160812

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-07

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J710

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/22/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	2.0	U	U
108-88-3	toluene	2.0	U	
100-41-4	ethylbenzene	2.0	U	
1330-20-7	xylenes (total)	3.0	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160812

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-16

Sample wt/vol: 990.0 (g/mL) ML Lab File ID: 8U522

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/21/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	10.1	U
91-58-7	2-chloronaphthalene	10.1	U
208-96-8	acenaphthylene	10.1	U
83-32-9	acenaphthene	10.1	U
86-73-7	fluorene	10.1	U
85-01-8	phenanthrene	10.1	U
120-12-7	anthracene	10.1	U
206-44-0	fluoranthene	10.1	U
129-00-0	pyrene	10.1	U
56-55-3	benzo(a)anthracene	10.1	U
218-01-9	chrysene	10.1	U
205-99-2	benzo(b)fluoranthene	10.1	U
207-08-9	benzo(k)fluoranthene	10.1	U
50-32-8	benzo(a)pyrene	10.1	U
193-39-5	indeno(1,2,3-cd)pyrene	10.1	U
53-70-3	dibenz(a,h)anthracene	10.1	U
191-24-2	benzo(g,h,i)perylene	10.1	U

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FORM I SV-1 OLM03.0

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DATA VALIDATION COPY

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE
EPA SAMPLE NO.

160814

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-17

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J559

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	2.0	U
108-88-3	toluene	2.0	U
100-41-4	ethylbenzene	2.0	U
1330-20-7	xylenes (total)	3.0	U

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FORM I VOA OLM03.0

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DUPLICATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160814

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-13

Sample wt/vol: 930.0 (g/mL) ML Lab File ID: 8U519

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/21/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	10.8	U
91-58-7	2-chloronaphthalene	10.8	U
208-96-8	acenaphthylene	10.8	U
83-32-9	acenaphthene	10.8	U
86-73-7	fluorene	10.8	U
85-01-8	phenanthrene	10.8	U
120-12-7	anthracene	10.8	U
206-44-0	fluoranthene	10.8	U
129-00-0	pyrene	10.8	U
56-55-3	benzo(a)anthracene	10.8	U
218-01-9	chrysene	10.8	U
205-99-2	benzo(b)fluoranthene	10.8	U
207-08-9	benzo(k)fluoranthene	10.8	U
50-32-8	benzo(a)pyrene	10.8	U
193-39-5	indeno(1,2,3-cd)pyrene	10.8	U
53-70-3	dibenz(a,h)anthracene	10.8	U
191-24-2	benzo(g,h,i)perylene	10.8	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160912

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-16

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J558

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	~~0.89~~ 2	JB	U F01, F26
108-88-3	toluene	0.86	J	J
100-41-4	ethylbenzene	19.1		=
1330-20-7	xylenes (total)	32.0		=

MMP
12/23/98

FORM I VOA OLM03.0

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

160912

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: ES6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-18

Sample wt/vol: 950.0 (g/mL) ML Lab File ID: 8U524

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/21/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	34.7	
91-58-7	2-chloronaphthalene	10.5	U
208-96-8	acenaphthylene	10.5	U
83-32-9	acenaphthene	27.6	
86-73-7	fluorene	17.6	
85-01-8	phenanthrene	114	
120-12-7	anthracene	24.8	
206-44-0	fluoranthene	94.9	
129-00-0	pyrene	63.5	
56-55-3	benzo(a)anthracene	17.8	
218-01-9	chrysene	19.8	
205-99-2	benzo(b)fluoranthene	14.5	
207-08-9	benzo(k)fluoranthene	6.1	J
50-32-8	benzo(a)pyrene	11.0	
193-39-5	indeno(1,2,3-cd)pyrene	3.2	J
53-70-3	dibenz(a,h)anthracene	10.5	U
191-24-2	benzo(g,h,i)perylene	3.7	J

USL

FORM I SV-1 OLM03.0

38

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE
EPA SAMPLE NO.

160918Z

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-04

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J707

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/22/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	2.0	U	U
108-88-3	toluene	2.0	U	↓
100-41-4	ethylbenzene	2.0	U	
1330-20-7	xylenes (total)	3 ~~0.68~~	JB	U FO1, FO6

mm 12/23/98

mm - 12/23/98
LR 1/13/99
(see cooler receipt check list)

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE

EPA SAMPLE NO.

160916

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-17

Sample wt/vol: 970.0 (g/mL) ML Lab File ID: 8U523

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/21/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	10.3	U
91-58-7	2-chloronaphthalene	10.3	U
208-96-8	acenaphthylene	10.3	U
83-32-9	acenaphthene	10.3	U
86-73-7	fluorene	10.3	U
85-01-8	phenanthrene	10.3	U
120-12-7	anthracene	10.3	U
206-44-0	fluoranthene	10.3	U
129-00-0	pyrene	10.3	U
56-55-3	benzo(a)anthracene	10.3	U
218-01-9	chrysene	10.3	U
205-99-2	benzo(b)fluoranthene	10.3	U
207-08-9	benzo(k)fluoranthene	10.3	U
50-32-8	benzo(a)pyrene	10.3	U
193-39-5	indeno(1,2,3-cd)pyrene	10.3	U
53-70-3	dibenz(a,h)anthracene	10.3	U
191-24-2	benzo(g,h,i)perylene	10.3	U

U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161012

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-11

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J553

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	2.0	U	U
108-88-3	toluene	2.0	U	
100-41-4	ethylbenzene	2.0	U	
1330-20-7	xylenes (total)	3.0	U	

DATA V
CO.1

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161012

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-01

Sample wt/vol: 850.0 (g/mL) ML Lab File ID: 8U507

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	11.8	U
91-58-7	2-chloronaphthalene	11.8	U
208-96-8	acenaphthylene	11.8	U
83-32-9	acenaphthene	11.8	U
86-73-7	fluorene	11.8	U
85-01-8	phenanthrene	11.8	U
120-12-7	anthracene	11.8	U
206-44-0	fluoranthene	11.8	U
129-00-0	pyrene	11.8	U
56-55-3	benzo(a)anthracene	11.8	U
218-01-9	chrysene	11.8	U
205-99-2	benzo(b)fluoranthene	11.8	U
207-08-9	benzo(k)fluoranthene	11.8	U
50-32-8	benzo(a)pyrene	11.8	U
193-39-5	indeno(1,2,3-cd)pyrene	11.8	U
53-70-3	dibenz(a,h)anthracene	11.8	U
191-24-2	benzo(g,h,i)perylene	11.8	U

DATA VALIDATION

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

161014

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6009W

Matrix: (soil/water) WATER Lab Sample ID: 9811478-15

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J557

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: not dec. _____ Date Analyzed: 11/21/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	2.0	U
108-88-3	toluene	2.0	U
100-41-4	ethylbenzene	2.0	U
1330-20-7	xylenes (total)	3.0	U

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

161014

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6007W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811476-02

Sample wt/vol: 850.0 (g/mL) ML Lab File ID: 8U508

Level: (low/med) LOW Date Received: 11/14/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/16/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/20/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	11.8	U
91-58-7	2-chloronaphthalene	11.8	U
208-96-8	acenaphthylene	11.8	U
83-32-9	acenaphthene	11.8	U
86-73-7	fluorene	11.8	U
85-01-8	phenanthrene	11.8	U
120-12-7	anthracene	11.8	U
206-44-0	fluoranthene	11.8	U
129-00-0	pyrene	11.8	U
56-55-3	benzo(a)anthracene	11.8	U
218-01-9	chrysene	11.8	U
205-99-2	benzo(b)fluoranthene	11.8	U
207-08-9	benzo(k)fluoranthene	11.8	U
50-32-8	benzo(a)pyrene	11.8	U
193-39-5	indeno(1,2,3-cd)pyrene	11.8	U
53-70-3	dibenz(a,h)anthracene	11.8	U
191-24-2	benzo(g,h,i)perylene	11.8	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161052

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6015W

Matrix: (soil/water) WATER Lab Sample ID: 9811575-13

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7K133

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: not dec. _____ Date Analyzed: 11/24/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	1.7	J
108-88-3	toluene	14.7	
100-41-4	ethylbenzene	1.3	J
1330-20-7	xylenes (total)	3.9	

FORM I VOA OLM03.0

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161052RE

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6015W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811575-04

Sample wt/vol: 840.0 (g/mL) ML Lab File ID: 2V313

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/25/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/25/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	11.9	U
91-58-7	2-chloronaphthalene	11.9	U
209-96-8	acenaphthylene	11.9	U
83-32-9	acenaphthene	11.9	U
86-73-7	fluorene	11.9	U
85-01-8	phenanthrene	11.9	U
120-12-7	anthracene	11.9	U
206-44-0	fluoranthene	11.9	U
129-00-0	pyrene	11.9	U
56-55-3	benzo(a)anthracene	11.9	U
218-01-9	chrysene	11.9	U
205-99-2	benzo(b)fluoranthene	11.9	U
207-08-9	benzo(k)fluoranthene	11.9	U
50-32-8	benzo(a)pyrene	6.3	J
193-39-5	indeno(1,2,3-cd)pyrene	11.9	U
53-70-3	dibenz(a,h)anthracene	11.9	U
191-24-2	benzo(g,h,i)perylene	11.9	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161072

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6015W

Matrix: (soil/water) WATER Lab Sample ID: 9811575-12

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7K132

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: not dec. _____ Date Analyzed: 11/24/98

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	2.0	U
108-88-3	toluene	2.0	U
100-41-4	ethylbenzene	2.0	U
1330-20-7	xylenes (total)	3.0	U

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161072

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6015W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811575-05

Sample wt/vol: 830.0 (g/mL) ML Lab File ID: 1V118

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:11/18/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 11/23/98

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	12.0	U
91-58-7	2-chloronaphthalene	12.0	U
209-96-8	acenaphthylene	12.0	U
83-32-9	acenaphthene	12.0	U
86-73-7	fluorene	12.0	U
85-01-8	phenanthrene	12.0	U
120-12-7	anthracene	12.0	U
206-44-0	fluoranthene	12.0	U
129-00-0	pyrene	12.0	U
56-55-3	benzo(a)anthracene	12.0	U
218-01-9	chrysene	12.0	U
205-99-2	benzo(b)fluoranthene	12.0	U
207-08-9	benzo(k)fluoranthene	12.0	U
50-32-8	benzo(a)pyrene	12.0	U
193-39-5	indeno(1,2,3-cd)pyrene	12.0	U
53-70-3	dibenz(a,h)anthracene	12.0	U
191-24-2	benzo(g,h,i)perylene	12.0	U

R GD4

Note: sample failed surrogate recovery twice, data are severely negatively biased, true low or undetected result is inconclusive. MJ.

FORM I SV-1 OLM03.0

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CHAIN OF CUSTODY RECORD

COC NO.: GA007

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name)

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
161012	11/13/98	1225	water		2								2	9811476-01
161014	11/13/98	1225			2								2	-02
920822	11/13/98	1030			2								2	-03
920812	11/13/98	950			2								2	-04
6801632	11/13/98	1640			2								2	-05
6801642	11/13/98	1745			2								2	-06

11/14/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 12	Cooler Temperature:
Laura Lumley	11/14/98	Bfrancis	11/14/98	Cooler ID: # 727	FEDEX NUMBER:
COMPANY NAME: SAIC	1105	COMPANY NAME: gel	1330		
RECEIVED BY: Carol Sandel	Date/Time 11/14/98	RELINQUISHED BY:	Date/Time	NOTE: Cooler receipt checklist indicates a cooler temperature of 3°-5°C upon arrival at the laboratory.	
COMPANY NAME: General Engineering	1105	COMPANY NAME:			
RELINQUISHED BY: Carol Sandel	Date/Time 11/14/98	RECEIVED BY:	Date/Time		
COMPANY NAME: General Engineering	1330	COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GA0009

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumley (Printed Name): Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
160814	11/13/98	1500	water		2								2	98 11476-13
160712	11/13/98	1745			2								2	-14
800612	11/13/98	1615			2								2	-15
160612	11/13/98	1500			2								2	-16
160916	11/13/98	1600			2								2	-17
160912	11/13/98	1600			2								2	-18

Save

RELINQUISHED BY: Laura Lumley — Date/Time: 11/14/98 1105
COMPANY NAME: SAIC

RECEIVED BY: Carol Sandel — Date/Time: 11/14/98 1105
COMPANY NAME: General Engineering

RELINQUISHED BY: Carol Sandel — Date/Time: 11/14/98 1330
COMPANY NAME: General Engineering

RECEIVED BY: D Francko — Date/Time: 11/14/98 1330
COMPANY NAME: FedEx

RELINQUISHED BY: — Date/Time:
COMPANY NAME:

RECEIVED BY: — Date/Time:
COMPANY NAME:

TOTAL NUMBER OF CONTAINERS:
Cooler ID: #715
Cooler Temperature:
FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 3°-5°C upon arrival at the laboratory.

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2 of 3

CHAIN OF CUSTODY RECORD

COC NO.: GA010

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
840623	11/13/98	915	Soil	1						1			2	9811477-14
860721	11/13/98	1745	↓	1						1			2	-15
800621	11/13/98	1615	↓	1						1			2	-16
680642	11/13/98	1745	water	2									2	9811478-01
680632	11/13/98	1640		2									2	02
860712	11/13/98	1745		2									2	-03
* 160912	11/13/98	1600		2									2	04
680622	11/13/98	1615		2									2	-05
680612	11/13/98	1550		2									2	-06
160642	11/13/98	1500		2									2	-07
920812	11/13/98	950		2									2	-08
800612	11/13/98	1615		2									2	-09
840812	11/13/98	1435	↓	2									2	-10

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/14/98	[illegible]	11/14/98
COMPANY NAME: SAIC	1105	COMPANY NAME: [illegible]	1330
RECEIVED BY: Carol Sandel	11/14/98	RELINQUISHED BY:	
COMPANY NAME: General Engineering	1105	COMPANY NAME:	
RELINQUISHED BY: Carol Sandel	11/14/98	RECEIVED BY:	
COMPANY NAME: General Engineering	1330	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #712

Cooler Temperature:

FEDEX NUMBER:

Note: Cooler Receipt Checklist indicates a cooler temperature of 3°-5°C upon arrival at the laboratory.

366637 :5

366650 :1

VIII-50

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CHAIN OF CUSTODY RECORD

COC NO.: GA010

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
161012	11/13/98	1225	water	2									2	9811478-11
840612	11/13/98	915		2									2	-12
920822	11/13/98	1030		2									2	-13
920814	11/13/98	950		2									2	-14
161014	11/13/98	1225		2									2	-15
160912	11/13/98	1600		2									2	-16
160814	11/13/98	1500		2									2	-17
TBA032	11/13/98	745		2									2	-18
800712	11/14/98	840		2									2	-19

11/12/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/14/98	Brenda	11/14/98
COMPANY NAME: SAIC	1105	COMPANY NAME: GEL	1330
RECEIVED BY: Carol Sandel	Date/Time 11/14/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: General Engineering	1105	COMPANY NAME:	
RELINQUISHED BY: Carol Sandel	Date/Time 11/14/98	RECEIVED BY:	Date/Time
COMPANY NAME: General Engineering	1330	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 70

Cooler ID: # 712

Cooler Temperature:

FEDEX NUMBER:

Note: Cooler Receipt Checklist indicates a cooler temperature of 3°-5°C upon arrival at the laboratory.

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800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD 9911519

COC NO.: GA012

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
07	710942	11/14/98	1040	water		2								2
08	670732	11/14/98	1740			2								2
09	670734	11/14/98	1740			2								2
10	670722	11/14/98	1710			2								2
11	670712	11/14/98	1610			2								2
12	160712	11/14/98	1615			2								2

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

36716

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/16/98	Tim K	11-16-98
COMPANY NAME: SAIC	1230	COMPANY NAME: G.E.L	1600
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	11-16-98 1240	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	11-16-98 1600	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12

Cooler Temperature: 3°

Cooler ID: #716

FEDEX NUMBER:

11/16/98

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3013

CHAIN OF CUSTODY RECORD

COC NO.: GA010

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

	Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:
15	71091Z	11/14/98	900	water	2									2
16	71093Z	11/14/98	1000		2									2
17	16071Z	11/14/98	1615		2									2
18	20041Z	11/14/98	1345		2									2
19	TBA033	11/14/98	745		2									2
20	TBA034	11/15/98	745		2									2

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/16/98		
COMPANY NAME: SAIC	1230	COMPANY NAME: G.E.C	11-16-98 1600
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEC	11-16-98 1230	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEC	11-16-98 1600	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 67

Cooler Temperature: 5°

Cooler ID: #2648

FEDEX NUMBER:

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CHAIN OF CUSTODY RECORD

COC NO.: GA017

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
710612	11/16/98	1130	water		2								2	9811575-01
710912	11/16/98	1230			2								2	-02
710712	11/16/98	950			2								2	-03
161052	11/16/98	1430			2								2	-04
161072	11/16/98	1600			2								2	-05
160812	11/16/98	1645	↓		2								2	-06

GD 11/17/98

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

36762.11

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/17/98	Branch	11/17/98
COMPANY NAME: SAIC	1230	COMPANY NAME: GEL	1615
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	11-17-98		
COMPANY NAME: GEL	1230	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
	11-17-98		
COMPANY NAME: GEL	1615	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12

Cooler ID: #712

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.

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1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GA018

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-9805-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	BTEX, GRO	PAH, DRO	PAH, TPH	PAH, DRO, Lead	PAH, TPH, Lead	PAH, DRO, Lead, TOC	PAH, TPH, Lead, TOC	TCLP BTEX	TCLP Lead, TCLP PAH	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
710621	11/16/98	1130	Soil			1	1								2	9811576-01
710711	11/16/98	950				1	1								2	-02
710911	11/16/98	1230				1	1								2	-03
710623	11/16/98	1130				1	1								2	-04
710821	11/16/98	1230				1			1						2	-05
710721	11/16/98	950				1			1						2	-06
710611	11/16/98	1130				1			1						2	-07
860811	11/16/98	1645		1				1							2	-08
860821	11/16/98	1645		1						1					2	-09
RS7609	11/17/98	930											1	1	2	-10
161072	11/16/98	1430	Water	2											2	9811575-12
161052	11/16/98	1430		2											2	-13
710612	11/16/98	1130		2											2	-14

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/17/98	[illegible]	11/17/98
COMPANY NAME: SAIC	1230	COMPANY NAME: GEL	1615
RECEIVED BY: [illegible]	Date/Time 11-17-98	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1230	COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 11-17-98	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	1615	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #721

Cooler Temperature:

FEDEX NUMBER:

NOTE: Cooler Receipt Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA07W

Matrix: (soil/water) WATER Lab Sample ID: 9902817-01

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1Y407

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: not dec. _____ Date Analyzed: 03/04/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
71-43-2	benzene	5.9	
108-88-3	toluene	5.1	
100-41-4	ethylbenzene	1.7	J
75-71-8	xylenes (total)	7.8	

J H02

FORM I VOA OLM03.0

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA07W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902817-13

Sample wt/vol: 890.0 (g/mL) ML Lab File ID: 8K118

Level: (low/med) LOW DATA VALIDATION COPY Date Received: 02/21/99

% Moisture: _____ decanted: (Y/N) Date Extracted: 03/08/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 03/09/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	11.2	U
91-58-7	2-chloronaphthalene	11.2	U
208-96-8	acenaphthylene	11.2	U
83-32-9	acenaphthene	11.2	U
86-73-7	fluorene	11.2	U
85-01-8	phenanthrene	11.2	U
120-12-7	anthracene	11.2	U
206-44-0	fluoranthene	11.2	U
129-00-0	pyrene	11.2	U
56-55-3	benzo(a)anthracene	11.2	U
218-01-9	chrysene	11.2	U
205-99-2	benzo(b)fluoranthene	11.2	U
207-08-9	benzo(k)fluoranthene	11.2	U
50-32-8	benzo(a)pyrene	11.2	U
193-39-5	indeno(1,2,3-cd)pyrene	11.2	U
53-70-3	dibenz(a,h)anthracene	11.2	U
191-24-2	benzo(g,h,i)perylene	11.2	U

UJ A01

UJ P02, A01

UJ A01

FORM I SV-1 OLM03.0

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA07W

Matrix: (soil/water) WATER Lab Sample ID: 9902817-02

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 1Y409

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: not dec. _____ Date Analyzed: 03/04/99

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: _____(uL

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
71-43-2	benzene	0.50	J	J
108-88-3	toluene	3.7		
100-41-4	ethylbenzene	1.0	J	J
75-71-8	xylenes (total)	5.7		

FORM I VOA OLM03.0

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

161212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA07W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902817-14

Sample wt/vol: 980.0 (g/mL) ML Lab File ID: 8K119

Level: (low/med) LOW Date Received: 02/21/99

% Moisture: _____ decanted: (Y/N) DATA VALIDATION Date Extracted: 03/08/99

Concentrated Extract Volume: 1000 (mL) COPY Date Analyzed: 03/09/99

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	10.2	U
91-58-7	2-chloronaphthalene	10.2	U
208-96-8	acenaphthylene	10.2	U
83-32-9	acenaphthene	10.2	U
86-73-7	fluorene	10.2	U
85-01-8	phenanthrene	10.2	U
120-12-7	anthracene	10.2	U
206-44-0	fluoranthene	10.2	U
129-00-0	pyrene	10.2	U
56-55-3	benzo(a)anthracene	10.2	U
218-01-9	chrysene	10.2	U
205-99-2	benzo(b)fluoranthene	10.2	U
207-08-9	benzo(k)fluoranthene	10.2	U
50-32-8	benzo(a)pyrene	10.2	U
193-39-5	indeno(1,2,3-cd)pyrene	10.2	U
53-70-3	dibenz(a,h)anthracene	10.2	U
191-24-2	benzo(g,h,i)perylene	10.2	U

UJ A01

UJ PQL, A01

UJ A01

FORM I SV-1 OLM03.0

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1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D0350

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-1593-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature): Laura Lumpkin (Printed Name): Laura Lumpkin

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	GRO	PAH, TPH	PAH, TPH, Lead	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	O&G Grease	Total Phenols	pH	VOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
D03501	2/20/99	1500	water									2	2	1	2	7	9902814-01 *24 HR. TURN
161112	2/20/99	1600	↓	2												2	9902817-01
161212	2/20/99	1530		2												2	02
716221 2	2/20/99	930		2												2	03
600812	2/20/99	1400		2												2	04
600824	2/20/99	1400		2												2	05
841312	2/20/99	1720		2												2	06
841412	2/20/99	1600		2												2	07
TB0804	2/20/99	745	↓	2												2	08
161221	2/20/99	1510	Soil	1		1			1							3	9902818-01
161121	2/20/99	1550		1		1			1							3	02
841311	2/20/99	1652		1												2	03
841411	2/20/99	1745	↓	1												2	04

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature:
Laura Lumpkin	2/21/99	Francis	2/22/99		
COMPANY NAME: SAIC	1045	COMPANY NAME: GEL		Cooler ID: # 93058 4°C	FEDEX NUMBER:
RECEIVED BY: Rhodes	Date/Time 2/4/99	RELINQUISHED BY:	Date/Time		
COMPANY NAME: GEL	1045	COMPANY NAME:			
RELINQUISHED BY: Rhodes	Date/Time 2/4/99	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL	1445	COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: D03509

PROJECT NAME: Fort Stewart CAP Part A UST Investigations

PROJECT NUMBER: 01-0331-04-1593-220

PROJECT MANAGER: Patty Stoll

Sampler (Signature) Laura Lumley (Printed Name) Laura Lumley

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	GRO	PAH, TPH	PAH, TPH, Lead	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
841312	2/20/99	1720	water		X		X		X			2	9902817-09
6006612	2/20/99	1400			X		X		X			2	-10
6006624	2/20/99	1400			X		X		X			2	-11
762212	2/20/99	930			X		X		X			2	-12
161112	2/20/99	1600			X		X		X			2	-13
161212	2/20/99	1530			X		X		X			2	-14

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	2/21/99 1045	[illegible]	2/22/99
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY: [illegible]	Date/Time 2/21/99 1045	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 2/22/99 1445	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12

Cooler ID: #625 5°C

Cooler Temperature:

FEDEX NUMBER:

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APPENDIX IX

CONTAMINATED SOIL DISPOSAL MANIFESTS

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No contaminated soil was disposed of during the removal of USTs 36 & 37, thus there are no manifests.

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APPENDIX X

SITE RANKING FORM

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SITE RANKING FORM

Facility Name: USTs 36 & 37, Building 1510 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089016 **Date Ranked:** 4/19/99

SOIL CONTAMINATION

A. Total PAHs –
Maximum Concentration found on the site
(Assume <0.660 mg/kg if only gasoline was stored on site)

☐	≤0.660 mg/kg	=	0
☐	>0.66 - 1 mg/kg	=	10
☒	>1 - 10 mg/kg	=	25
☐	>10 mg/kg	=	50

B. Total Benzene -
Maximum Concentration found on the site

☒	≤0.005 mg/kg	=	0
☐	>0.005 - .05 mg/kg	=	1
☐	>0.05 - 1 mg/kg	=	10
☐	>1 - 10 mg/kg	=	25
☐	>10 - 50 mg/kg	=	40
☐	>50 mg/kg	=	50

C. Depth to Groundwater
(bls = below land surface)

☐	>50' bls	=	1
☐	>25' - 50' bls	=	2
☐	>10' - 25' bls	=	5
☒	≤10' bls	=	10

Fill in the blanks: **(A. 25) + (B. 0) = (25) x (C. 10) = (D. 250)**

GROUNDWATER CONTAMINATION

E. Free Product (Nonaqueous-phase liquid hydrocarbons; See Guidelines For definition of "sheen").

☒	No free product	=	0
☐	Sheen - 1/8"	=	250
☐	>1/8" - 6"	=	500
☐	>6" - 1ft.	=	1,000
☐	For every additional inch, add another 100 points = 1,000 +		

F. Dissolved Benzene -
Maximum Concentration at the site
(One well must be located at the source of the release.)

☐	≤5 µg/L	= 0
☐	>5 - 100 µg/L	= 5
☒	>100 - 1,000 µg/L	= 50
☐	>1,000 - 10,000 µg/L	= 100
☐	>10,000 µg/L	= 250

Fill in the blanks: **(E. 0) + (F. 50) = (G. 50)**

Facility Name: USTs 36 & 37, Building 1510 **County:** Liberty **Facility ID #:** 9-089016

POTENTIAL RECEPTORS (MUST BE FIELD-VERIFIED)

Distance from nearest contaminant plume boundary to the nearest downgradient and hydraulically connected Point of Withdrawal for water supply. **If the point of withdrawal is not hydraulically connected, evidence as outlined in the CAP-A guidance document MUST be presented to substantiate this claim.**

H. Public Water Supply

☐	Impacted	= 2000
☐	≤500'	= 500
☐	>500' - ¼ mi	= 25
☐	¼ mi - 1 mi	= 10
☐	>1 mi - 2 mi	= 2
* ☒	> 2 mi	= 0

For lower susceptibility areas only:

☐	>1 mi	= 0

Note: If site is in lower susceptibility area, do not use the shaded areas.

* For justification that withdrawal point is not hydraulically connected, see attached text.

I. Non-Public Water Supply

☐	Impacted	= 1000
☐	≤100'	= 500
☐	>100' - 500'	= 25
☐	>500' - ¼ mi	= 5
☐	>¼ - ½ mi	= 2
☒	>½ mi	= 0

For lower susceptibility areas only:

☐	>¼ mi	= 0

J. Distance from nearest Contaminant Plume boundary to downgradient Surface Waters **OR UTILITY TRENCHES & VAULT** (a utility trench may be omitted from ranking if its invert elevation is more than 5 feet above the water table)

☐	Impacted	= 500
☒	≤500'	= 50
☐	>500' - 1,000'	= 5
☐	>1,000'	= 1

K. Distance from any Free Product to basements and crawl spaces

☐	Impacted	= 500
☐	<500'	= 50
☐	>500' - 1,000'	= 5
☒	>1,000' or no free product.	= 0

Fill in the blanks: **(H. 0) + (I. 0) + (J. 50)+ (K. 0) = L. 50**

(G. 50) x (L. 50) = M. 2500

(M. 250)+ (D. 250) = N. 275

P. **SUSCEPTIBILITY AREA MULTIPLIER**

☐ If site is located in a Low Ground-Water Pollution Susceptibility Area = 0.5

☒ All other sites = 1

Q. **EXPLOSION HAZARD**

Have any explosive petroleum vapors, possibly originating from this release, been detected in any subsurface structure (e.g., utility trenches, basements, vaults, crawl spaces, etc.)?

☐ Yes = 200,000

☒ No = 0

Fill in the blanks: **(N. 2750) x (P. 1) = (2750) + (Q. 0)**

= 2750
ENVIRONMENTAL SENSITIVITY SCORE

ADDITIONAL GEOLOGIC AND HYDROLOGIC DATA

The following information is presented to provide supplemental information to Section II.D.5 of the CAP-Part A form and Item H of the Site Ranking Form and provides detailed information relating to the geologic and hydrogeologic conditions at Fort Stewart, which supports Fort Stewart's determination that the water withdrawal point(s) located at Fort Stewart is (are) not hydraulically connected to the surficial aquifer.

1.0 REGIONAL AND LOCAL GEOLOGY

Fort Stewart is located within the coastal plain physiographic province. This province is typified by nine southeastward dipping strata that increase in thickness from 0 feet at the fall line located approximately 150 miles inland from the Atlantic coast, to approximately 4,200 feet at the coast. State geologic records describe a probable petroleum exploration well (the No. 1 Jelks-Rogers) located in the region as encountering crystalline basement rocks at a depth of 4254 feet BGS. This well provides the most complete record for Cretaceous, Tertiary, and Quaternary sedimentary strata in the region.

The Cretaceous section was found to be approximately 1970 feet thick and dominated by clastics. The Tertiary section was found to be approximately 2170 feet thick and dominated by limestone with a 175-foot-thick cap of dark green phosphatic clay. This clay is regionally extensive and is known as the Hawthorn Group. The interval from approximately 110 feet to the surface is Quaternary in age and composed primarily of sand with interbeds of clay or silt. This section is undifferentiated into separate formations (Herrick and Vochis 1963).

State geologic records contain information regarding a well drilled in October 1942, 1.8 miles north of Flemington at Liberty Field of Camp Stewart (now known as Fort Stewart). This well is believed to be an artesian well located approximately one-quarter mile north of the runway at Wright Army Airfield within the Fort Stewart Military Reservation. The log for this well describes a 410-foot section, the lowermost 110 feet of which consisted predominantly of limestone sediments, above which 245 feet of dark green phosphatic clay typical of the Hawthorn Group was encountered. The uppermost portion of the section was found to be Quaternary-age interbedded sands and clays. The top 15 feet of these sediments were described as sandy clay (Herrick and Vochis 1963).

The surface soil located throughout the Fort Stewart garrison area consists of Stilson loamy sand. The surface layer of this soil is typically dark grayish-brown loamy sand measuring approximately 6 inches in depth. The surface layer is underlain by material consisting of pale yellow loamy sand and extends to a depth of approximately 29 inches. The subsoil is dominantly sandy clay loam and extends to a depth of 72 inches or more (Herrick and Vochis 1963).

2.0 REGIONAL AND LOCAL HYDROGEOLOGY

The hydrogeology in the vicinity of Fort Stewart is dominated by two aquifers referred to as the Principal Artesian and the surficial aquifers. The Principal Artesian aquifer is the lowermost hydrologic unit and is regionally extensive from South Carolina through Georgia, Alabama, and most of Florida. Known elsewhere as the Floridan, this aquifer is composed primarily of Tertiary-age limestone, including the Bug Island Formation, the Ocala Group, and the Suwannee Limestone. These formations are

approximately 800 feet thick, and groundwater from this aquifer is used primarily for drinking water (Arora 1984).

The uppermost hydrologic unit is the surficial aquifer, which consists of widely varying amounts of sand and clay ranging from 55 to 150 feet in thickness. This aquifer is primarily used for domestic lawn and agricultural irrigation. The top of the water table ranges from approximately 2 to 10 feet BGS (Geraghty and Miller 1993). The base of the aquifer corresponds to the top of the underlying dense clay of the Hawthorn Group. The Hawthorn Group was not encountered during drilling at this site but is believed to be located at 40 to 50 feet BGS; thus, the effective aquifer thickness would be approximately 35 to 45 feet. Soil surveys for Liberty and Long Counties describe the occurrence of a perched water table within the Stilson loamy sands present within Fort Stewart (Looper 1980).

The confining layer for the Principal Artesian aquifer is the phosphatic clay of the Hawthorn Group and ranges in thickness from 15 to 90 feet. The vertical hydraulic conductivity of this confining unit is on the order of 10^{-8} cm/sec. There are minor occurrences of aquifer material within the Hawthorn Group; however, they have limited utilization (Miller 1990). The Hawthorn Group has been divided into three formations: Coosawhatchie Formation, Markshead Formation, and the Parachula Formation, which are listed from youngest to oldest.

The Coosawhatchie Formation is composed predominantly of clay but also has sandy clay, argillaceous sand, and phosphorite units. The formation is approximately 170 feet thick in the Savannah Georgia area. This unit disconformably overlies the Markshead Formation and is distinguished from the underlying unit by dark phosphatic clays or phosphorite in the lower part and fine-grained sand in the upper part.

The Markshead Formation is approximately 70 feet thick in the Savannah Georgia area and consists of light-colored phosphatic, slightly dolomitic, argillaceous sand to fine-grained sandy clay with scattered beds of dolostone and limestone.

The Parachula Formation consists of sand, clay, limestone, and dolomite, and is approximately 10 feet thick in the Savannah Georgia area. The Parachula Formation generally overlies the Suwannee Limestone in Georgia.

Groundwater encountered at all the UST investigation sites is part of the Surficial Aquifer system. Based on the fact that all public and non-public water supply wells draw water from the Principal (Floridan) Aquifer, and that the Hawthorn confining unit separates the Principal Aquifer from the Surficial Aquifer, it is concluded that there is no hydraulic interconnection between the Surficial Aquifer (and associated groundwater plumes, if applicable) located beneath former UST sites and identified water supply withdrawal points at Fort Stewart.

APPENDIX XI

COPIES OF PUBLIC NOTIFICATION LETTERS AND CERTIFIED RECEIPTS OF NEWSPAPER NOTICE

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STATE OF GEORGIA
CHATHAM COUNTY

Affidavit of Publication
___Savannah Morning News
___Savannah Evening Press

Personnally appeared before me, Joan T. Jenkins, to me known, who being sworn, deposes and says:

That he is the Classified Adv Supv of Southeastern Newspapers Corporation, a Georgia corporation, doing business in Chatham County, Georgia, under the trade name of Savannah Morning News/Savannah Evening Press, a daily newspaper published in said county;

That he is authorized to make affidavits of publication on behalf of said published corporation;

That said newspaper is of general circulation in said county and in the area adjacent thereto;

That he has reviewed the regular editions of the Savannah Morning News/Savannah Evening Press, published on 7-19, 1998, 7-26, 1998, _____, 1998, _____, 1998, and finds that the following Advertisement, to-wit:

PUBLIC NOTICE
Notification of Corrective Action Plan, Underground Storage Tank Releases, Fort Stewart Garrison Area, Fort Stewart, Georgia
The United States Army Corps of Engineers and Fort Stewart Directorate of Public Works have prepared Corrective Action Plan (CAP) - Part A and Part B reports to assess the environmental impact of diesel, gasoline, or waste oil releases from numerous underground storage tanks (USTs) located at the above referenced property. These reports will be submitted to the Georgia Environmental Protection Division after September 30, 1998. A listing of the UST sites for which CAP - Part A and Part B reports have been prepared is presented at the end of this notification.
The Georgia rules for UST management require notification of the public most directly affected by the plans. If you would like a copy of any of the plans, please contact:
Commander, 3rd Infantry Division (Mechanized) and Fort Stewart, Attn: AFZP-DEV (T. Rutland), Building 1139, Fort Stewart, Georgia 31314-5000
A copy of each requested plan will be mailed at a nominal fee to make comments on any of the plans, or to examine the Georgia Environmental Protection Division's files, contact the Corrective Action Unit, Underground Storage Tank Management Program, Environmental Protection Division at 404-362-2687. The Underground Storage Tank Management Program will accept comments on the CAP - Part A and Part B reports up to 30 days after submittal to the Georgia Environmental Protection Division. Following is their mailing address:
Corrective Action Unit, Underground Storage Tank Management Program, 424 International Parkway, Suite 100, Atlanta, Georgia 30354
Fort Stewart CAP - Part A and Part B Underground Storage Tank Sites

Tank Number Facility ID Building
242, 9-089041, 241
244, 9-089041, 241
28B, 9-089011, 1720
94B, 9-089110, 1339
100B, 9-089081, 1350
214, 9-089015, 1503
215, 9-089015, 1503
123, 9-089092, 933
106, 9-089032, 6923
111, 9-089085, 19109
118, 9-089070, 1239
36, 9-089016, 1512
37, 9-089016, 1512
94, 9-089016, 1328
4, 9-089045, 1840
5 and 6, 9-089066, 1824
52, 9-089050, 1062
X, 9, 106501
1, 9-089044, 1842
18, 9-089011, 1720
20, 9-089011, 1720
28A, 9-089011, 1720
30-35, 9-089028, 1621
202-204, 9-089045, 241
261, 9-089118, 430
225, 9-089090, 4529
122, 9-089083, 7705
257-260, 9-089037, 430
2 and 3, 9-089065, 1840
87 and 88, 9-089073, 1245
48 and 49, 9-089054, 1175
226 and 227, 9-089042, 4530

appeared in each of said editions.

Joan T. Jenkins
(Deponent)

Sworn to and subscribed before me this 28 day of July, 1998.

Lillie D. Lang
Notary Public, Chatham County, Georgia

LILLIE D. LANG
Notary Public, Chatham County, Ga.
My Commission Expires Apr. 8, 2001

Form 121 rev.

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APPENDIX XII

GUST TRUST FUND REIMBURSEMENT APPLICATION AND CLAIM FOR REIMBURSEMENT

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Fort Stewart is a federally owned facility and has funded the investigation for the USTs 36 & 37, Building 1510, Facility ID #9-089016, using Department of Defense Environmental Restoration Account Funds. Application for Georgia Underground Storage Tank Trust Fund reimbursement is not being pursued at this time.

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ATTACHMENT A

TECHNICAL APPROACH

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TECHNICAL APPROACH

1.0 INTRODUCTION

The overall objective of this project is to provide the engineering services required to produce Corrective Action Plans (CAPs) for the subject UST sites. These reports will conform to the site closure requirements of a CAP-Part A for sites in Georgia. The field investigations necessary to support the report preparation included the installation of temporary piezometers, soil borings, and associated sampling of soil and groundwater. Upon completion of the field investigations, a CAP-Part A will be prepared to meet GA EPD, Fort Stewart, and the USACE-Savannah requirements.

2.0 FIELD ACTIVITIES

The following sections detail the methodologies used for geoprobe drilling, sampling, and piezometer installation. A geologist from SAIC was on site at all times during operations. No drilling activities were undertaken until all utility clearances and permits had been obtained from Fort Stewart's utility personnel.

2.1 Subsurface Soil Sampling

2.1.1 Geoprobe Drilling

The geoprobe method was used during the project for collecting soil samples. During all geoprobe drilling, soil samples were collected continuously on 4.0-foot centers from the ground surface to the bottom of the borehole. The total depth of each borehole was dictated by the depth where the water table was encountered.

2.1.2 Sample Collection

Soil samples for chemical analyses were collected from boreholes using 4.0-foot macro-core samplers. Upon retrieval of the sampling device, the soil core was split into two 2.0-foot sections using a stainless steel knife. A portion of each 2.0-foot section was collected for possible laboratory analysis. The remaining portion of each 2.0-foot section was used for field measurements.

During the May and June 1998 sampling events and any prior sampling events, samples designated for possible laboratory analysis were collected from the section using a stainless steel spoon. The spoon was run lengthwise down the core to collect a sample representative of the entire core section. The portion of the sample designated for volatile organic analyses was placed into laboratory sample containers first, followed by placement of the remaining portion of the sample into the containers designated for other types of analyses. Sample containers designated for volatile organic analyses were filled so that minimal headspace was present in the containers. Headspace gas concentration measurements were made using a field organic vapor meter (OVM). Initially, soil from each 2.0-foot interval was placed into a glass jar, leaving some air space, and covered with aluminum foil to create an air-tight seal. The sample was allowed to volatilize for a minimum of 15 minutes. The sealed jar was punctured with the OVM probe and headspace gas drawn until the meter reading was stable. The concentration of the headspace gas was recorded to the nearest 0.1 part per million.

Due to a change in the state regulations governing sample analysis, the collection of samples designated for volatile organic analyses was modified beginning with the November 1998 field effort. Soil samples designated for volatile organic analyses were collected using En Core™ samplers. The samplers were locked into an En Core T-Handle. Using the T-Handle, the sampler was pushed into the soil until the coring

body of the sampler was full. Once the samplers were filled, caps were locked onto them insuring that no headspace was present. The samplers were then removed from the handle and placed in an En Core zipper bag. Three encore samples are collected from each section 2.0-foot section.

Immediately after collection of each sample and completion of bottle label information, each potential analytical sample container was placed into an ice-filled cooler to ensure preservation. A clean split-barrel sampling device was used to collect soil core from each interval of the project boreholes. Information regarding the criteria for selection of soil samples for off-site shipment to a laboratory for chemical analysis is presented in Section 3.1.3 of the project Work Plan. Soil samples, which were not selected for laboratory analysis, were disposed of as investigation-derived waste (IDW).

2.2 Groundwater Sampling

2.2.1 Groundwater Collection

Groundwater samples from geoprobe boreholes installed during Preliminary Groundwater and CAP-Part A investigations were collected using a geoprobe sampler or from temporary piezometers. The geoprobe sampler is a probe that allows the collection of a groundwater sample from a discrete undisturbed depth interval in a soil boring. Temporary piezometers were constructed of 1.0-inch inside diameter (ID) polyvinyl chloride (PVC) casing with a 5-foot or 10-foot screened interval. These piezometers were installed in the open borehole following completion of all drilling activities.

Each soil borehole was advanced to the top of the water table using direct push methods. For each borehole, the geoprobe sampler was lowered to the bottom of the borehole and driven through the undisturbed soil to a depth of approximately 3.0 feet below the water table. The outer casing of the geoprobe sampler was retracted to expose the screen and allow groundwater to enter the chamber. In cases where the geoprobe sampler could not be driven or where groundwater recovery through the geoprobe sampler was poor, the groundwater sample was collected through the temporary piezometer.

Groundwater samples were collected using a peristaltic pump or a 0.75-inch diameter stainless steel bailer. The portion of the sample designated for volatile organic analysis was poured into laboratory sample containers first, followed by pouring the remaining sample portion into containers designated for other types of chemical analyses. Sample containers designated for volatile organic analysis were filled so that no headspace was present in the containers.

2.2.2 Field Measurements

Groundwater field measurements performed during the project included measurement of static groundwater level, pH, specific conductance, and temperature. Measurement of groundwater levels in soil boreholes was accomplished through the installation of temporary PVC piezometers. A summary of the procedures and criteria to be used for groundwater sample field measurements is presented in the following sections.

Static Groundwater Level

Static groundwater level measurements were made using an electronic water level indicator. Initially, the indicator probe was lowered into each temporary piezometer casing until the alarm sounded and/or the indicator light illuminated. The probe was withdrawn several feet and slowly lowered again until the groundwater surface was contacted as noted by the alarm and/or indicator light. Water level measurements

were estimated to the nearest 0.01 foot based on the difference between the nearest probe cord mark to the top of the piezometer casing.

The distance between the top of casing and the surrounding ground surface was taken into account in measuring the water level to within 0.01 foot. The static water level measurement procedure was repeated two or three times to ensure that the water level measurements were consistent (plus or minus 0.01 foot). If this was the case, then the first measured level was recorded as the depth to groundwater. If this was not the case, the procedure was repeated until consistent readings were obtained from three consecutive measurements.

pH, Specific Conductance, and Temperature

The pH, specific conductance, and temperature measurements were recorded for groundwater during groundwater sampling. The pH, temperature, and conductivity measurements were made using a combination meter designed to measure these parameters. A portion of each groundwater sample was retrieved from the PowerPunch sampler and poured into the collection cup. With the combination meter set in the pH mode, the meter electrode was swirled at a slow constant rate within the sample until the meter reading reached equilibrium. The sample pH was recorded to the nearest 0.1 pH unit. The pH measurement procedure was repeated, using a new sample each time, until the pH measurements were consistent (less than 0.2 pH units variation).

Upon completion of the pH measurement, conductivity, and temperature measurements were made on a groundwater sample collected in the same manner as described above. With the combination meter set in the conductivity mode, the meter electrode was swirled at a slow constant rate within the sample until the meter reading reached equilibrium. Concurrently, a temperature probe was placed into the sample and allowed to reach equilibrium. The sample conductivity was recorded to the nearest 10 mmhos/cm and the temperature to the nearest 0.1° C. All recorded conductivity values were converted to conductance at 25° C. The conductivity and temperature measurement procedure was repeated a minimum of three times using a new sample each time, until the measurements are consistent (less than 10 percent variation for conductance and less than 0.5° C variation for temperatures).

2.3 Temporary Piezometer Installation

Following the collection of the groundwater sample, a 1.0-inch PVC piezometer, with a 5-foot or 10-foot screened section, was installed in the borehole to prevent the borehole from collapsing. These piezometers remained in the boreholes approximately 24 hours, after which time the static water level was measured. During field activities in November 1998 or later, the temporary piezometers were screened from ground surface to the bottom of the borehole.

2.4 Borehole Abandonment

Once the static water level was measured, the temporary piezometers were removed and the boreholes were abandoned. Abandonment was conducted in a manner precluding any current or subsequent fluid media from entering or migrating within the subsurface environment along the axis or from the endpoint of the borehole. Abandonment was accomplished by filling the entire volume of the borehole with grout.

2.5 Surveying

A topographic survey of the horizontal and vertical locations of all soil boreholes was conducted after completion of all field activities. The topographic survey was conducted by a surveyor registered in the state of Georgia.

The horizontal coordinates for each soil borehole were surveyed to the closest 1.0 foot and referenced to the State Plane Coordinate System. Ground elevations were surveyed to the closest 0.1 foot. Elevations were referenced to the National Geodetic Vertical Datum of 1983.

2.6 Decontamination Procedures

2.6.1 Geoprobe Equipment

Decontamination of equipment used for the drilling of boreholes was conducted within the temporary decontamination pad constructed at the central staging area. The decontamination pad was constructed so that all decontamination liquids were contained from the surrounding environment and were recovered for disposal as IDW. The entire geoprobe vehicle and equipment was decontaminated once it arrived on site and the geoprobe sampling equipment was decontaminated after completion of each soil borehole. The equipment was decontaminated by removing the caked soil material from the exterior of equipment using a rod and/or brush, steam cleaning the interior and exterior of equipment, allowing the equipment to air dry as long as possible, and wrapping or covering the equipment in plastic.

2.6.2 Sampling Equipment

Decontamination of equipment used for soil sampling and collection of groundwater samples was conducted at the temporary decontamination area. Nondedicated equipment was decontaminated after each use. The sampling equipment was washed with potable water and phosphate-free detergent using various types of brushes required to remove particulate matter and surface films, followed by a potable water rinse, American Society for Testing and Materials (ASTM) Type I or equivalent water rinse, isopropyl alcohol rinse, ASTM Type I or equivalent water rinse, allowed to air dry, and wrapped in plastic or aluminum foil.

In addition to the sampling equipment, field measurement instruments were also decontaminated between uses. Only those portions of each instrument that come into contact with potentially contaminated environmental media were decontaminated. Because of the delicate nature of these instruments, the decontamination procedure only involved initial rinsing of the instrument probes with ASTM Type I or equivalent water.

2.7 Documentation of Field Activities

All information pertinent to sampling activities, including instrument calibration data, was recorded in field logbooks. The logbooks were bound and the pages consecutively numbered. Entries in the logbooks were made in black permanent ink and included, at a minimum, a description of all activities, individuals involved in drilling and sampling activities, date and time of drilling and sampling, weather conditions, any problems encountered, and all field measurements.

Sufficient information was recorded in the logbooks to permit reconstruction of all sampling activities. For a detailed description of all field documentation, see section 4.5 of Attachment IV of the Work Plan.

3.0 SAMPLE HANDLING AND ANALYSIS

3.1 Analytical Program

Soil samples were screened for the presence of volatile vapors using a MiniRae organic vapor analyzer (PID). The MiniRae was calibrated daily using 100 parts per million (ppm) isobutylene. The headspace of each sample was measured approximately 15 minutes after collection.

For sites where the UST had contained waste oil, soil samples were analyzed for BTEX by method SW846-8020, PAH by method SW846-8270, TPH by method SW846-9073, and lead by method SW846-6010/7000, during the May and June 1998 field effort. Beginning in November 1998, BTEX was analyzed using method SW846-5035/8260B, while the analyses for the other contaminants remained the same. Groundwater samples were analyzed for BTEX by method SW846-8260 and PAH by method SW 846-8270. All samples were sent to General Engineering Laboratories, Charleston, South Carolina.

For sites where the UST had contained gasoline or diesel, soil samples were analyzed for BTEX by method SW846-8020, PAH by method SW846-8270, TPH by method SW846-8015 (modified), and Lead by method SW846-6010/7000. Groundwater samples were analyzed for BTEX by method SW846-8260 and PAH by method SW 846-8270. TPH analysis included both gasoline range organics (GRO) and diesel range organics (DRO). Beginning in November 1998, soil samples were analyzed for BTEX using method SW846-5035/8260B. All samples were sent to General Engineering Laboratories, Charleston, South Carolina.

Duplicate samples of soil and groundwater were collected throughout the project and represented approximately 10 percent of the total sample population. Rinsate blanks were collected to determine whether the sampling equipment was causing cross-contamination of the samples and represented approximately 5 percent of the total sample population. Duplicates and rinsates were submitted to General Engineering Laboratories, Charleston, South Carolina.

3.2 Sample Containers, Preservation, and Holding Times

The soil sample containers, preservatives, and holding times are summarized in Table A-1. The groundwater sample containers, preservatives, and holding times are summarized in Table A-2.

3.3 Sampling Packaging and Shipment

Each sample container was labeled, taped shut with electrical tape (except those containing samples designated for volatile organic analysis), and an initialed/dated custody seal was placed over the lid. Each sample bottle was placed into a separate plastic bag and sealed. The samples were placed upright in thermally insulated rigid-body coolers and surrounded by vermiculite to prevent breakage during shipment. In addition, samples were cooled to approximately 4° C with wet ice. These measures were taken to slow the decomposition and volatilization of contaminants during shipping and handling. The sample coolers were shipped to the analytical laboratory via courier service provided by the laboratory.

Table A-1. Summary of Sample Containers, Preservation Techniques, and Holding Times for Soil Samples Collected During the Site Investigation

Analyte Group	Container	Minimum Sample Size	Preservative	Holding Time
BTEX/TPH-GRO	1 – 4 oz jar with Teflon®-lined cap (no headspace)	20 g	Cool, 4°C	14 d
BTEX (beginning 11/98)	3 – En Core™ Samplers	15 g	Cool, 0°C	48 hrs
TPH-GRO (beginning 11/98)	1 – 4 oz jar with Teflon®-lined cap (no headspace)	20 g	Cool, 4°C	14 d
PAHs	1 – 8 oz jar with Teflon®-lined cap	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
TPH-DRO	use same container as PAHs	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
TPH	use same container as PAHs	90 g	Cool, 4°C	14 d (extraction) 40 d (analysis)
Metals (lead)	use same container as PAHs	20 g	Cool, 4°C	180 d

Table A-2. Summary of Sample Containers, Preservation Techniques, and Holding Times for Groundwater Samples Collected During the Site Investigation

Analyte Group	Container	Minimum Sample Size	Preservative	Holding Time
BTEX	2 – 40 mL glass vials with Teflon®-lined septum (no headspace)	40 mL	Cool, 4°C HCl to pH < 2	14 d
PAHs	2 – 1L amber glass bottle with Teflon®-lined lid	1000 mL	Cool, 4°C	7 d (extraction) 40 d (analysis)

ATTACHMENT B

REFERENCES

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Arora, Ram, 1984. Hydrologic Evaluation for Underground Injection Control in the Coastal Plain of Georgia, Department of Natural Resources, Environmental Protection Division, Georgia Geological Survey.

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Looper, Edward E., 1980. Soil Survey of Liberty and Long Counties, Georgia, U.S. Department of Agriculture, Soil Conservation Service.

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ATTACHMENT C

SUPPLEMENTAL INFORMATION – RISK BASED CORRECTIVE ACTION

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1. RISK-BASED CORRECTIVE ACTION

A risk-based approach was used to aid in the decision making process to determine the need for further action at the USTs 36 & 37 site. Due to the nature of the contamination (petroleum hydrocarbon contamination of groundwater), the risk-based approach was limited to human health concerns. Ecological risk concerns are negligible because of the lack of habitat available for ecological receptors as a result of the 10 to 12 inches of concrete overlying the site.

The methods for assessing human health concerns for the site were derived from GUST CAP Part B guidance (GA EPD 1995) and recent GA EPD guidance (GA EPD 1996). These were supplemented by the additional guidance documents on risk assessment methods referenced in this section. In general, the risk-based corrective action approach is performed in two steps:

1. Results were screened against readily available regulatory levels and risk-based screening levels to identify chemicals of potential concern (COPCs).

2. Site-specific ACLs were developed for COPCs using the results of the fate and transport modeling and identified receptor locations.

The following sections present the conceptual model of the exposure setting and potential receptors as well as the general methodology employed to perform the screening for COPCs and the development of ACLs.

1.1 Potential receptor survey

The exposure assessment identifies any potentially complete pathways between the contaminant source and potential receptors. This involves identifying potential current and future receptors, release mechanisms through which contamination might come into contact with the receptors, and the routes of exposure through which the receptors might be exposed.

The USTs 36 & 37 site is located within Fort Stewart, an active military installation, and within an access-controlled fence of a secured motorpool. The land use at the site is currently military industrial. In the direction of groundwater flow, an underground storm drain is located above the water table and approximately 40 feet southwest of boring 16-03 (i.e., area, of highest contamination), a drainage ditch is located approximately 1200 feet southwest of the site, and Mill Creek is located approximately 1900 feet southwest of the site.

No connection between site contamination and current off-site receptors has been identified. Site contamination may migrate to the surficial aquifer. The Hawthorn Group separates the surficial aquifer from the deep drinking water aquifer, the Floridan aquifer, which is approximately 90 feet of clay. There is no vertical migration from the surficial aquifer to the Floridan aquifer. Well #1 is located approximately 3000 feet upgradient and Well #5 is located approximately 5900 feet downgradient of the USTs 36 & 37 site. However, the Hawthorn Group, a thick and highly effective confining unit, separates the water supply well from the surficial aquifer.

No current on-site receptors have been identified for the site. Potential future on-site receptors might include industrial workers and military residents.

Potential future on-site industrial receptors may come in direct contact with site soil contamination during construction or excavation activities. No near-term on-site receptors are likely to come into contact with groundwater, unless the surficial aquifer discharges into the drainage ditch.

1.2 Screening for Chemicals of Potential Concern

1.2.1 Screening Methodology

The purpose of a risk evaluation screen is to identify the COPCs and areas of concern at a site and possibly to identify sites for which no further action is needed. The first step in the risk process uses screening levels that are readily obtainable and that, due to their conservative nature, can be used with a high degree of confidence to indicate sites for which no further action is required.

An American Society of Testing and Materials (ASTM) (ASTM 1995) Tier 1–type risk evaluation process will be applied to the data collected for the USTS 36 & 37 site to identify any COPCs and media for which no further action is needed. The risk evaluation screen involves the steps listed below.

- Identify potential migration and exposure pathways associated with the site, and identify potential exposure scenarios that should be used to select screening levels.
- Identify risk-based screening levels and regulatory based screening levels for each contaminant.
- Compare site-related concentrations to screening levels to determine if any potential COPCs exist at the site.
- Compare detection limits to screening levels to identify potential false negative screening results.

The screening levels for the USTS 36 & 37 site data have been taken from the following sources based on GA EPD guidance (GA EPD 1996):

- federal MCLs (EPA 1989),
- GUST Soil Threshold Levels (i.e., Table A, Column 2),
- soil screening levels developed by the U.S. Environmental Protection Agency (EPA) (EPA 1996a), and
- soil and groundwater risk-based concentrations developed by EPA Region 3 (EPA 1996b).

These values reflect screening levels based on a combination of regulatory screening levels (i.e., MCLs and GUST soil threshold levels), and calculated risk-based values (i.e., EPA Region 3 risk-based concentrations).

Screening levels inherently incorporate assumptions about land use. In identifying COPCs, it is generally accepted that screening levels will reflect any potential future land uses, and thus, they usually reflect a conservative residential use scenario (EPA 1991; EPA 1996a; ASTM 1995). Based on GA EPD guidance, risk-based screening levels reflect residential land use for groundwater and industrial land use for deep soils (GA EPD 1996).

Default residential exposure scenarios for groundwater assume that use of the land could someday be residential and that the following exposures could occur:

- ingestion of groundwater and
- inhalation of volatiles during showering.

The default industrial exposure assumptions for deep soils assume that the following exposures could occur:

- incidental ingestion of soil and
- inhalation of volatiles and dust.

EPA's *Soil Screening Guidance* (EPA 1996a) provides two options for selecting soil values that address protection of groundwater. One value assumes no contaminant dilution or attenuation would occur between the soil and groundwater; a second value assumes a 20-fold dilution attenuation factor (DAF). A DAF of 20 was used to develop soil screening values protective of groundwater at the USTS 36 & 37 site.

If ARAR- or risk-based values are not available, it generally means that (1) the chemical is not considered to be toxic except perhaps at extremely high concentrations (e.g., aluminum, sodium); (2) the dose-response data do not indicate a toxic effect; or (3) EPA is currently reviewing toxicity information and no reference dose or cancer slope factor is currently available.

1.2.2 Screening Results

The risk screening process is a systematic screening of sample results to identify site-related COPCs. Chemical concentrations below risk- or regulatory-based screening levels are not considered COPCs and are not evaluated further. Table C-1 presents the results of the risk-based screening for the Part A SI soil data. Table C-2 presents the results of the risk-based screening for the Part A SI groundwater data.

Benzene was detected at 10.2 µg/kg in a sample from boring 16-11 that exceeds the GUST soil threshold level of 8 µg/kg. However, this sample is located approximately 50 feet away from the UST and ancillary piping and is above the water table in an area where armored personnel carriers are parked with drip pans placed underneath the vehicles to catch oil leaks. Thus, the contamination is assumed to be related to the motorpool operations and not the UST and ancillary piping. No other compounds were detected above the GUST soil threshold levels or the risk-based screening levels for soil data collected for the Part A SI. Toluene, ethylbenzene, xylenes, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, pyrene, lead, and TPH were detected below screening levels during the Part A sampling. No constituents were selected as COPCs for USTs 36 & 37 site soils.

The detection limits for benzo(a)pyrene and dibenzo(a,h)anthracene exceeded their risk-based screening levels for soils based on leaching to groundwater in one sample. No COPCs for soils were selected for the site based on the detection limit screening.

Benzene was detected in seven temporary wells at concentrations above screening levels. The detections ranged from 0.42 µg/L (well 16-02) to 221 µg/L (well 16-03). These results exceeded the risk-based screening level for benzene of 0.36 µg/L. Four of the seven results also exceeded the federal MCL for benzene of 5 µg/L. Toluene was detected in eight wells. Of these eight detections, one (1740 µg/L in well 16-05) exceeded the MCL and risk-based screening levels for toluene. Benzo(a)pyrene was detected above its MCL and risk-based screening level in two wells (16-09 and 16-10). Several other PAHs were detected above risk-based screening levels in well 16-09. These PAHs include

benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chyrsene, and indeno(1,2,3-cd)pyrene. Ethylbenzene, xylenes, acenaphthene, anthracene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene were detected below screening values for the Part A SI. Benzene, toluene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene were selected as COPCs for the USTs 36 & 37 site groundwater.

Detection limits for several PAHs exceeded risk-based screening levels for the Part A groundwater data. For these chemicals, risk-based values represent values below analytically achievable levels. The detection limits for one PAH, benzo(*a*)pyrene, also exceeded the federal MCL of 0.2 µg/L by two orders of magnitude. The PAH fraction of sample 161072 was rejected because the surrogate recovery was zero. No additional COPCs were selected for groundwater based on the detection limit screening.

1.3 Site-Specific Levels

Detections exceeding the conservative generic screening levels are considered COPCs. ACLs are developed, when appropriate, for the COPCs using site-specific information from the fate and transport modeling. When regulatory screening levels were not available, then ACLs were developed based on risk-based levels. Risk-based ACLs were developed for benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene at the USTs 36 & 37 site.

1.3.1 Alternate Threshold Levels

No COPCs were identified for USTS 36 & 37 site soils; thus no alternate threshold levels were developed for soils.

1.3.2 Alternative Concentration Limits

Benzene, toluene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene were identified as COPCs for groundwater at the site. Benzene was considered the most mobile, and thus conservative, constituent. Benzene was modeled to three potential downgradient locations where a receptor may come in contact with migrating site contamination. These three locations included a storm drain 40 feet downgradient, a drainage ditch 1200 feet downgradient, and Mill Creek 1900 feet downgradient from the site. Fate and transport modeling was used to develop site-specific dilution attenuation factors (DAF) between the source and the receptor locations (see 1.3.3 below). Even though the storm drain is located above the water table, it is in close proximity to the water table and it was used as the closest potential receptor in the fate and transport modeling in order to be conservative in the event of seasonal groundwater fluctuations. Modeling results for the storm drain estimated a DAF for benzene of 4.4.

The MCLs for benzene and benzo(a)pyrene are 5 and 0.2 µg/L, respectively. The risk based values for benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene are 0.092 µg/L. The risk based values for benzo(k)fluoranthene and chrysene are 0.92 µg/L and 9.2 µg/L, respectively. Adjusting this regulatory level using the site-specific DAF identified for the potential migration of contamination from the site to the storm drain results in an ACL for benzene of 22 µg/L (i.e., 4.4 × 5 µg/L). The ACLs for benzene and the other groundwater COPCs are presented in Table C-4. The modeling estimated infinite DAFs for the drainage ditch and Mill Creek. An infinite DAF indicates that contamination will never reach these locations, thus no ACLs were developed for the drainage ditch and Mill Creek.

1.3.3 Fate and transport model

1.3.3.1 Model Selection

Site-specific dilution attenuation factors between the source and the receptor locations were developed. The DAF is a numerical value that represents the attempt to mathematically quantify the natural physical, chemical, and biological processes (e.g., advection-dispersion, sorption-retardation, biodegradation, volatilization) that result in the decrease of a chemical concentration in an environmental medium. In simple terms, the DAF is the ratio of chemical concentration at the source (or the point of origin) to the concentration at the exposure point. The DAFs reflect the natural attenuation concepts outlined in the ASTM's Risk Based Corrective Action (RBCA) protocol (ASTM 1995).

Fate and transport models are used as a tool for developing DAFs. The application of fate and transport models at any release site must ensure that the modeling results are protective of human health and the environment. Therefore, the selection process of a predictive model at a release site must consider its performance, characteristics, and applicability to the site being considered. The following characteristics were considered before selecting an appropriate model for Fort Stewart:

- the model provides conservative predictions,
- the model is technically sound,
- the model is a public-domain model or is readily available,
- the model has received adequate peer review,
- the model has been applied to other similar sites, and
- the model is easy to use.

The Analytical Transient 1-, 2-, 3-Dimensional Model (AT123D) meets all of the above criteria, and was selected for performing fate and transport analysis for this site. AT123D is a well-known and commonly used analytical groundwater pollutant fate and transport model. It computes the spatial-temporal concentration distribution of chemicals in the aquifer system and predicts the transient spread of a chemical plume through a groundwater aquifer. The fate and transport processes accounted for in AT123D are advection, dispersion, adsorption/retardation, and decay. This model can be used as a tool for estimating the dissolved concentration of a chemical in one, two, or three dimensions in the groundwater resulting from a mass release (either continuous or instant or depleting source) over a source area (i.e., point, line, area, or volume source).

1.3.3.2 Fate and Transport Results

The AT123D model was used to determine the impact of dissolved hydrocarbons on potential receptors. A steady-state AT123D model was developed by calibrating the model against observed maximum concentrations in the groundwater (i.e., 221 µg/L) beneath the USTs 36 & 37 site. Site-specific geotechnical information was collected during the CAP-Part A investigation and is presented in Table C-3. Modeling of the leaching of soil contamination to the groundwater was not performed because the additional contaminant contribution to the groundwater was negligible compared to the existing groundwater contamination. Potential receptors are a storm drain located 40 feet southwest of boring 16-03, a drainage ditch located 1200 feet southwest of the site, and Mill Creek located approximately 1900 feet southwest of the site. All underground utilities are located above the water table, however, the storm drain is in close proximity to the water table and is considered a potential receptor for the purpose of the fate and transport modeling.

Vertical migration of the contaminant plume through the confining unit to the Principal Artesian aquifer is improbable. The confining unit has a vertical hydraulic conductivity on the order of 10^{-8} cm/sec and ranges from 15 to 90 feet in thickness. Assuming a vertical gradient of 1.0 ft/ft and an effective porosity of 0.06 (Mills et al. 1985) for the confining unit, the groundwater travel time is estimated to be 87 years. However, benzene will not travel at the same speed as water because of retardation due to adsorption. The retardation factor for benzene through the confining unit is 5.05. Therefore, the travel time for benzene through the confining unit (15 feet thick) is greater than 400 years (i.e., 87 years × 5.05 = 439 years). The surficial aquifer in which the contaminant plume is located is not used as a source of drinking water.

The fate and transport modeling results are provided in Table C-5 and Section 1.5. Three potential downgradient locations, a storm drain, a drainage ditch, and Mill Creek at which a receptor might encounter migrating groundwater contamination, were modeled. These are the nearest possible locations at which a receptor might encounter migrating groundwater contamination due to a possible hydraulic connection between the groundwater and the surface water in the ditch and the creek. Contaminant fate and transport simulations were performed to predict the maximum concentrations at these receptor locations over a simulation period of 100 years. The modeling results indicate that the benzene concentration is predicted to be 49.7 µg/L at the storm drain, which is greater than the MCL of 5 µg/L. In addition, due to dilution attenuation benzene contamination will not reach the drainage ditch or Mill Creek at detectable concentrations. Therefore, surface water will not be impacted at concentrations above MCLs by the current site conditions at the USTs 36 & 37 site, Facility ID #: 9-089016.

Based on modeling results the estimated DAF for benzene at the storm drain is 4.4 (i.e., 221 µg/L ÷ 49.7 µg/L) and the DAF at the drainage ditch and Mill Creek are both infinity, indicating that the predicted concentrations at these receptors are zero. Simulations were not performed to predict the maximum concentrations of benzene over a simulation period of two years because there are no permanent monitoring wells at the site to confirm the model predictions. This simulation will be performed during the CAP-Part B.

1.4 Conclusions and recommendations

The conclusions below are based on a fate and transport modeling assuming a continuous source of contamination of infinite duration at the site based on the maximum observed benzene concentration (i.e. 221J µg/L) in groundwater during the CAP-Part A investigation.

- Risk-based screening results show that benzene and several PAH concentrations in groundwater exceed the initial screening levels.
- Benzene concentrations in groundwater exceed the ACL of 22 µg/L.
- The horizontal extent of groundwater contamination was not determined during the CAP-Part A investigation.
- The vertical extent of groundwater contamination was determined and the horizontal and vertical extent of soil contamination was determined during the CAP-Part A investigation.

- Fate and transport modeling of benzene indicates that contamination exceeds MCLs at the conservatively defined downgradient receptor, a storm drain, but does not exceed MCLs at the drainage ditch and Mill Creek.

Considering the site characteristics, a CAP-Part B investigation is recommended to determine the extent of contamination and provide monitoring wells in the event that natural attenuation is the most suitable corrective action at the site.

1.5 Fate and Transport Model Output Results

Following are the data for fate and transport modeling.

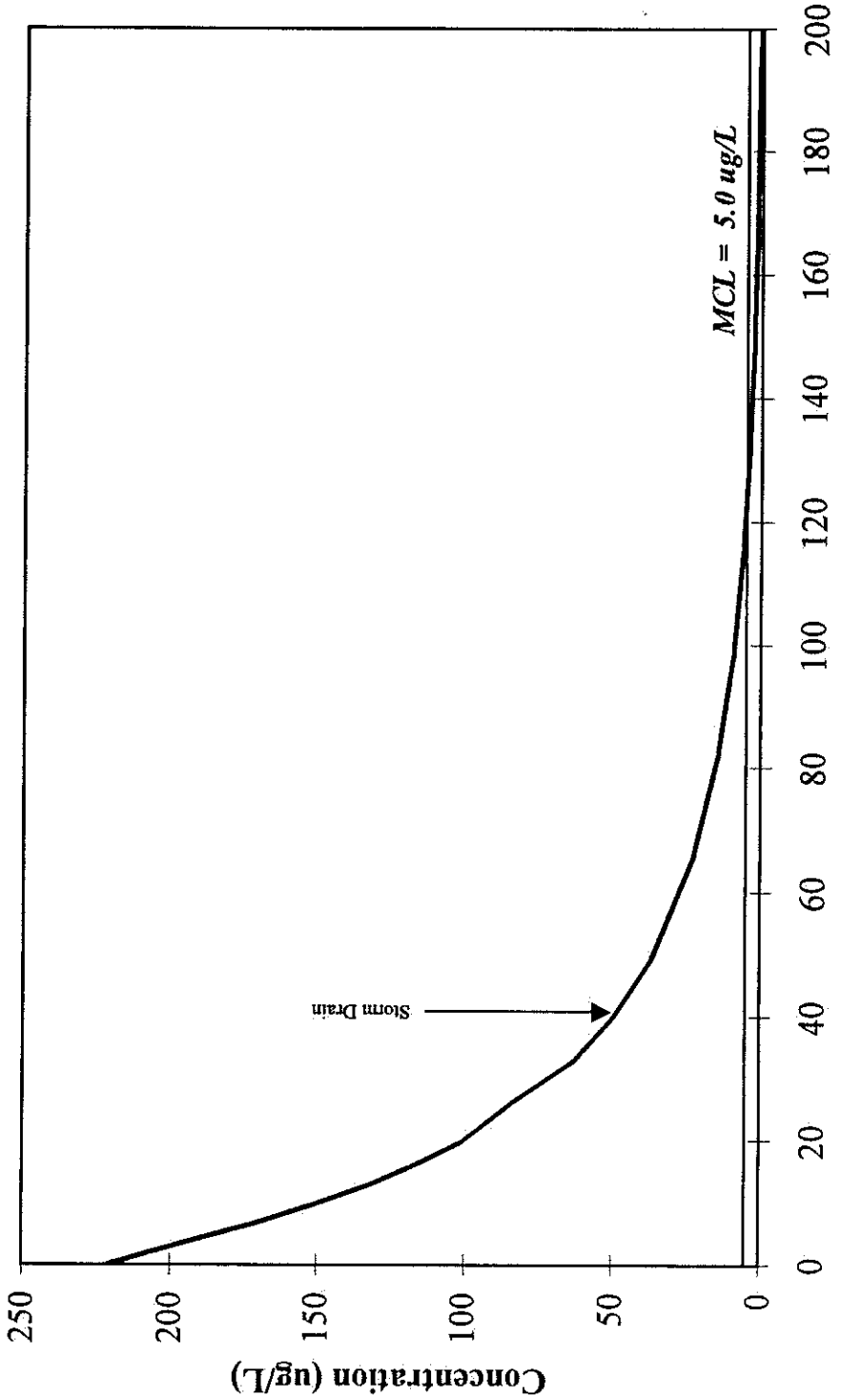

Figure C-1. AT123D modeled maximum concentration of benzene in the groundwater versus downgradient distance from the source (USTs 36 & 37)

USTs 36-37 Steady State Calib. for Benzene

NO. OF POINTS IN X-DIRECTION	10
NO. OF POINTS IN Y-DIRECTION	5
NO. OF POINTS IN Z-DIRECTION	1
NO. OF ROOTS: NO. OF SERIES TERMS	400
NO. OF BEGINNING TIME STEP	121
NO. OF ENDING TIME STEP	340
NO. OF TIME INTERVALS FOR PRINTED OUT SOLUTION	12
INSTANTANEOUS SOURCE CONTROL = 0 FOR INSTANT SOURCE	1
SOURCE CONDITION CONTROL = 0 FOR STEADY SOURCE	0
INTERMITTENT OUTPUT CONTROL = 0 NO SUCH OUTPUT	1
CASE CONTROL =1 THERMAL, = 2 FOR CHEMICAL, = 3 RAD	2

AQUIFER DEPTH, = 0.0 FOR INFINITE DEEP (METERS) ...	0.1128E+02
AQUIFER WIDTH, = 0.0 FOR INFINITE WIDE (METERS) ...	0.0000E+00
BEGIN POINT OF X-SOURCE LOCATION (METERS)	-0.1524E+02
END POINT OF X-SOURCE LOCATION (METERS)	0.0000E+00
BEGIN POINT OF Y-SOURCE LOCATION (METERS)	-0.2300E+01
END POINT OF Y-SOURCE LOCATION (METERS)	0.2300E+01
BEGIN POINT OF Z-SOURCE LOCATION (METERS)	0.0000E+00
END POINT OF Z-SOURCE LOCATION (METERS)	0.3000E+01

POROSITY	0.2000E+00
HYDRAULIC CONDUCTIVITY (METER/HOUR)	0.5720E-01
HYDRAULIC GRADIENT	0.3900E-02
LONGITUDINAL DISPERSIVITY (METER)	0.1000E+02
LATERAL DISPERSIVITY (METER)	0.3000E+01
VERTICAL DISPERSIVITY (METER)	0.1000E+01
DISTRIBUTION COEFFICIENT, KD (M**3/KG)	0.1620E-03
HEAT EXCHANGE COEFFICIENT (KCAL/HR-M**2-DEGREE C)..	0.0000E+00

MOLECULAR DIFFUSION MULTIPLY BY POROSITY (M**2/HR)	0.3530E-05
DECAY CONSTANT (PER HOUR)	0.4000E-04
BULK DENSITY OF THE SOIL (KG/M**3)	0.2050E+04
ACCURACY TOLERANCE FOR REACHING STEADY STATE	0.1000E-02
DENSITY OF WATER (KG/M**3)	0.1000E+04
TIME INTERVAL SIZE FOR THE DESIRED SOLUTION (HR) ..	0.7300E+03
DISCHARGE TIME (HR)	0.8760E+06
WASTE RELEASE RATE (KCAL/HR), (KG/HR), OR (CI/HR) .	0.7980E-05

RETARDATION FACTOR	0.2661E+01
RETARDED DARCY VELOCITY (M/HR)	0.4192E-03
RETARDED LONGITUDINAL DISPERSION COEF. (M**2/HR) ..	0.4199E-02
RETARDED LATERAL DISPERSION COEFFICIENT (M**2/HR) .	0.1264E-02
RETARDED VERTICAL DISPERSION COEFFICIENT (M**2/HR).	0.4259E-03

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.0000E+00 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
20.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
10.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
5.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
0.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.8760E+05 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.181E-03	0.196E-03	0.204E-03	0.212E-03	0.218E-03	0.220E-03	0.212E-03	0.196E-03	0.173E-03	0.121E-03
20.	0.204E-02	0.214E-02	0.217E-02	0.218E-02	0.215E-02	0.199E-02	0.174E-02	0.146E-02	0.118E-02	0.697E-03
10.	0.247E-01	0.235E-01	0.223E-01	0.202E-01	0.181E-01	0.138E-01	0.100E-01	0.716E-02	0.502E-02	0.239E-02
5.	0.902E-01	0.755E-01	0.652E-01	0.528E-01	0.430E-01	0.278E-01	0.180E-01	0.118E-01	0.775E-02	0.338E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.831E-01	0.630E-01	0.369E-01	0.225E-01	0.141E-01	0.904E-02	0.381E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.9636E+05 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.190E-03	0.206E-03	0.215E-03	0.225E-03	0.231E-03	0.235E-03	0.228E-03	0.213E-03	0.190E-03	0.137E-03
20.	0.207E-02	0.217E-02	0.220E-02	0.221E-02	0.218E-02	0.203E-02	0.179E-02	0.151E-02	0.123E-02	0.745E-03
10.	0.247E-01	0.236E-01	0.223E-01	0.203E-01	0.182E-01	0.138E-01	0.101E-01	0.725E-02	0.512E-02	0.248E-02
5.	0.903E-01	0.756E-01	0.652E-01	0.528E-01	0.431E-01	0.279E-01	0.182E-01	0.119E-01	0.786E-02	0.349E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.832E-01	0.631E-01	0.370E-01	0.226E-01	0.143E-01	0.916E-02	0.392E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1051E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.197E-03	0.214E-03	0.223E-03	0.233E-03	0.240E-03	0.245E-03	0.240E-03	0.225E-03	0.203E-03	0.150E-03
20.	0.209E-02	0.219E-02	0.223E-02	0.223E-02	0.221E-02	0.206E-02	0.182E-02	0.154E-02	0.126E-02	0.779E-03
10.	0.247E-01	0.236E-01	0.224E-01	0.203E-01	0.182E-01	0.139E-01	0.102E-01	0.731E-02	0.518E-02	0.254E-02
5.	0.903E-01	0.757E-01	0.653E-01	0.529E-01	0.431E-01	0.280E-01	0.182E-01	0.120E-01	0.793E-02	0.356E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.832E-01	0.631E-01	0.370E-01	0.227E-01	0.143E-01	0.923E-02	0.399E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1139E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.201E-03	0.219E-03	0.228E-03	0.239E-03	0.246E-03	0.252E-03	0.248E-03	0.234E-03	0.212E-03	0.159E-03
20.	0.210E-02	0.220E-02	0.224E-02	0.225E-02	0.222E-02	0.208E-02	0.184E-02	0.156E-02	0.128E-02	0.802E-03
10.	0.248E-01	0.236E-01	0.224E-01	0.203E-01	0.182E-01	0.139E-01	0.102E-01	0.735E-02	0.522E-02	0.258E-02
5.	0.903E-01	0.757E-01	0.653E-01	0.529E-01	0.432E-01	0.280E-01	0.183E-01	0.120E-01	0.797E-02	0.360E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.832E-01	0.631E-01	0.371E-01	0.227E-01	0.144E-01	0.928E-02	0.404E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1226E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.204E-03	0.222E-03	0.232E-03	0.243E-03	0.250E-03	0.257E-03	0.253E-03	0.240E-03	0.219E-03	0.166E-03
20.	0.210E-02	0.221E-02	0.225E-02	0.226E-02	0.223E-02	0.209E-02	0.185E-02	0.158E-02	0.130E-02	0.818E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.203E-01	0.183E-01	0.139E-01	0.102E-01	0.737E-02	0.524E-02	0.261E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.529E-01	0.432E-01	0.280E-01	0.183E-01	0.120E-01	0.800E-02	0.363E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.931E-02	0.407E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1314E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.206E-03	0.224E-03	0.234E-03	0.245E-03	0.253E-03	0.261E-03	0.257E-03	0.244E-03	0.223E-03	0.171E-03
20.	0.211E-02	0.221E-02	0.225E-02	0.226E-02	0.224E-02	0.209E-02	0.186E-02	0.159E-02	0.131E-02	0.828E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.139E-01	0.103E-01	0.738E-02	0.526E-02	0.263E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.529E-01	0.432E-01	0.280E-01	0.183E-01	0.120E-01	0.802E-02	0.365E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.932E-02	0.409E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1402E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.207E-03	0.225E-03	0.236E-03	0.247E-03	0.255E-03	0.263E-03	0.259E-03	0.246E-03	0.226E-03	0.175E-03
20.	0.211E-02	0.222E-02	0.225E-02	0.227E-02	0.224E-02	0.210E-02	0.187E-02	0.159E-02	0.132E-02	0.836E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.739E-02	0.527E-02	0.264E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.529E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.803E-02	0.366E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.933E-02	0.411E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1489E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.208E-03	0.226E-03	0.237E-03	0.248E-03	0.256E-03	0.264E-03	0.261E-03	0.248E-03	0.228E-03	0.177E-03
20.	0.211E-02	0.222E-02	0.226E-02	0.227E-02	0.224E-02	0.210E-02	0.187E-02	0.160E-02	0.132E-02	0.840E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.740E-02	0.527E-02	0.265E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.530E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.804E-02	0.367E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.934E-02	0.411E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1577E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.209E-03	0.227E-03	0.237E-03	0.249E-03	0.257E-03	0.265E-03	0.262E-03	0.250E-03	0.230E-03	0.179E-03
20.	0.211E-02	0.222E-02	0.226E-02	0.227E-02	0.225E-02	0.210E-02	0.187E-02	0.160E-02	0.132E-02	0.843E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.740E-02	0.528E-02	0.265E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.530E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.804E-02	0.368E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.935E-02	0.412E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1664E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y	X 0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.209E-03	0.227E-03	0.238E-03	0.249E-03	0.257E-03	0.266E-03	0.263E-03	0.250E-03	0.231E-03	0.180E-03
20.	0.211E-02	0.222E-02	0.226E-02	0.227E-02	0.225E-02	0.210E-02	0.187E-02	0.160E-02	0.132E-02	0.845E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.740E-02	0.528E-02	0.265E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.530E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.804E-02	0.368E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.935E-02	0.412E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1752E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.209E-03	0.228E-03	0.238E-03	0.250E-03	0.258E-03	0.266E-03	0.263E-03	0.251E-03	0.231E-03	0.181E-03
20.	0.211E-02	0.222E-02	0.226E-02	0.227E-02	0.225E-02	0.210E-02	0.187E-02	0.160E-02	0.133E-02	0.847E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.740E-02	0.528E-02	0.266E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.530E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.804E-02	0.368E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.935E-02	0.412E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1840E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.209E-03	0.228E-03	0.238E-03	0.250E-03	0.258E-03	0.266E-03	0.264E-03	0.251E-03	0.232E-03	0.181E-03
20.	0.211E-02	0.222E-02	0.226E-02	0.227E-02	0.225E-02	0.210E-02	0.187E-02	0.160E-02	0.133E-02	0.848E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.741E-02	0.528E-02	0.266E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.530E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.805E-02	0.368E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.935E-02	0.413E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.1927E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.209E-03	0.228E-03	0.238E-03	0.250E-03	0.258E-03	0.266E-03	0.264E-03	0.251E-03	0.232E-03	0.181E-03
20.	0.211E-02	0.222E-02	0.226E-02	0.227E-02	0.225E-02	0.211E-02	0.187E-02	0.160E-02	0.133E-02	0.848E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.741E-02	0.528E-02	0.266E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.530E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.805E-02	0.368E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.935E-02	0.413E-02

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2015E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.210E-03	0.228E-03	0.238E-03	0.250E-03	0.258E-03	0.267E-03	0.264E-03	0.252E-03	0.232E-03	0.182E-03
20.	0.212E-02	0.222E-02	0.226E-02	0.227E-02	0.225E-02	0.211E-02	0.187E-02	0.160E-02	0.133E-02	0.849E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.741E-02	0.528E-02	0.266E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.530E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.805E-02	0.368E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.935E-02	0.413E-02

STEADY STATE SOLUTION HAS BEEN OBTAINED BEFORE FINAL SIMULATING TIME

DISTRIBUTION OF DISSOLVED CHEMICALS IN PPM AT 0.2102E+06 HRS
(ADSORBED CHEMICAL CONC. = 0.1620E+00 * DISSOLVED CHEMICAL CONC.)
Z = 0.00

Y \ X	0.	3.	5.	8.	10.	15.	20.	25.	30.	40.
30.	0.210E-03	0.228E-03	0.239E-03	0.250E-03	0.258E-03	0.267E-03	0.264E-03	0.252E-03	0.232E-03	0.182E-03
20.	0.212E-02	0.222E-02	0.226E-02	0.227E-02	0.225E-02	0.211E-02	0.187E-02	0.160E-02	0.133E-02	0.849E-03
10.	0.248E-01	0.237E-01	0.224E-01	0.204E-01	0.183E-01	0.140E-01	0.103E-01	0.741E-02	0.528E-02	0.266E-02
5.	0.904E-01	0.757E-01	0.653E-01	0.530E-01	0.432E-01	0.281E-01	0.183E-01	0.121E-01	0.805E-02	0.368E-02
0.	0.221E+00	0.150E+00	0.115E+00	0.833E-01	0.632E-01	0.371E-01	0.228E-01	0.144E-01	0.935E-02	0.413E-02

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Table C-1. Comparison of Fort Stewart CAP-Part A USTs 36 & 37 Soil Results to Screening Levels

Station:	Screening Levels			16-01	16-02	16-02	16-03	16-03	16-04	16-04
Sample ID:	Georgia UST	Risk-based		1601B1	1602A1	1602B1	160311	160321	160411	160421
Sample Interval (ft BGS):	Soil Threshold	Screening	Leaching to	2.5' - 5.0'	0.0' - 2.5'	2.5' - 5.0'	0.8' - 2.0'	2.0' - 3.5'	0.0' - 2.0'	2.0' - 4.0'
Collection Date:	Level[a]	Level[b]	Groundwater[c]	06-Sep-96	06-Sep-96	06-Sep-96	12-May-98	12-May-98	12-May-98	12-May-98
Units:	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Volatile Organic Compounds										
Benzene	8	200000	30	6 U	5.3 U	5.6 U	2.2 U	2.2 U	2.3 U	2.2 U
Toluene	10000	200000000	13000	6 U	5.3 U	5.6 U	22 =	2.2 U	55.5 =	6.7 =
Ethylbenzene	6000	410000000	12000	6 U	5.3 U	5.6 U	2.2 U	2.2 U	2.3 U	2.2 U
Xylenes, Total	700000	1000000000	190000	6 U	5.3 U	5.6 U	6.4 U	6.7 U	6.9 U	6.7 U
Polynuclear Aromatic Hydrocarbons										
2-Chloronaphthalene	N/A[e]	82000000	84000	394 U	348 U	364 U	358 U	370 U	379 U	374 U
Acenaphthene	N/A[e]	120000000	570000	394 U	348 U	364 U	358 U	370 U	379 U	374 U
Acenaphthylene	N/A[e]	61000000	4200000	394 U	348 U	364 U	358 U	370 U	379 U	374 U
Anthracene	N/A[e]	610000000	12000000	394 U	348 U	364 U	358 U	370 U	379 U	374 U
Benzo(a)anthracene	N/A[e]	7800	2000	394 U	348 U	682 =	358 U	370 U	379 U	374 U
Benzo(a)pyrene	N/A[e]	780	8000	394 U	348 U	727 =	358 U	370 U	379 U	374 U
Benzo(b)fluoranthene	N/A[e]	7800	5000	394 U	348 U	810 =	358 U	370 U	379 U	374 U
Benzo(g,h,i)perylene	N/A[e]			394 U	348 U	427 =	358 U	370 U	379 U	374 U
Benzo(k)fluoranthene	N/A[e]	78000	49000	394 U	348 U	386 =	358 U	370 U	379 U	374 U
Chrysene	N/A[e]	780000	160000	394 U	348 U	853 =	358 U	370 U	379 U	374 U
Dibenzo(a,h)anthracene	N/A[e]	780	2000	394 U	348 U	364 U	358 U	370 U	379 U	374 U
Fluoranthene	N/A[e]	82000000	4300000	394 U	348 U	1720 =	358 U	370 U	379 U	374 U
Fluorene	N/A[e]	82000000	560000	394 U	348 U	364 U	358 U	370 U	379 U	374 U
Indeno(1,2,3-cd)pyrene	N/A[e]	7800	14000	394 U	348 U	448 =	358 U	370 U	379 U	374 U
Naphthalene	N/A[e]	82000000	84000	394 U	348 U	364 U	358 U	370 U	379 U	374 U
Phenanthrene	N/A[e]	61000000	4200000	394 U	348 U	364 U	358 U	370 U	379 U	374 U
Pyrene	N/A[e]	61000000	4200000	394 U	348 U	2190 =	358 U	370 U	379 U	374 U
Other Analytes										
Lead	--	5000000	--	2100 =		2000 =		4200 =		31200 =
Total Organic Carbon	--	--	--							
TPH-Diesel Range Organics	--	--	--	37100 =	430 U	16700 =	300 UJ	1200 U	1000 U	880 UJ
TPH-Gasoline Range Organics	--	--	--	359 J	106 U	112 UJ	1080 U	1110 U	216 J	1120 UJ

[a] Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 mi.).
[b] Protective of soil exposure during Industrial Land Use.
[c] Protective of groundwater ingestion. Used a dilution attenuation factor of 20.
[d] Values based on naphthalene as a surrogate chemical.
[e] Not applicable. The screening level exceeds the expected soil concentration under free product condition.
[f] Values based on pyrene as a surrogate chemical.

Bold values indicate results exceeding Georgia UST action levels

Italicized values indicate results exceeding risk-based screening levels.
Underlined values indicate results exceeding leaching to groundwater screening levels.

U Indicates that the compound was not detected above the reported sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.
= Indicates that the compound was detected at the concentration reported.

Table C-1. Comparison of Fort Stewart CAP-Part A USTs 36 & 37 Soil Results to Screening Levels (continued)

Station:	Screening Levels			16-05	16-06	16-07	16-07	16-08	16-08
Sample ID:	Georgia UST	Risk-based		160521	160621	160711	160721	160811	160821
Sample Interval (ft BGS):	Soil Threshold	Screening	Leaching to	0.8' - 2.0'	1.1' - 2.6'	2.0' - 4.0'	0.9' - 2.0'	2.5' - 4.0'	1.0' - 2.5'
Collection Date:	Level[a]	Level[b]	Groundwater[c]	12-May-98	12-May-98	14-Nov-98	14-Nov-98	13-Nov-98	13-Nov-98
Units:	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Volatile Organic Compounds									
Benzene	8	200000	30	2.2 U	2.2 U	2.3 U	2.1 U	2.4 U	2.2 U
Toluene	10000	200000000	13000	2.2 U	10.4 =	7.1 =	60.1 =	2.4 U	2.2 U
Ethylbenzene	6000	410000000	12000	2.2 U	2.2 U	2.3 U	2.9 =	2.4 U	2.2 U
Xylenes, Total	700000	1000000000	190000	6.7 U	6.7 U	2.1 J	12 =	3.6 U	3.2 U
Polynuclear Aromatic Hydrocarbons									
2-Chloronaphthalene	N/A[e]	82000000	84000	374 U	374 U	383 U	1480 U	397 U	358 U
Acenaphthene	N/A[e]	120000000	570000	374 U	374 U	383 U	1480 U	397 U	358 U
Acenaphthylene	N/A[e]	61000000	4200000	374 U	374 U	383 U	1480 U	397 U	358 U
Anthracene	N/A[e]	610000000	12000000	374 U	374 U	383 U	1480 U	397 U	358 U
Benzo(a)anthracene	N/A[e]	7800	2000	374 U	374 U	383 U	1480 U	397 U	358 U
Benzo(a)pyrene	N/A[e]	780	8000	374 U	374 U	383 U	*1480 U*	397 U	358 U
Benzo(b)fluoranthene	N/A[e]	7800	5000	374 U	374 U	383 U	1480 U	397 U	358 U
Benzo(g,h,i)perylene	N/A[e]			374 U	374 U	383 U	1480 U	397 U	358 U
Benzo(k)fluoranthene	N/A[e]	78000	49000	374 U	374 U	383 U	1480 U	397 U	358 U
Chrysene	N/A[e]	780000	160000	374 U	374 U	383 U	1480 U	397 U	358 U
Dibenzo(a,h)anthracene	N/A[e]	780	2000	374 U	374 U	383 U	*1480 U*	397 U	358 U
Fluoranthene	N/A[e]	82000000	4300000	374 U	374 U	383 U	1480 U	397 U	358 U
Fluorene	N/A[e]	82000000	560000	374 U	374 U	383 U	1480 U	397 U	358 U
Indeno(1,2,3-cd)pyrene	N/A[e]	7800	14000	374 U	374 U	383 U	1480 U	397 U	358 U
Naphthalene	N/A[e]	82000000	84000	374 U	374 U	383 U	1480 U	397 U	358 U
Phenanthrene	N/A[e]	61000000	4200000	374 U	374 U	383 U	1480 U	397 U	358 U
Pyrene	N/A[e]	61000000	4200000	374 U	374 U	383 U	1480 U	397 U	358 U
Other Analytes									
Lead	--	5000000	--	27600 =	17100 =		29900 =		2100 =
Total Organic Carbon	--	--	--				9310000 =		
TPH-Diesel Range Organics	--	--	--	1500 UJ	890 UJ	1300 U	7100 U	960 U	2200 U
TPH-Gasoline Range Organics	--	--	--	1120 UJ	1120 U	115 U	111 U	119 U	53.8 U

[a] Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 mi.).
[b] Protective of soil exposure during Industrial Land Use.
[c] Protective of groundwater ingestion. Used a dilution attenuation factor of 20.
[d] Values based on naphthalene as a surrogate chemical.
[e] Not applicable. The screening level exceeds the expected soil concentration under free product condition.
[f] Values based on pyrene as a surrogate chemical.

Bold values indicate results exceeding Georgia UST action levels

Italicized values indicate results exceeding risk-based screening levels.
Underlined values indicate results exceeding leaching to groundwater screening levels.
U Indicates that the compound was not detected above the reported sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified.
= Indicates that the compound was detected at the concentration reported.

Table C-1. Comparison of Fort Stewart CAP-Part A USTs 36 & 37 Soil Results to Screening Levels (continued)

Station:	Screening Levels			16-09	16-09	16-11	16-12
Sample ID:				160911	160911	161121	161221
Sample Interval (ft BGS):	Georgia UST Soil Threshold Level[a]	Risk-based Screening Level[b]	Leaching to Groundwater[c]	2.5' - 3.5'	1.0' - 2.0'	0.8' - 2.0'	0.8' - 2.0'
Collection Date:				13-Nov-98	13-Nov-98	20-Feb-99	20-Feb-99
Units:	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Volatile Organic Compounds							
Benzene	8	200000	30	2.4 U	2.1 U	**10.2** =	3.6 U
Toluene	10000	200000000	13000	2.6 =	3.6 =	8.6 =	3.6 U
Ethylbenzene	6000	410000000	12000	2.4 U	0.86 J	15.5 =	3.6 U
Xylenes, Total	700000	1000000000	190000	1.8 J	4.4 =	19.4 =	1.3 J
Polynuclear Aromatic Hydrocarbons							
2-Chloronaphthalene	N/A[e]	82000000	84000	397 U	351 U	1430 U	374 U
Acenaphthene	N/A[e]	120000000	570000	397 U	351 U	1430 U	374 U
Acenaphthylene	N/A[e]	61000000	4200000	397 U	351 U	1430 U	374 U
Anthracene	N/A[e]	610000000	12000000	397 U	351 U	1430 U	374 U
Benzo(a)anthracene	N/A[e]	7800	2000	397 U	351 U	1430 U	374 U
Benzo(a)pyrene	N/A[e]	780	8000	397 U	351 U	*1430 U*	374 U
Benzo(b)fluoranthene	N/A[e]	7800	5000	397 U	351 U	1430 U	374 U
Benzo(g,h,i)perylene	N/A[e]			397 U	351 U	1430 U	374 U
Benzo(k)fluoranthene	N/A[e]	78000	49000	397 U	351 U	1430 U	374 U
Chrysene	N/A[e]	780000	160000	397 U	351 U	1430 U	374 U
Dibenzo(a,h)anthracene	N/A[e]	780	2000	397 U	351 U	*1430 U*	374 U
Fluoranthene	N/A[e]	82000000	4300000	397 U	351 U	1430 U	374 U
Fluorene	N/A[e]	82000000	560000	397 U	351 U	1430 U	374 U
Indeno(1,2,3-cd)pyrene	N/A[e]	7800	14000	397 U	351 U	1430 U	374 U
Naphthalene	N/A[e]	82000000	84000	397 U	351 U	1430 U	374 U
Phenanthrene	N/A[e]	61000000	4200000	397 U	351 U	1430 U	374 U
Pyrene	N/A[e]	61000000	4200000	397 U	351 U	1430 U	374 U
Other Analytes							
Lead	--	5000000	--		1800 =	28100 =	4300 =
Total Organic Carbon	--	--	--				
TPH-Diesel Range Organics	--	--	--	1200 U	950 U	940 U	250 U
TPH-Gasoline Range Organics	--	--	--	59.5 UJ	52.6 U	163 =	112 U

[a] Average or higher groundwater pollution susceptibility area (where public water supply is within 2.0 mi.).
[b] Protective of soil exposure during Industrial Land Use.
[c] Protective of groundwater ingestion. Used a dilution attenuation factor of 20.
[d] Values based on naphthalene as a surrogate chemical.
[e] Not applicable. The screening level exceeds the expected soil concentration under free product condition.
[f] Values based on pyrene as a surrogate chemical.

Bold values indicate results exceeding Georgia UST action levels

Italicized values indicate results exceeding risk-based screening levels.
Underlined values indicate results exceeding leaching to groundwater screening levels.
U Indicates that the compound was not detected above the reported sample quantitation limit.
J Indicates that the value for the compound was an estimated value.
UJ Indicates that the sample was not detected above an approximate sample quantitation limit.
R Indicates that the sample results are unusable and the presence or absence of the compound could not be verified .
= Indicates that the compound was detected at the concentration reported.

Table C-2. Comparison of Fort Stewart CAP-Part A USTs 36 & 37 Groundwater Results to Screening Levels

Station:	Screening Levels		16-01	16-02	16-03	16-04	16-05	16-06	16-07
Sample ID:	Federal		1601W2	1602W2	160312	160412	160512	160612	160712
Screened Interval (ft BGS)	SDWA	Risk-	3.5' - 8.5'	3.5' - 8.5'	0.0' - 8.0'	0.0' - 7.0'	0.0' - 8.0'	0.0' - 8.0'	0.0' - 8.0'
Collection Date:	MCLs	based*	06-Sep-96	06-Sep-96	12-May-98	12-May-98	12-May-98	12-May-98	14-Nov-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS									
Benzene	5	0.36	5 U	0.42 J	**221 J**	2 U	**63 =**	2 U	**83.3 =**
Toluene	1000	1300	5 U	5 U	325 J	2 U	**1740 =**	4.6 =	7.1 =
Ethylbenzene	700	750	0.04 J	2.4 J	791 J	3.3 =	359 =	4 =	69.5 =
Xylenes, Total	10000	12000	5 U	3.6 J	2830 J	6 U	1920 =	2 J	157 =
POLYNUCLEAR AROMATIC HYDROCARBONS									
2-Chloronaphthalene	-	1500	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Acenaphthene	-	2200	8.7 J	10 U	20 U	20 U	20 U	20 U	10.5 U
Acenaphthylene	-	1100	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Anthracene	-	11000	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Benzo(a)anthracene	-	0.092	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Benzo(a)pyrene	0.2	0.0092	**10 U**	**10 U**	**20 U**	**20 U**	**20 U**	**20 U**	**10.5 U**
Benzo(b)fluoranthene	-	0.092	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Benzo(g,h,i)perylene	-	-	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Benzo(k)fluoranthene	-	0.92	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Chrysene	-	9.2	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Dibenzo(a,h)anthracene	-	0.0092	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Fluoranthene	-	1500	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Fluorene	-	1500	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Indeno(1,2,3-cd)pyrene	-	0.092	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Naphthalene	-	1500	10 U	10 U	77.1 =	20 U	164 =	20 U	1.6 J
Phenanthrene	-	1100	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U
Pyrene	-	1100	10 U	10 U	20 U	20 U	20 U	20 U	10.5 U

* Protective of tap water ingestion by a resident.
[b] Values based on naphthalene as a surrogate chemical.
[c] Values based on pyrene as a surrogate chemical.
Bold values indicate results exceeding Federal Safe Drinking Water Act Maximum Contaminant Levels.
Underlined values indicate results exceeding risk-based screening levels.

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Table C-2. Comparison of Fort Stewart CAP-Part A USTs 36 & 37 Groundwater Results to Screening Levels

Station:	Screening Levels		16-08	16-09	16-10	16-10	16-10	16-11	16-12
Sample ID:	Federal		160812	160912	161012	161052	161072	161112	161212
Screened Interval (ft BGS)	SDWA	Risk-	0.0' - 8.5'	0.0' - 12.0'	6.0' - 10.0'	18.0' - 20.0'	30.0' - 32.0'	0.0' - 8.0'	0.0' - 7.0'
Collection Date:	MCLs	based[a]	13-Nov-98	13-Nov-98	13-Nov-98	13-Nov-98	13-Nov-98	20-Feb-99	20-Feb-99
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS									
Benzene	5	0.36	2 U	2 U	2 U	1.7 J	2 U	**5.9** =	0.5 J
Toluene	1000	1300	2 U	0.86 J	2 U	14.7 =	2 U	5.1 J	3.7 =
Ethylbenzene	700	750	2 U	19.1 =	2 U	1.3 J	2 U	1.7 J	1 J
Xylenes, Total	10000	12000	3 U	32 =	3 U	3.9 =	3 U	7.8 =	5.7 =
POLYNUCLEAR AROMATIC HYDROCARBONS									
2-Chloronaphthalene	-	1500	10.1 U	10.5 U	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Acenaphthene	-	2200	10.1 U	27.6 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Acenaphthylene	-	1100	10.1 U	10.5 U	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Anthracene	-	11000	10.1 U	24.8 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(a)anthracene	-	0.092	10.1 U	17.8 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(a)pyrene	0.2	0.0092	**10.1 U**	**11 =**	**11.8 U**	**6.3 J**	**12 R**	**11.2 UJ**	**10.2 UJ**
Benzo(b)fluoranthene	-	0.092	10.1 U	14.5 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(g,h,i)perylene	-	-	10.1 U	3.7 J	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Benzo(k)fluoranthene	-	0.92	10.1 U	6.1 J	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Chrysene	-	9.2	10.1 U	19.8 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Dibenzo(a,h)anthracene	-	0.0092	10.1 U	10.5 U	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Fluoranthene	-	1500	10.1 U	94.9 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Fluorene	-	1500	10.1 U	17.6 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Indeno(1,2,3-cd)pyrene	-	0.092	10.1 U	3.2 J	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Naphthalene	-	1500	10.1 U	34.7 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Phenanthrene	-	1100	10.1 U	114 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ
Pyrene	-	1100	10.1 U	63.5 =	11.8 U	11.9 UJ	12 R	11.2 UJ	10.2 UJ

[a] Protective of tap water ingestion by a resident.
[b] Values based on naphthalene as a surrogate chemical.
[c] Values based on pyrene as a surrogate chemical.
Bold values indicate results exceeding Federal Safe Drinking Water Act Maximum Contaminant Levels.
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Table C-3. Summary of Geotechnical Results for the USTs 36 & 37 Site

Site	USTs 36 & 37
Boring	16-07
Sample ID	160731
Sample Depth Interval (ft BGS)	4.0 – 6.0
Grain Size Analysis - % Fines	14
Grain Size Analysis - % Sand	86
Grain Size Analysis - % Gravel	0
Liquid Limit	NP
Plastic Limit	NP
Plasticity Index	NP
Moisture Content (%)	12.8
Permeability	1.59×10^{-4}
Porosity	0.23
Specific Gravity	2.66

NP = Nonplastic

Table C-4. ACLs for groundwater COPCs

Chemical	Regulatory Level[1] (µg/L)	DAF (storm drain)[2]	ACL[3] (µg/L)
Benzene	5	4.4	22
Toluene	1000	4.4	4,400
Benzo(a)anthracene	0.092[a]	4.4	0.4
Benzo(a)pyrene	0.2	4.4	0.88
Benzo(b)fluoranthene	0.092[a]	4.4	0.4
Benzo(k)fluoranthene	0.92[a]	4.4	4.0
Chrysene	9.2[a]	4.4	40
Indeno(1,2,3-cd)pyrene	0.092[a]	4.4	0.4

[1] Regulatory levels are MCLs unless otherwise noted.

[2] DAF = Maximum Observed Concentration ÷ Predicted Concentration at the Receptor
= 221 ÷ 49.7 ≈ 4.4 for benzene at the storm drain.

[3] ACL = Regulatory Level × DAF.

[a] Values presented are risk-based values. No MCLs are available for these chemicals.

Table C-5. Natural Attenuation Modeling Results for USTs 36 & 37

Distance to Receptor (ft)	Distance to Receptor (m)	Predicted Maximum Conc. In Groundwater (ug/L)
0.0	0.0	221
3.3	1.0	197
6.6	2.0	172
9.8	3.0	150
13.1	4.0	131
16.4	5.0	115
19.7	6.0	101
26.2	8.0	83.3
32.8	10.0	63.2
40.0	12.2	49.7
49.2	15.0	37.1
65.6	20.0	22.8
82.0	25.0	14.4
98.4	30.0	9.35
114.8	35.0	6.17
131.2	40.0	4.13
147.6	45.0	2.79
164.0	50.0	1.91
196.9	60.0	0.915
229.7	70.0	0.449
262.5	80.0	0.225
328.1	100.0	0.059
656.2	200.0	0
1200.0	365.8	0
1900.0	579.1	0