FINAL

CORRECTIVE ACTION PLAN - PART A REPORT
FOR
UNDERGROUND STORAGE TANK 71
FACILITY ID #9-089022
BUILDING 1203
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 37831

July 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
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
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: UST 71, Building 1203 Street Address: McFarland Avenue & W. 6th Street

Facility ID: 9-089022 City: Fort Stewart County: Liberty Zip Code: 31314

Latitude: 32° 16′ 18″ Longitude: 82° 05′ 27″

Submitted by UST Owner/Operator:		Prepared by Consultant/Contractor:	
Name:	Thomas C. Fry/ Environmental Branch	Name:	Patricia A. Stoll
Company:	U.S. Army/HQ 3d, Inf. Div (Mech)	Company:	SAIC
Address:	DPW ENRD ENV. Br. (Fry)	Address:	P.O. Box 2502
	1557 Frank Cochran Drive		
City:	Fort Stewart State: GA	City:	Oak Ridge State: TN
Zip Code:	31314-4928	Zip Code:	37831
Telephone:	(912) 767-1078	Telephone:	(423) 481-8792

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: 07/28/99

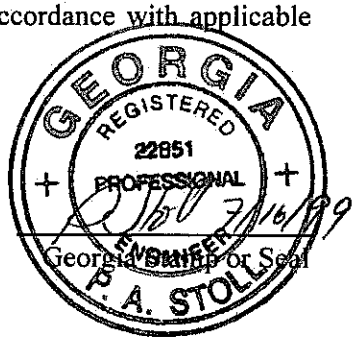
B. Registered Professional Engineer or Professional Geologist Certification

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: 7/16/99



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 UST 71 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 UST 71.

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
71	1000	waste oil	7/16/96

D. Initial Site Characterization

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

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

   Characterization of petroleum-related contamination at the site was initiated during UST system closure activities on July 16, 1996, by Anderson Columbia Environmental, Inc. (ACE). The ancillary piping was removed to the grease rack. After removal of the tank, one soil sample was collected from the tank pit (Figure 7). The xylene concentration was below its applicable soil threshold level in sample TK71-S1. Benzene, toluene, and ethylbenzene were not detected in sample TK71-S1. TPH was detected in this sample at a concentration of 174 mg/kg. 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 UST 71 and ancillary piping is presented in Figure 2. During removal activities by ACE, no holes in the tank were reported. Therefore, the source of contamination is believed to have been piping leakage and/or tank overflow.

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:	2100	*feet*
ii. Nearest down-gradient public water supply located within:	4200	*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	3000	*feet*
ii. Nearest down-gradient surface water located within	6500	*feet*
iii. Nearest storm or sanitary sewer located within:	5	*feet*
iv. Depth to bottom of sewer at a point nearest the plume	5.6	*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 2.0-foot intervals during the installation of nine 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, and PAH. In boreholes where organic vapors were detected, one sample was collected from the 2.0-foot interval where the highest vapor concentration was recorded, and the other from the deepest 2.0-foot interval with the lowest concentration. If organic vapors were not detected, one sample was collected from the 2.0-foot interval nearest the midpoint of the boring, and the other from the 2.0-foot 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 ____ NO X
If yes, indicate highest concentrations in soil along with locations and depths detected.

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 water table to approximately 5.0 feet below the water table using a direct-push sampling device. At the vertical profile location (86-05), 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.

Benzene was present in borings 86-01 and 86-07 at concentrations of 109 µg/L and 44.5 µg/L. Other compounds were detected at these and other locations, but at concentrations below their respective MCLs.

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): 9.9 – 13.7 *(Table 4: Groundwater Elevations)*
b. Groundwater Flow Direction: northwest *(Figure 6: Potentiometric Surface Map)*
c. Hydraulic Gradient 0.0016 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 UST 71 on July 16, 1996. The UST piping was drained into the tank, and all waste oil was 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 tank was lifted from the excavation pit. The ancillary piping was removed to the grease rack and the ends were grouted.

b. Excavation and Treatment/Disposal of Backfill Materials and Native Soils

Check one: *No UST removal performed* _____
Returned to UST excavation _____
Excavated soils treated or disposal off site X

If soils were excavated, summarize excavation and treatment/disposal activities:

No contaminated soil was excavated from the site.

7. Site Ranking:
Environmental Site Sensitivity Score: 50
(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 _____
(provide justification)

There is no soil contamination in excess of applicable GUST soil threshold levels (i.e. Table A, Column 2). Benzene was detected in two groundwater samples with the highest concentration being 109 µg/L. The horizontal and vertical extent of groundwater contamination was determined during the CAP-Part A investigation. The invert of the industrial waste water line located approximately 5 feet from the tank pit is more than 5 feet above the water table, thus the site ranking score was determined to be 50.

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

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

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 X
(Figure 8: Proposed additional boring/monitoring well location)

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

1. Soil N/A X

2. Groundwater

a. Free Product N/A X

b. Dissolved phase N/A X

3. Surface Water N/A X

B. Proposed Investigation of Vadose Zone And Aquifer Characteristics:

Additional vadose zone and aquifer characteristics were collected as part of the CAP-Part A investigation, thus no additional data is required.

V. PUBLIC NOTICE

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

UST 71, Building 1203, 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 June 27 and July 4, 1999.

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 UST 71 site, Building 1203, Facility ID #9-089022, 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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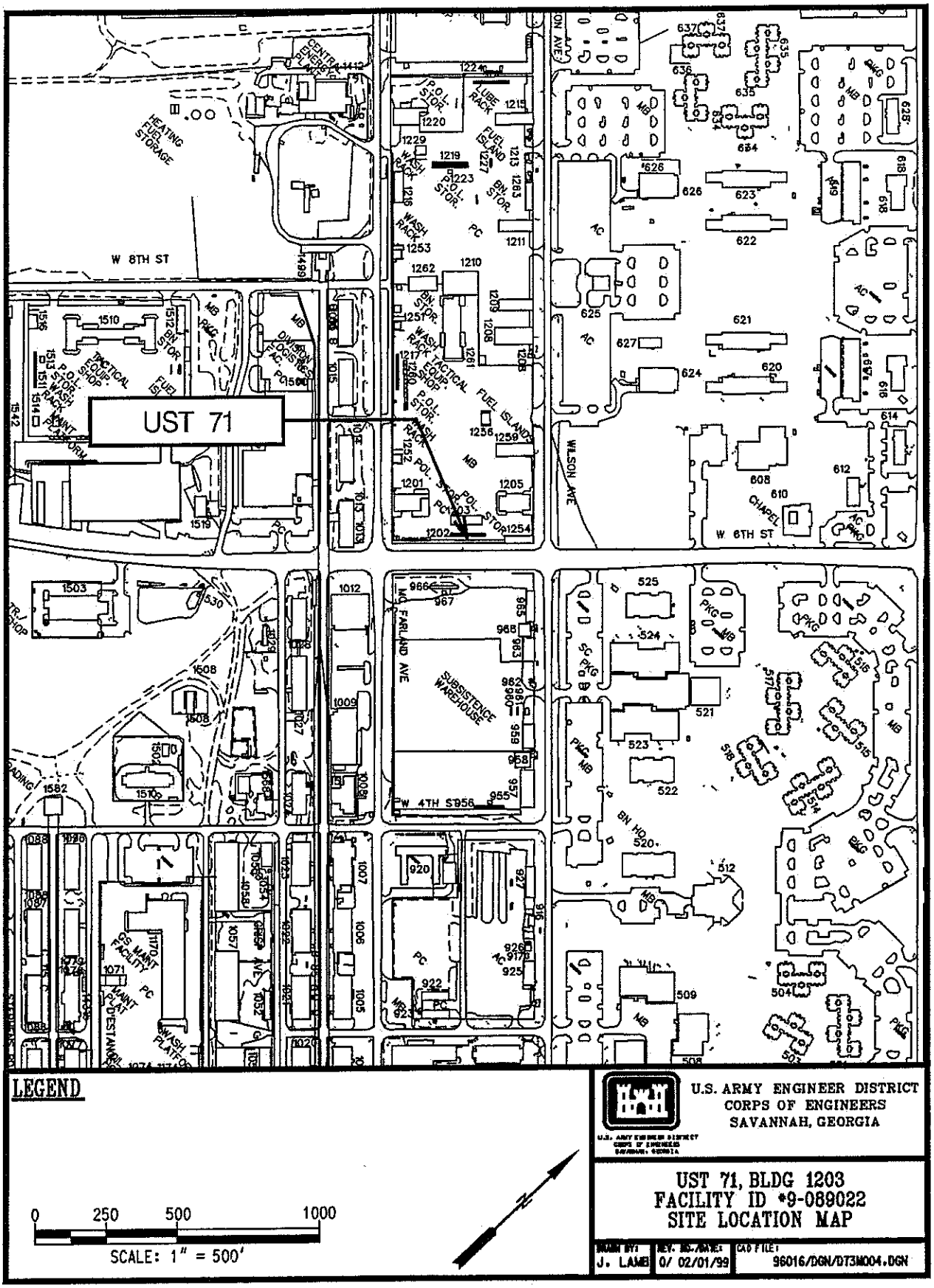

Figure 1. Location Map of UST 71, Fort Stewart, Liberty County, Georgia

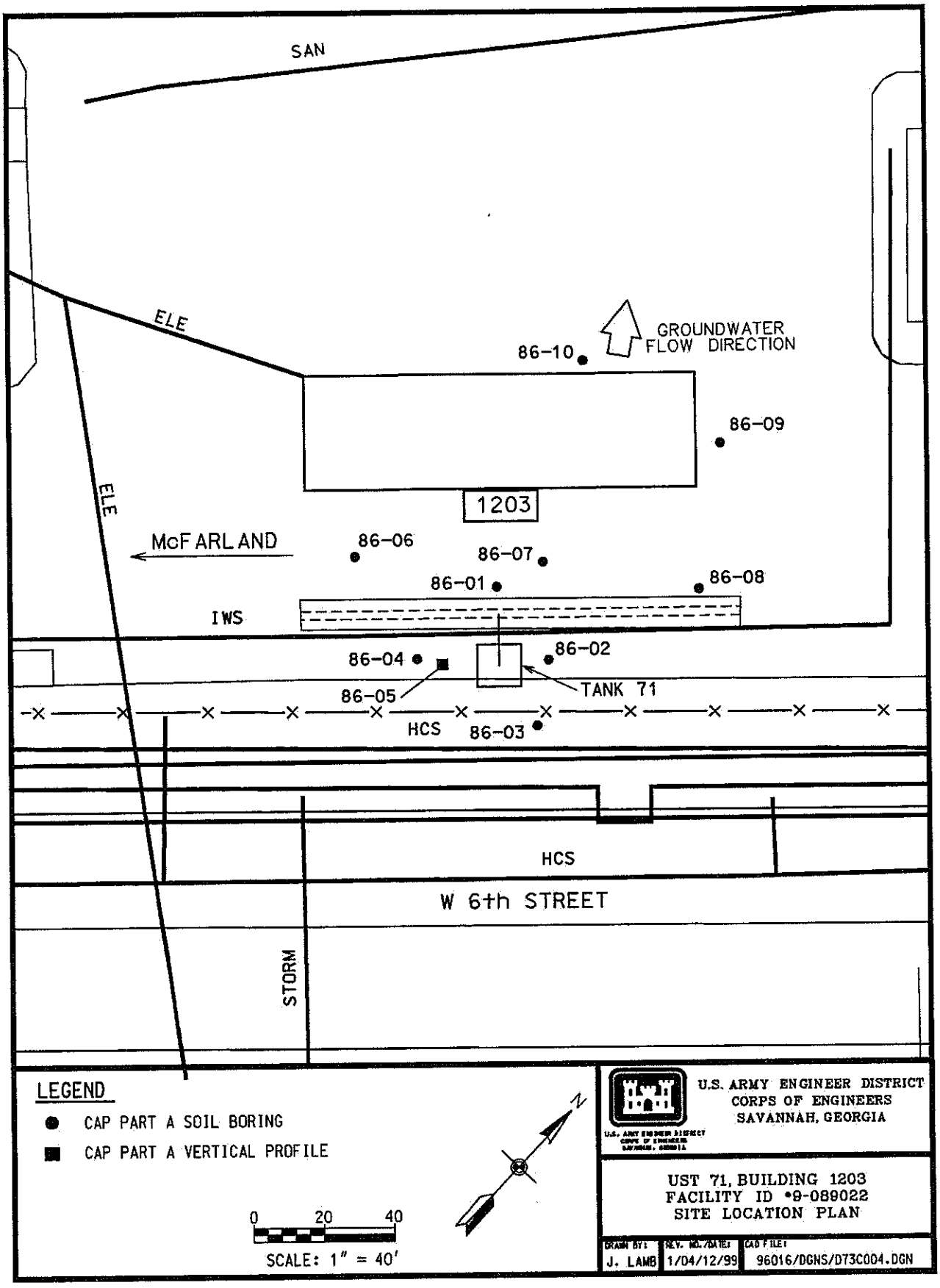

Figure 2. Site Plan for the UST 71 Site Investigation

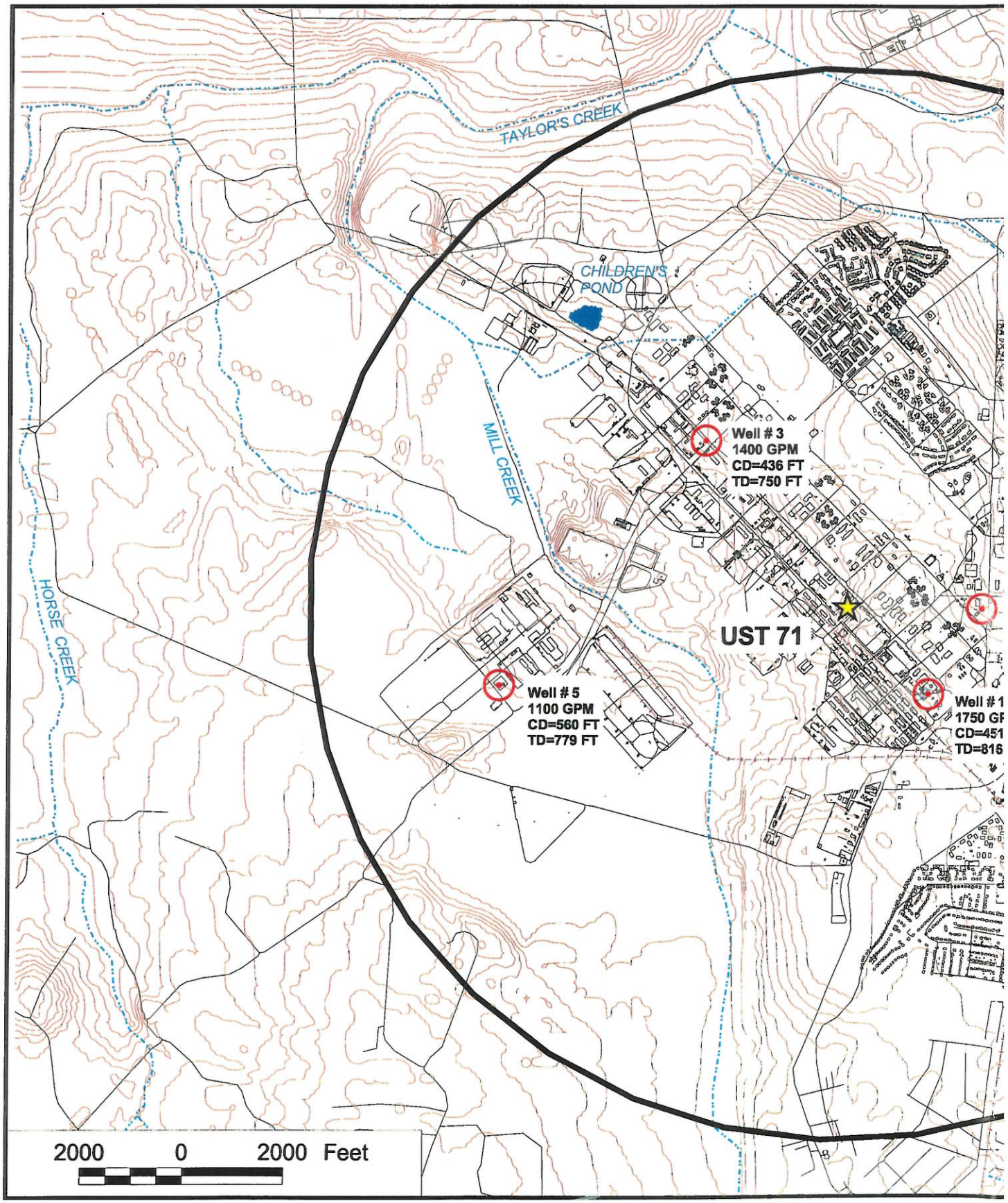

Figure 3. Map Showing Public and Privat
Bodies at Fort Stewart

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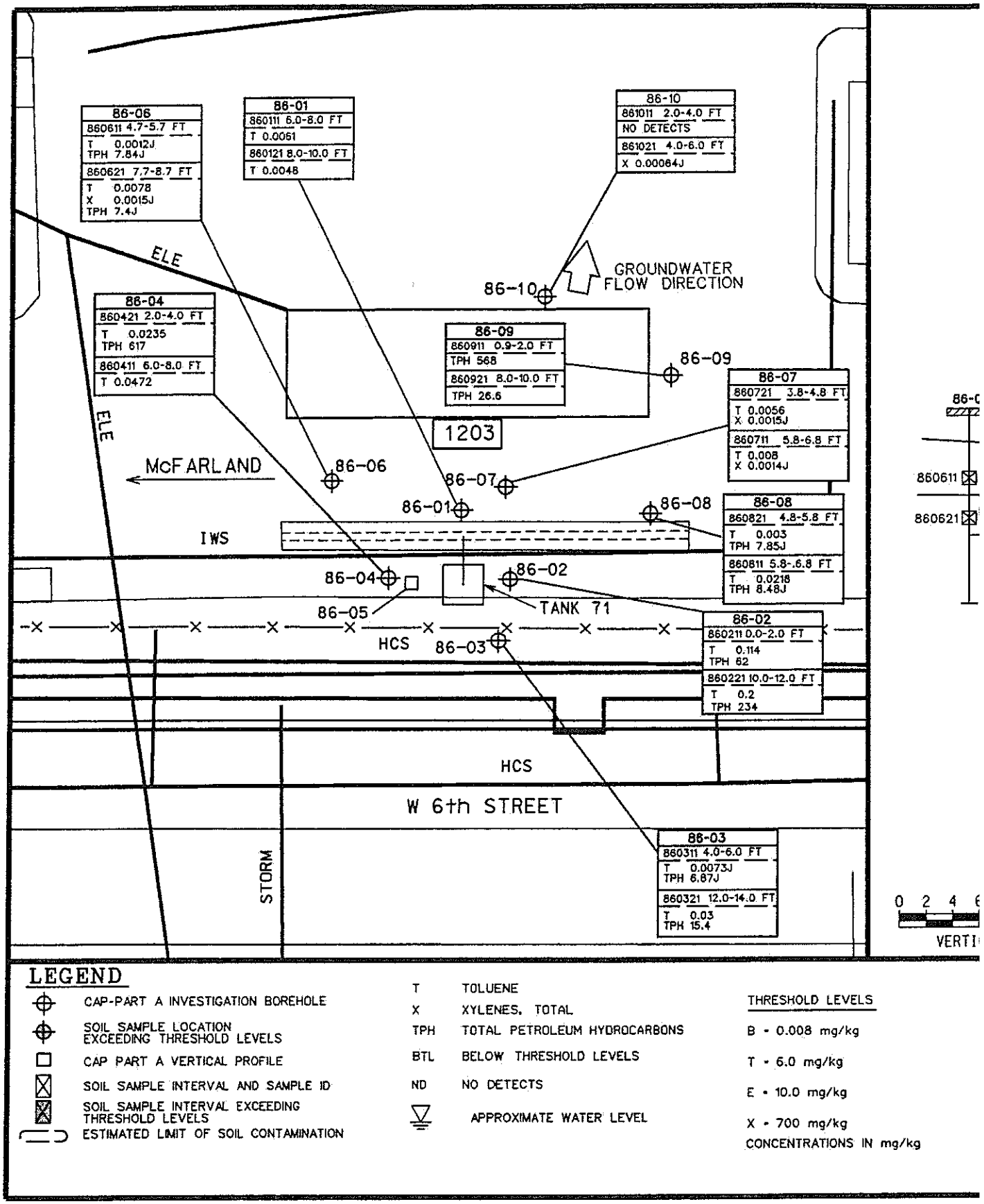

Figure 4. Soil Qualit

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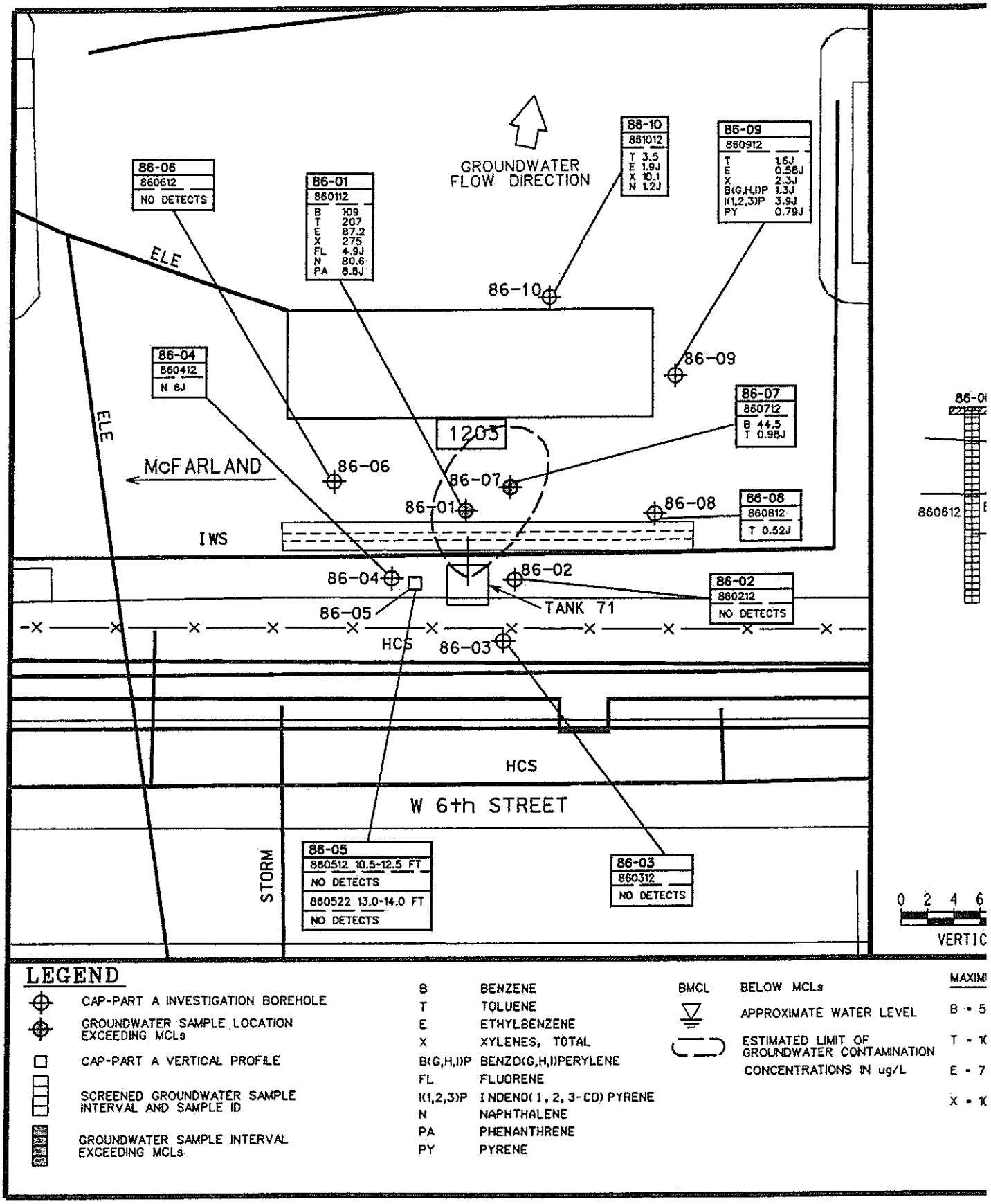

Figure 5. Groundwate

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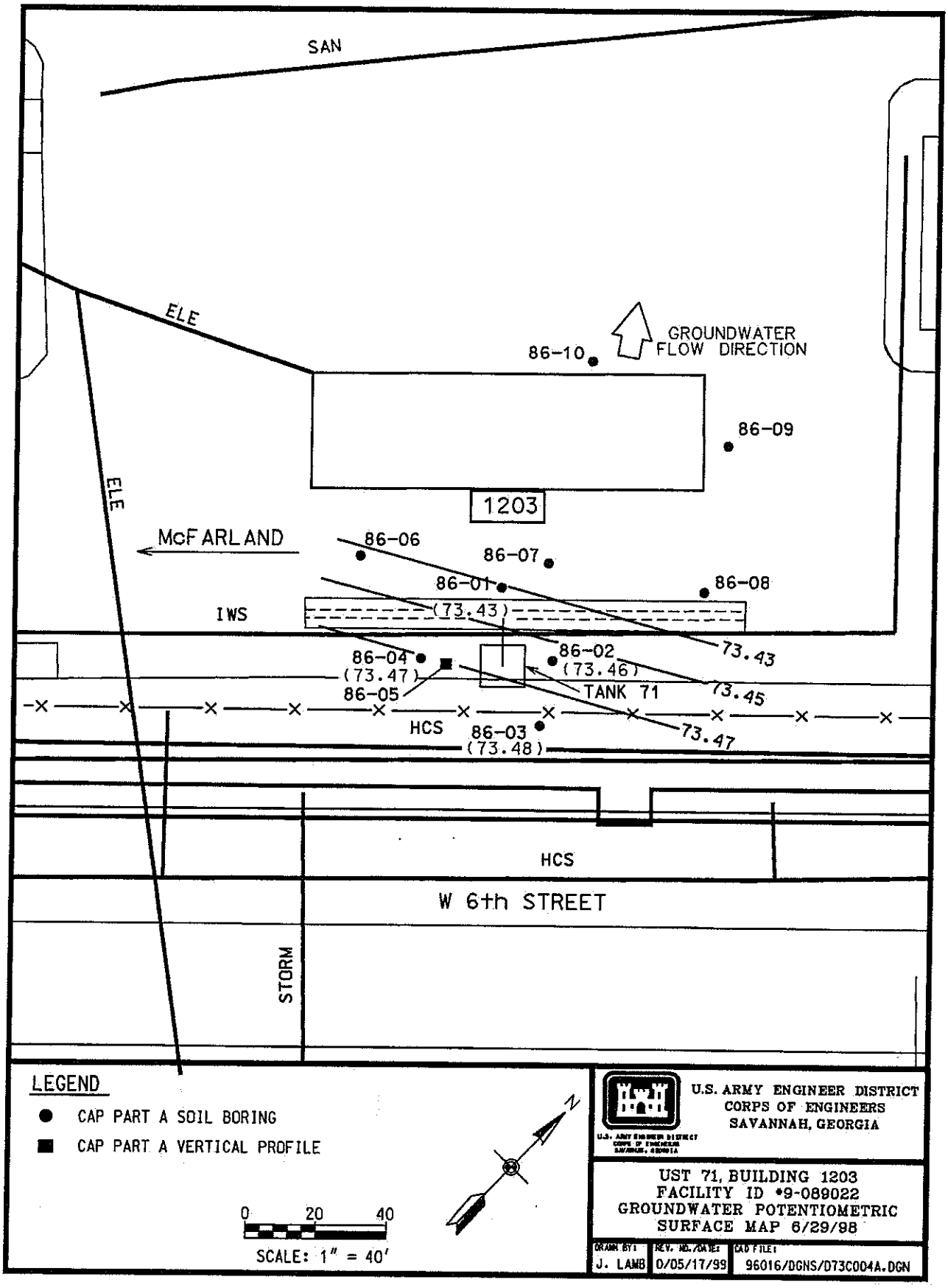

Figure 6. Potentiometric Surface Map of the UST 71 Site

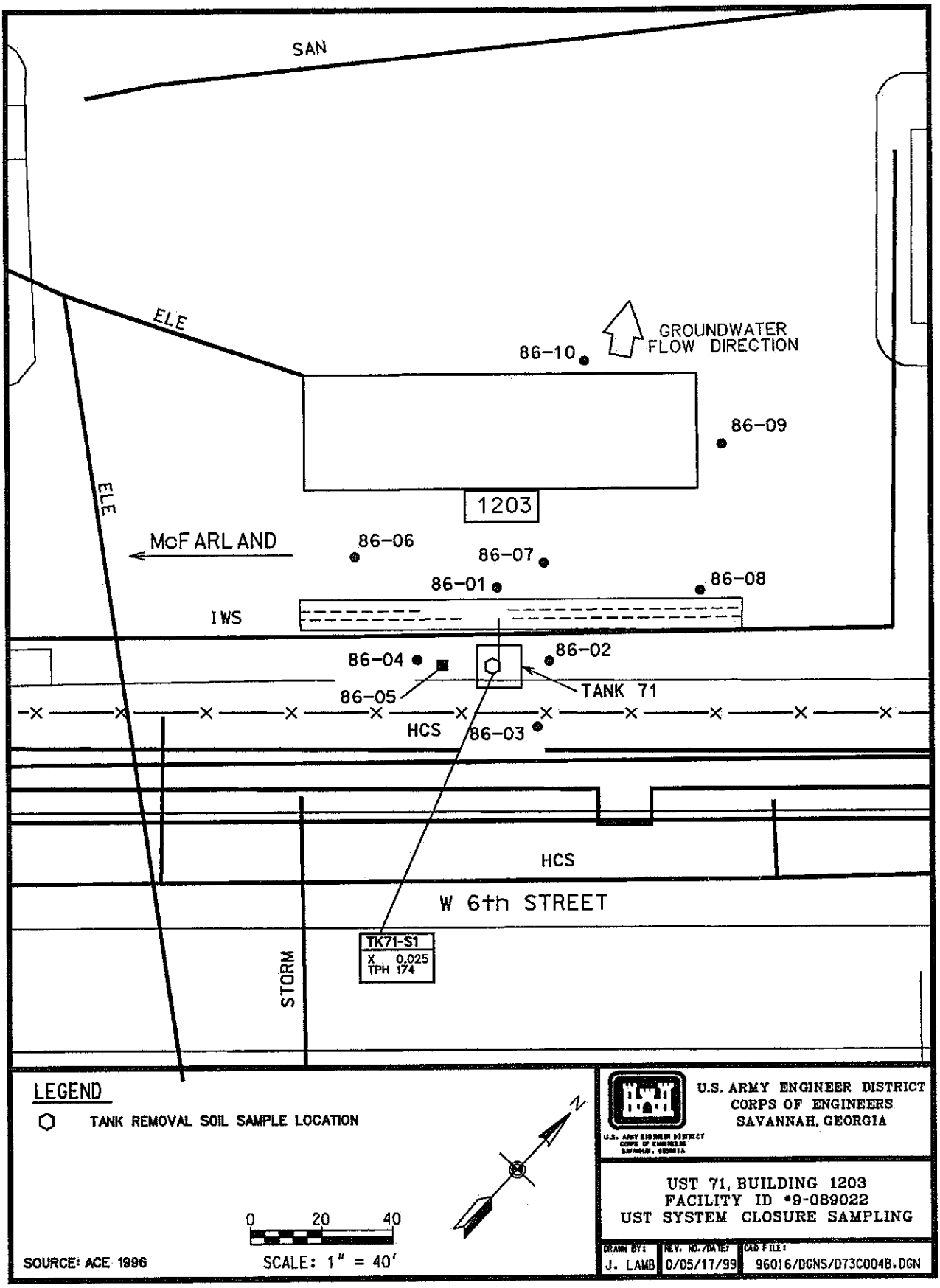

Figure 7. UST System Closure Sampling Locations at the UST 71 Site

No additional borings or monitoring well locations are proposed for this 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 (mg/kg)
86-01	860111	6.0 - 8.0	06/25/98	0.0022 U	0.0061 =	0.0022 U	0.0066 U	0.0061	10 U
86-01	860121	8.0 - 10.0	06/25/98	0.0023 U	0.0048 =	0.0023 U	0.0068 U	0.0048	10 U
86-02	860211	0.0 - 2.0	06/26/98	0.0022 U	0.114 =	0.0022 U	0.0067 U	0.114	62 =
86-02	860221	10.0 - 12.0	06/26/98	0.0024 U	0.2 =	0.0024 U	0.0072 U	0.2	234 =
86-03	860311	4.0 - 6.0	06/27/98	0.0021 U	0.0073 J	0.0021 U	0.0063 UJ	0.0073	6.87 J
86-03	860321	12.0 - 14.0	06/27/98	0.0023 U	0.03 =	0.0023 U	0.0069 U	0.03	15.4 =
86-04	860411	6.0 - 8.0	06/25/98	0.0022 U	0.0472 =	0.0022 U	0.0067 U	0.0475	10 U
86-04	860421	2.0 - 4.0	06/25/98	0.0021 U	0.0235 =	0.0021 U	0.0062 U	0.0235	617 =
86-06	860611	4.7 - 5.7	11/12/98	0.0022 U	0.0012 J	0.0022 U	0.0033 U	0.0012	7.84 J
86-06	860621	7.7 - 8.7	11/12/98	0.0022 U	0.0078 =	0.0022 U	0.0015 J	0.0093	7.4 J
86-07	860711	5.8 - 6.8	11/13/98	0.0024 U	0.008 =	0.0024 U	0.0014 J	0.0094	7.79 U
86-07	860721	3.8 - 4.8	11/13/98	0.0022 U	0.0056 =	0.0022 U	0.0015 J	0.0071	6.39 U
86-08	860811	5.8 - 6.8	11/16/98	0.0024 U	0.0218 =	0.0024 U	0.0036 U	0.0218	8.48 J
86-08	860821	4.8 - 5.8	11/16/98	0.0022 U	0.003 =	0.0022 U	0.0033 U	0.003	7.85 J
86-09	860911	0.9 - 2.0	02/21/99	0.0023 U	0.0023 U	0.0023 U	0.0034 U	ND	568 =
86-09	860921	8.0 - 10.0	02/21/99	0.0023 U	0.0023 U	0.0023 U	0.0035 U	ND	26.6 =
86-10	861011	2.0 - 4.0	02/21/99	0.0025 U	0.0025 U	0.0025 U	0.0037 U	ND	9.63 U
86-10	861021	4.0 - 6.0	02/21/99	0.0025 U	0.0025 U	0.0025 U	0.00064 J	0.00064	8.17 U
Applicable Standards[1]				0.008	6	10	700	NRC	NRC

NOTES:

Contract for the June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance 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
DRO Diesel range organics
GRO Gasoline range organics
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.
= 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)
86-01	860111	6.0 - 8.0	06/25/98									ND
86-01	860121	8.0 - 10.0	06/25/98									ND
86-02	860211	0.0 - 2.0	06/26/98									ND
86-02	860221	10.0 - 12.0	06/26/98									ND
86-03	860311	4.0 - 6.0	06/27/98									ND
86-03	860321	12.0 - 14.0	06/27/98									ND
86-04	860411	6.0 - 8.0	06/25/98									ND
86-04	860421	2.0 - 4.0	06/25/98									ND
86-06	860611	4.7 - 5.7	11/12/98									ND
86-06	860621	7.7 - 8.7	11/12/98									ND
86-07	860711	5.8 - 6.8	11/13/98									ND
86-07	860721	3.8 - 4.8	11/13/98									ND
86-08	860811	5.8 - 6.8	11/16/98									ND
86-08	860821	4.8 - 5.8	11/16/98									ND
86-09	860911	0.9 - 2.0	02/21/99									ND
86-09	860921	8.0 - 10.0	02/21/99									ND
86-10	861011	2.0 - 4.0	02/21/99									ND
86-10	861021	4.0 - 6.0	02/21/99									ND
Applicable Standards[1]												NRC

NOTES:

Contract for the June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance 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.

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)
86-01	860112	4.0 - 14.0	06/25/98	109 =	207 =	87.2 =	275 =	678.2
86-02	860212	4.0 - 14.0	06/26/98	2 UJ	2 UJ	2 UJ	6 UJ	ND
86-03	860312	5.0 - 15.0	06/28/98	2 U	2 U	2 U	6 U	ND
86-04	860412	5.5 - 15.5	06/25/98	2 U	2 U	2 U	6 U	ND
86-05	860512	10.5 - 12.5	06/28/98	2 U	2 U	2 U	6 U	ND
86-05	860522	13.0 - 14.0	06/30/98	2 U	2 U	2 U	6 U	ND
86-06	860612	0.0 - 14.7	11/12/98	2 U	2 U	2 U	3 U	ND
86-07	860712	0.0 - 12.8	11/13/98	44.5 =	0.98 J	2 U	3 U	45.48
86-08	860812	0.0 - 13.0	11/16/98	2 U	0.52 J	2 U	3 U	0.52
86-09	860912	0.0 - 13.3	02/21/99	2 U	1.6 J	0.58 J	2.3 J	4.48
86-10	861012	0.0 - 11.0	02/21/99	2 U	3.5 =	1.9 J	10.1 =	15.5
Applicable Standards[1]				5	1000	700	10000	NRC

NOTE:

Contract for the June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance 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 PAH (ug/L)
				Benzo(g,h,I) perylene	Fluorene	Indeno(1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene	
86-01	860112	4.0 - 14.0	06/25/98		4.9 J		80.6 =	8.8 J		94.3
86-02	860212	4.0 - 14.0	06/26/98							ND
86-03	860312	5.0 - 15.0	06/28/98							ND
86-04	860412	5.5 - 15.5	06/25/98				6.0 J			6.0
86-05	860512	10.5 - 12.5	06/28/98							ND
86-05	860522	13.0 - 14.0	06/30/98							ND
86-06	860612	0.0 - 14.7	11/12/98							ND
86-07	860712	0.0 - 12.8	11/13/98							ND
86-08	860812	0.0 - 13.0	11/16/98							ND
86-09	860912	0.0 - 13.3	02/21/99	1.3 J		3.9 J			0.79J	5.99
86-10	861012	0.0 - 11.0	02/21/99				1.2 J			1.2
Applicable Standards[1]				NRC	NRC	NRC	NRC	NRC	NRC	NRC

NOTE:

Contract for the June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

[1] U.S. Environmental Protection Agency maximum contaminant level
BGS Below ground surface
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 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)
86-01	6/29/98	86.45	85.87	4.0 - 14.0	N/A	12.44	N/A	N/A	73.43
86-02	6/29/98	86.63	84.81	4.0 - 14.0	N/A	11.35	N/A	N/A	73.46
86-03	6/29/98	86.48	86.06	5.0 - 15.0	N/A	12.58	N/A	N/A	73.48
86-04	6/29/98	86.66	83.37	5.5 - 15.5	N/A	9.9	N/A	N/A	73.47
86-06	11/18/98	86.65	87.98	0.0 - 14.7	N/A	11.97	N/A	N/A	76.01
86-07	11/18/98	86.42	89.32	0.0 - 12.8	N/A	dry	N/A	N/A	Dry
86-08	11/18/98	86.68	89.72	0.0 - 13.0	N/A	13.7	N/A	N/A	76.02

NOTE:

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

TABLE 5a: UST SYSTEM CLOSURE - 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)
TK71-S1	unknown	7/16/96	0.0011 U	0.0011 U	0.0011 U	0.025 =	0.025	174 =
Applicable Standards[2]			0.008	10	6	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)				Total PAHs (mg/kg)
TK71-S1	unknown	7/16/96					ND
Applicable Standards[2]							NRC

NOTE:

[1]	Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1996)
[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 hydrocarbons
TPH	Total petroleum 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.

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	700	1,000	10,000	NRC

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

Sample Location	Depth (ft BGS)	Date Sampled	Detected PAH Compounds (ug/L)				Total PAHs (µg/L)
			No groundwater samples were collected.				
Applicable Standards[2]							NRC

NOTE:

[1]	Underground storage tank system closure performed by Anderson Columbia Environmental, Inc. (1997)
[2]	U.S. Environmental Protection Agency maximum contaminant levels
BGS	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylene
ND	Not detected
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 UST 71 SITE

A field potential receptor survey was conducted for the UST 71 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 UST 71 Site

The UST 71 site is located approximately 2100 feet northwest (downgradient) of Well #1. Therefore, the UST 71 site is classified as being located greater than 500 feet to a withdrawal point. The nearest downgradient water supply well is Well #3, which is located 4200 feet northwest of the UST 71 site.

2.2 Surface Water Bodies Near the UST 71 Site

At the closest point to the site, Mill Creek is located approximately 3000 feet southwest of the UST 71 site. In the direction of groundwater flow, a tributary that flows into Mill Creek is located approximately 6500 feet northwest 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 UST 71 Site

Several overhead electrical lines are located in the vicinity of the site. The closest downgradient underground utility is an industrial wastewater line that runs parallel to the grease rack and is located approximately 5 feet from the former tank pit. However, the invert depth of this line is approximately 5 feet above the average groundwater depth at the site, thus it is not considered a potential preferential pathway.

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 86-01

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)
	0	Concrete				
	1	silty SAND, fine grained, subangular, soft, 30% silt, dark brown (10YR3/3) dry	0ppm			
	2					
	3	grading to SAND, fine to medium grained, subrounded, soft, light gray (10YR7/2), dry	0ppm			
	4					
	5		10ppm			
	6	grading to sandy SILT, 5% fine grained, subrounded sand, soft, dark brown (10YR3/3), moist				
	7		0ppm		Soil Sample 860111	
	8	No Recovery				Collected groundwater sample 860112 from temporary piezometer screened from 4.0 to 14.0 ft BGS
	9	as above; grading to black (10YR2/1)	17ppm		Soil Sample 860121	▼ Wet below 9.4 ft BGS
	10					Drilled to 14.0 ft BGS. Set piezometer

HTRW DRILLING LOG

HOLE NUMBER 86-02

PROJECT: Fort Stewart USTs | INSPECTOR J.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	Concrete				
	1	Sandy SILT, 10% fine to medium grained, subrounded sand, soft, dry, dark brown (10YR3/3)	22 ppm		Soil Sample 860211	
	2					
	3	grading to SAND, fine to medium grained, subrounded, soft, dry, light gray (10YR7/2)	61 ppm			
	4					
	5	Shelby Tube	N/A	Soil Sample 860231		
	6					
	7	as above grading to SILT, soft, moist, black (10YR2/1)	70 ppm			
	8					
	9		163 ppm			
	10					

HTRW DRILLING LOG

HOLE NUMBER 86-02

PROJECT: Fort Stewart USTs

INSPECTOR J. 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)
	11	Same as above	179 ppm		Soil Sample 860221	
	12					▼ Wet below 12.0 FT BGS
	13		N/A			Collected groundwater sample 860212 from temporary piezometer screened from 4.0 to 14.0 FT BGS
	14					End of drilling at 14.0 FT BGS Set Piezometer
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 86-03

PROJECT: Fort Stewart USTs | INSPECTOR M. Vest | 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)
	0–1	SILT: non-plastic, loose, well sorted, pale yellow (5Y 8/3), dry	0ppm			Ran 4.0 Rec 4.0
	1–4	Silty SAND: non-plastic, loose, well sorted, very fine grained, pale yellow (5Y 8/2), damp	0ppm			
	4–5	SILT: non-plastic, loose, well sorted, pale brown (10YR 6/3), damp	0ppm		Soil Sample 860311	Ran 4.0 Rec. 4.0
	5–8	Silty SAND: very fine grained, loose, non-plastic, very dark gray (10YR 3/1) with some grains (~15%) a light gray color	0ppm			
	8–10		0ppm			Ran 4.0 Rec. 4.0

HTRW DRILLING LOG

HOLE NUMBER 86-03

PROJECT: Fort Stewart USTs | INSPECTOR M. Vest | 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)
	11	Silty SAND: fine grained, non-plastic, low density, black (10YR 2/1), damp	0ppm			
	12					Ran 3.0 Rec. 3.0
	13	Silty SAND, fine grained, non-plastic, low density, black (10YR 2/1), moist to damp	0ppm		Soil Sample B60321	
	14					
	15	Silty SAND, fine grained, non-plastic, low density, black (10YR 2/1), wet	0ppm			▼ Wet below = 14.5 FT BGS End of drilling at 15.0 FT BGS Set piezometer COLLECTED GROUNDWATER SAMPLE B60312 FROM TEMPORARY PIEZOMETER SCREENED FROM 5.0 TO 15.0 FT BGS
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 860-04

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	silty SAND, subrounded, soft, 30% silt, dark brown (10YR 3/3), dry	7.3 ppm			
	3	grading to SAND, fine to medium grained, poorly sorted, subrounded, light gray (10YR 7/2), dry	32 ppm		Soil Sample 860411	
	4					
	5		4.7 ppm			
	6	grading to sandy SILT, 5% fine subrounded sand, soft, black (10YR 2/1), moist				
	7		0 ppm		Soil Sample 860411	
	8					▼ Wet below 7.5 FT BGS
	9					COLLECTED GROUNDWATER SAMPLE 860412 FROM TEMPORARY PIEZOMETER SCREENED AT 5.5 TO 15.5 FT BGS. Drilled to 15.5 FT BGS. Set piezometer
	10					

HTRW DRILLING LOG

HOLE NUMBER 86-05

PROJECT: Fort Stewart USTs | INSPECTOR P. Lucot | 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	Vertical profile borehole for the purpose of collecting groundwater samples. No soil was collected for lithlogic description				
	2					
	4					
	6					
	8					
	10					
	12		452 ppm		Groundwater Sample 860512	PUSHED TO 12.5 FT BGS AND PULLED BACK TO 10.5 FT BGS TO EXPOSE SCREEN REFUSAL AT 12.5 FT BGS START ANOTHER HOLE IN TANK PIT
	14	REFUSAL AT 14.0 FT BGS	7.01 ppm		Groundwater Sample 860522	PUSHED TO 14.0 FT BGS AND PULLED BACK TO 13.0 FT BGS TO EXPOSE SCREEN
	16					
	18					
	20					

HTRW DRILLING LOG

HOLE NUMBER 860606

PROJECT: Fort Stewart USTs | INSPECTOR J. Shiflet | 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)
		CONCRETE				
	1	SAND(SP), fine to medium grained, some silt, moist to saturated, subrounded dark brown to tan to black				
	2					
	3					
	4					
	5		7.2 ppm		Soil sample 860611	
	6					
	7					
	8		6.3 ppm		Soil sample 860621	
	9					▽ wet below 9.4 FT BGS
	10					

HTRW DRILLING LOG

HOLE NUMBER 860-06

PROJECT: Fort Stewart USTs

INSPECTOR J. Shiflet

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)
	11					
	12					COLLECTED GROUNDWATER SAMPLE 860012 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 14.7 FT BGS.
	13					
	14					END OF DRILLING AT 14.7 FT BGS AND SET TEMPORARY PIEZOMETER
	15					
	16					
	17					
	18					
	19					
	20					

HTRW DRILLING LOG

HOLE NUMBER 86-07

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 (SM), fine to medium grained, subrounded, weak, dark brown mottled with tan to orange				
	2					
	3	SAND (SP), fine to medium grained, subrounded, light tan				
	4	SAND (SP), fine to medium grained, some silt, moist, gray to dark brown	28.6 ppm		Soil Sample 860721	
	5					
	6		26.5 ppm		Soil Sample 860711	
	7					
	8					▽ = Wet below 8.3 ft BGS
	9					COLLECTED GROUNDWATER SAMPLE 860712 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 12.8 FT BGS
	10					END OF DRILLING AT 12.8 FT BGS AND SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 86-08

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	CONCRETE				
	1	SAND (SP), fine to medium grained, dark brown to very light tan	0.6ppm			
	2					
	3		1.0ppm			
	4		3.8ppm			
	5	Silty SAND (SM), fine grained, black	14.3ppm		Soil Sample 860821	
	6		3.8ppm		Soil Sample 860811	
	7		6.9ppm			
	8					▽ wet below 8.3ft BGS
	9					Collected ground water sample 860812 from temporary piezometer screened from 0.0 to 13.0 ft BGS
	10					Pushed to 13.0 ft BGS and set temporary piezometer

HTRW DRILLING LOG

HOLE NUMBER B6-09

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), 15% silt, fine to medium grained, subrounded, soft, dry, dark brown (10 YR 3/3)	3.5 ppm		Soil Sample 860911	
	2					
	3	SAND (SW), very fine grained, soft, dry, light gray (10 YR 7/1)	5.3 ppm			
	4					
	5		7.0 ppm			
	6					
	7	sandy SILT (ML), 5% fine grained sand, soft, moist, black (10 YR 2/1)	13.0 ppm			COLLECTED GROUNDWATER SAMPLE 860912 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 13.3 FT BGS
	8					▽ WET BELOW 8.7 FT BGS
	9		14.6 ppm		Soil Sample 860921	
	10					PUSHED TO 15.0 FT BGS TO SET TEMPORARY PIEZOMETER

HTRW DRILLING LOG

HOLE NUMBER 86-10

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), 15% silt, fine to medium grained, subrounded, soft, dry, dark brown (10YR 3/3)	8.1 ppm			
	2					
	3	SAND (SW), very fine grained, soft, dry, light gray (10YR 7/1)	13.0 ppm		Soil Sample 861021	
	4					
	5		5.7 ppm		Soil Sample 861011	
	6	sandy SILT (ML), 5% fine grained sand, soft to firm, moist, black (10YR 2/1)				
	7		10.1 ppm			
	8					▽ = WET BELOW 7.7 FT BGS
	9					COLLECTED GROUNDWATER SAMPLE 861012 FROM TEMPORARY PIEZOMETER SCREENED FROM 0.0 TO 11.0 FT BGS
	10					PUSHED TO 11.0 FT BGS TO SET TEMPORARY PIEZOMETER

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APPENDIX V

SOIL LABORATORY REPORTS

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TABLE V-A. Summary of Soil Analytical Results

Station:	GA UST	86-01	86-01	86-02	86-02	86-03	86-03
Sample ID:	Soil	860111	860121	860211	860221	860311	860321
Sample Interval (ft BGS):	Threshold	6.0 - 8.0	8.0 - 10.0	0.0 - 2.0	10.0 - 12.0	4.0 - 6.0	12.0 - 14.0
Collection Date:	Levels[1]	25-Jun-98	25-Jun-98	26-Jun-98	26-Jun-98	27-Jun-98	27-Jun-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS							
Benzene	0.008	0.0022 U	0.0023 U	0.0022 U	0.0024 U	0.0021 U	0.0023 U
Toluene	6	0.0061 =	0.0048 =	0.114 =	0.2 =	0.0073 J	0.03 =
Ethylbenzene	10	0.0022 U	0.0023 U	0.0022 U	0.0024 U	0.0021 U	0.0023 U
Xylenes, Total	700	0.0066 U	0.0068 U	0.0067 U	0.0072 U	0.0063 UJ	0.0069 U
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Acenaphthene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Acenaphthylene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Anthracene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Benzo(a)anthracene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Benzo(a)pyrene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Benzo(b)fluoranthene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Benzo(g,h,i)perylene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Benzo(k)fluoranthene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Chrysene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Dibenzo(a,h)anthracene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Fluoranthene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Fluorene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Indeno(1,2,3-cd)pyrene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Naphthalene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Phenanthrene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Pyrene	NRC	0.366 U	0.379 U	3.70 U	0.402 U	0.351 U	1.53 U
Other Analytes							
Lead	NRC		5.1 =		6.8 =		10.2 =
Total Organic Carbon	NRC				13700 =		
Total Petroleum Hydrocarbons	NRC	10 U	10 U	62 =	234 =	6.87 J	15.4 =

NOTE:

Contract for June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for QA/QC sample 860425 (equipment rinsate) are provided in this Appendix V, but are 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.

ND Not detected

[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:	GA UST	86-04	86-04	86-06	86-06	86-07	86-07
Sample ID:	Soil	860411	860421	860611	860621	860711	860721
Sample Interval (ft BGS):	Threshold	6.0 - 8.0	2.0 - 4.0	4.7 - 5.7	7.7 - 8.7	5.8 - 6.8	3.8 - 4.8
Collection Date:	Levels[1]	25-Jun-98	25-Jun-98	12-Nov-98	12-Nov-98	13-Nov-98	13-Nov-98
Units:	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOLATILE ORGANIC COMPOUNDS							
Benzene	0.008	0.0022 U	0.0021 U	0.0022 U	0.0022 U	0.0024 U	0.0022 U
Toluene	6	0.0472 =	0.0235 =	0.0012 J	0.0078 =	0.008 =	0.0056 =
Ethylbenzene	10	0.0022 U	0.0021 U	0.0022 U	0.0022 U	0.0024 U	0.0022 U
Xylenes, Total	700	0.0067 U	0.0062 U	0.0033 U	0.0015 J	0.0014 J	0.0015 J
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Acenaphthene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Acenaphthylene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Anthracene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Benzo(a)anthracene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Benzo(a)pyrene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Benzo(b)fluoranthene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Benzo(g,h,i)perylene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Benzo(k)fluoranthene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Chrysene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Dibenzo(a,h)anthracene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Fluoranthene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Fluorene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Indeno(1,2,3-cd)pyrene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Naphthalene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Phenanthrene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Pyrene	NRC	0.374 U	0.347 U	0.370 U	0.366 U	0.402 U	0.366 U
Other Analytes							
Lead	NRC		0.95 U		2.5 =		3.7 =
Total Organic Carbon	NRC						
Total Petroleum Hydrocarbons	NRC	10 U	617 =	7.84 J	7.4 J	7.79 U	6.39 U

NOTE:

Contract for June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for QA/QC sample 860425 (equipment rinsate) are provided in this Appendix V, 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:	GA UST	86-08	86-08	86-09	86-09	86-10	86-10
Sample ID:	Soil	860811	860821	860911	860921	861011	861021
Sample Interval (ft BGS):	Threshold	5.8 - 6.8	4.8 - 5.8	0.9 - 2.0	8.0 - 10.0	2.0 - 4.0	4.0 - 6.0
Collection Date:	Levels[1]	16-Nov-98	16-Nov-98	21-Feb-99	21-Feb-99	21-Feb-99	21-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	0.0023 U	0.0023 U	0.0025 U	0.0025 U
Toluene	6	0.0218 =	0.003 =	0.0023 U	0.0023 U	0.0025 U	0.0025 U
Ethylbenzene	10	0.0024 U	0.0022 U	0.0023 U	0.0023 U	0.0025 U	0.0025 U
Xylenes, Total	700	0.0036 U	0.0033 U	0.0034 U	0.0035 U	0.0037 U	0.00064 J
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Acenaphthene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Acenaphthylene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Anthracene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Benzo(a)anthracene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Benzo(a)pyrene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Benzo(b)fluoranthene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Benzo(g,h,i)perylene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Benzo(k)fluoranthene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Chrysene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Dibenzo(a,h)anthracene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Fluoranthene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Fluorene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Indeno(1,2,3-cd)pyrene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Naphthalene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Phenanthrene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Pyrene	NRC	0.401 U	0.366 U	1.43 U	0.362 U	0.355 U	0.351 U
Other Analytes							
Lead	NRC		2.7 =		2.5 =		0.55 =
Total Organic Carbon	NRC						
Total Petroleum Hydrocarbons	NRC	8.48 J	7.85 J	568 =	26.6 =	9.63 U	8.17 U

NOTE:

Contract for June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for QA/QC sample 860425 (equipment rinsate) are provided in this Appendix V, 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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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A03S

Matrix: (soil/water) SOIL Lab Sample ID: 9806805-08

Sample wt/vol: 10.0 (g/mL) Lab File ID: 2P2015

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: not dec. 9 Date Analyzed: 06/30/98

GC Column: J&W DB-624(PID) 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	2.2	U
108-88-3	Toluene	6.1	
100-41-4	Ethylbenzene	2.2	U
1330-20-7	Xylenes (total)	6.6	U

LW
8-05-98

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860111

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A03S

Matrix: (soil/water) SOIL Lab Sample ID: 9806805-08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7B315

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: 9 decanted: (Y/N) N Date Extracted: 06/29/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/09/98

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	366	U	U
91-58-7	2-chloronaphthalene	366	U	
208-96-8	acenaphthylene	366	U	
83-32-9	acenaphthene	366	U	
86-73-7	fluorene	366	U	
85-01-8	phenanthrene	366	U	
120-12-7	anthracene	366	U	
206-44-0	fluoranthene	366	U	
129-00-0	pyrene	366	U	
56-55-3	benzo(a)anthracene	366	U	
218-01-9	chrysene	366	U	
205-99-2	benzo(b)fluoranthene	366	U	
207-08-9	benzo(k)fluoranthene	366	U	
50-32-8	benzo(a)pyrene	366	U	
193-39-5	indeno(1,2,3-cd)pyrene	366	U	
53-70-3	dibenz(a,h)anthracene	366	U	
191-24-2	benzo(g,h,i)perylene	366	U	

LW 8-05-98

FORM I SV-1 OLM03.0

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 (Task Order No. 8)

cc: SAIC00598 Report Date: July 09, 1998

Sample ID	: 860111
Lab ID	: 9806805-08
Matrix	: Soil
Date Collected	: 06/25/98
Date Received	: 06/26/98
Priority	: Routine
Collector	: Client

DATA VALIDATION COPY

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	~~10 6.26 10 6.26 U~~ J LW 8-18-98	2.18	10.0	mg/kg	1.0	JLP	06/30/98	1600	125127	1

U F01, F06

M = Method	Method-Description
M 1	EPA 418.1 Modified

LW 8-18-98

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 (803) 769-7391.

Reviewed By

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VOLATILE ORGANICS 1A ANALYSIS DATA SHEET

EPA SAMPLE NO.

860121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA - Case-No.: NA SAS No.: NA SDG No.: FS4A03S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806805-16

Sample wt/vol: 10.0 (g/mL) DATA VALIDATION COPY

Lab File ID: 2P2033

Level: (low/med) LOW

% Moisture: not dec. 12

Date Received: 06/26/98

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

Date Analyzed: 07/01/98

Soil Extract Volume: _____(ml)

Dilution Factor: 1.0

Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
71-43-2	Benzene	2.3	U
108-88-3	Toluene	4.8	
100-41-4	Ethylbenzene	2.3	U
1330-20-7	Xylenes (total)	6.8	U

CLC

LW
8-05-98

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860121

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A03S

Matrix: (soil/water) SOIL Lab Sample ID: 9806805-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7B323

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: 12 decanted: (Y/N) Date Extracted: 06/29/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/09/98

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

U

LW
8-05-98

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 (Task Order No. 8)

cc: SAIC00598 Report Date: July 09, 1998

Sample ID	: 860121
Lab ID	: 9806805-16
Matrix	: Soil
Date Collected	: 06/25/98
Date Received	: 06/26/98
Priority	: Routine
Collector	: Client

DATA VALIDATION COPY

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	~~9.09~~ 16	2.26	10.0	mg/kg	1.0	JLP	06/30/98	1600	125127	1

LW 8-18-98

U Fol, 1

M = Method	Method-Description
M 1	EPA 418.1 Modified

LW 8-18-98

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 (803) 769-7391.

Reviewed By

9806805-16

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Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A03S

Method Type: Total Metals

Sample ID: 9806805-16

Client ID: 860121

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

Matrix: SOIL Date Received: 6/26/98 Level: LOW

% Solids: 88.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	5.1	mg/kg			P	0.16	TJA61 Trace ICPAES	980701-3

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION COPY

DATA VALIDATION COPY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A10S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806843-15

Sample wt/vol: 10.0 (g/mL) G

Lab File ID: 2P3027

Level: (low/med) LOW

Date Received: 06/29/98

% Moisture: not dec. 10

Date Analyzed: 07/02/98

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	114		
100-41-4	Ethylbenzene	2.2	U	U
1330-20-7	Xylenes (total)	6.7	U	U

LW
8-14-98

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860211

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A10S

Matrix: (soil/water) SOIL Lab Sample ID: 9806843-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7B424

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: 10 decanted: (Y/N) N Date Extracted: 07/01/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/10/98

Injection Volume: 1.0 (uL) Dilution Factor: 10.0

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	3700	U	U
91-58-7	2-chloronaphthalene	3700	U	
208-96-8	acenaphthylene	3700	U	
83-32-9	acenaphthene	3700	U	
86-73-7	fluorene	3700	U	
85-01-8	phenanthrene	3700	U	
120-12-7	anthracene	3700	U	
206-44-0	fluoranthene	3700	U	
129-00-0	pyrene	3700	U	
56-55-3	benzo(a)anthracene	3700	U	
218-01-9	chrysene	3700	U	
205-99-2	benzo(b)fluoranthene	3700	U	
207-08-9	benzo(k)fluoranthene	3700	U	
50-32-8	benzo(a)pyrene	3700	U	
193-39-5	indeno(1,2,3-cd)pyrene	3700	U	
53-70-3	dibenz(a,h)anthracene	3700	U	
191-24-2	benzo(g,h,i)perylene	3700	U	

FORM I SV-1

OLM03.0

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 (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Sample ID	: 860211
Lab ID	: 9806843-15
Matrix	: Soil
Date Collected	: 06/26/98
Date Received	: 06/29/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		62.0	=	2.20	11.1	mg/kg	1.0	AAT	07/10/98	1030	125813	1

M = Method	Method-Description
M 1	EPA 418.1 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).
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* 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 (803) 769-7391.

Reviewed By

9806843-15

299

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A11S

Matrix: (soil/water) SOIL Lab Sample ID: 9806844-16

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2P3023

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: not dec. 17 Date Analyzed: 07/02/98

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	2.4	U	U
108-88-3	Toluene	200		U
100-41-4	Ethylbenzene	2.4	U	U
1330-20-7	Xylenes (total)	7.2	U	U

LW
8-06-98

FORM I VOA

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860221

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A11S

Matrix: (soil/water) SOIL Lab Sample ID: 9806844-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4B511

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: 17 decanted: (Y/N) N Date Extracted: 07/06/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/10/98

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	402	U	U
91-58-7	2-chloronaphthalene	402	U	
209-96-8	acenaphthylene	402	U	
83-32-9	acenaphthene	402	U	
86-73-7	fluorene	402	U	
85-01-8	phenanthrene	402	U	
120-12-7	anthracene	402	U	
206-44-0	fluoranthene	402	U	
129-00-0	pyrene	402	U	
56-55-3	benzo(a)anthracene	402	U	
218-01-9	chrysene	402	U	
205-99-2	benzo(b)fluoranthene	402	U	
207-08-9	benzo(k)fluoranthene	402	U	
50-32-8	benzo(a)pyrene	402	U	
193-39-5	indeno(1,2,3-cd)pyrene	402	U	
53-70-3	dibenz(a,h)anthracene	402	U	
191-24-2	benzo(g,h,i)perylene	402	U	

LW
8-10-98

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 (Task Order No. 8)

cc: SAIC00598 Report Date: July 14, 1998

Sample ID	: 860221
Lab ID	: 9806844-16
Matrix	: Soil
Date Collected	: 06/26/98
Date Received	: 06/29/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	
General Chemistry												
Total Rec. Petro. Hydrocarbons		234	4.75	24.0	mg/kg	2.0	JLP	07/09/98	1100	125709	1	= FOS
TOTAL ORGANIC CARBON (TOC)		13700	24.1	100	mg/kg	1.0	LS	07/09/98	1548	125629	2	= FOS

M = Method	Method-Description
M 1	EPA 418.1 Modified
M 2	SW846 9060 modified

LW
8-21-98

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 (803) 769-7391.

Reviewed By

DATA VALIDATION COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A11S

Method Type: Total Metals

Sample ID: 9806844-16

Client ID: 860221

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

Matrix: SOIL Date Received: 6/29/98 Level: LOW

% Solids: 83.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	6.8	mg/kg			P	0.17	TJA61 Trace ICPAES	980630-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

DATA VALIDATION COPY

VOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE

EPA SAMPLE NO. 860425

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A04W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806806-10

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2P109

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: not dec. _____ Date Analyzed: 06/29/98

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
108-88-3	Toluene	2.0	U
100-41-4	Ethylbenzene	2.0	U
1330-20-7	Xylenes (total)	6.0	U

U

LW
7-22-98

FORM I VOA

DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

RINSATE

EPA SAMPLE NO.

860425

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A01W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806802-20

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 1B415

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:06/29/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 07/10/98

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	10.0	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

LC
7-28-98

FORM I SV-1

OLM03.0

RINSATES

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 (Task Order No. 8)

cc: SAIC00598 Report Date: July 07, 1998

Sample ID	: 860425
Lab ID	: 9806802-20
Matrix	: Water
Date Collected	: 06/25/98
Date Received	: 06/26/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	U	0.0770	0.197	1.00	mg/l	1.0	JLP	07/01/98	1615	125167	1

U

M = Method	Method-Description
M 1	EPA 418.1

Notes:
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* 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 (803) 769-7391.

Reviewed By

9806802-20

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DATA VALIDATION COPY

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A10S

Matrix: (soil/water) SOIL Lab Sample ID: 9806843-10

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2P3014

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: not dec. 5 Date Analyzed: 07/01/98

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	2.1	U	UJ C14
108-88-3	Toluene	7.3	P	MC8
100-41-4	Ethylbenzene	2.1	U	UJ C14
1330-20-7	Xylenes (total)	6.3	U	UJ C14

LW
8-14-98

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860311

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A10S

Matrix: (soil/water) SOIL Lab Sample ID: 9806843-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7B419

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: 5 decanted: (Y/N) N Date Extracted: 07/01/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/10/98

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

LW
8-14-98

FORM I SV-1

OLM03.0

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 (Task Order No. 8)

cc: SAIC00598

Report Date: July 14, 1998

Sample ID	: 860311
Lab ID	: 9806843-10
Matrix	: Soil
Date Collected	: 06/27/98
Date Received	: 06/29/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	6.87	~~J~~ 2.08	10.5	mg/kg	1.0	JLP	06/30/98	1600	125127	1

JAM 8/17/98

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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standard operating procedures. Please direct
any questions to your Project Manager, Valerie Davis at (803) 769-7391.

Reviewed By

9806843-10

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A11S

Matrix: (soil/water) SOIL Lab Sample ID: 9806844-13

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 2P3020

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: not dec. 13 Date Analyzed: 07/02/98

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	2.3	U	U
108-88-3	Toluene	30.0		U
100-41-4	Ethylbenzene	2.3	U	U
1330-20-7	Xylenes (total)	6.9	U	U

LW
8-06-98

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860321

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A11S

Matrix: (soil/water) SOIL Lab Sample ID: 9806844-13

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4B508

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: 13 decanted: (Y/N) N Date Extracted: 07/06/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/10/98

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	1530	U
91-58-7	2-chloronaphthalene	1530	U
209-96-8	acenaphthylene	1530	U
83-32-9	acenaphthene	1530	U
86-73-7	fluorene	1530	U
85-01-8	phenanthrene	1530	U
120-12-7	anthracene	1530	U
206-44-0	fluoranthene	1530	U
129-00-0	pyrene	1530	U
56-55-3	benzo(a)anthracene	1530	U
218-01-9	chrysene	1530	U
205-99-2	benzo(b)fluoranthene	1530	U
207-08-9	benzo(k)fluoranthene	1530	U
50-32-8	benzo(a)pyrene	1530	U
193-39-5	indeno(1,2,3-cd)pyrene	1530	U
53-70-3	dibenz(a,h)anthracene	1530	U
191-24-2	benzo(g,h,i)perylene	1530	U

U

LW
8-10-98

FORM I SV-1

OLM03.0

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 (Task Order No. 8)

cc: SAIC00598 Report Date: July 14, 1998 Page 1 of 1

Sample ID	: 860321
Lab ID	: 9806844-13
Matrix	: Soil
Date Collected	: 06/27/98
Date Received	: 06/29/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M	
General Chemistry												
Total Rec. Petro. Hydrocarbons		15.4	2.28	11.5	mg/kg	1.0	JLP	07/09/98	1100	125709	1 =	F08

M = Method	Method-Description
M 1	EPA 418.1 Modified

LW
8-21-98

Notes:
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Reviewed By

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DATA VALIDATION COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A11S

Method Type: Total Metals

Sample ID: 9806844-13

Client ID: 860321

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

Matrix: SOIL Date Received: 6/29/98 Level: LOW

% Solids: 87.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	10.2	mg/kg			P	0.17	TJA61 Trace ICPAES	980630-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A03S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806805-09

Sample wt/vol: 10.0 (g/mL) G

Lab File ID: 2P2031

Level: (low/med) LOW

Date Received: 06/26/98

% Moisture: not dec. 11

Date Analyzed: 07/01/98

GC Column: J&W DB-624 (PID) 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	2.2	U
108-88-3	Toluene	47.2	
100-41-4	Ethylbenzene	2.2	U
1330-20-7	Xylenes (total)	6.7	U

CCIIC

LW
8-05-98

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860411

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A03S

Matrix: (soil/water) SOIL Lab Sample ID: 9806805-09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7B316

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: 11 decanted: (Y/N) N Date Extracted: 06/29/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/09/98

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

LW 8-05-98

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 (Task Order No. 8)

cc: SAIC00598 Report Date: July 09, 1998

Sample ID	: 860411
Lab ID	: 9806805-09
Matrix	: Soil
Date Collected	: 06/25/98
Date Received	: 06/26/98
Priority	: Routine
Collector	: Client

DATA VALIDATION COPY

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	10 ~~9.84~~ ~~9.845~~	2.22	10.0	mg/kg	1.0	JLP	06/30/98	1600	125127	1

8-18-98

U F01, F06

M = Method	Method-Description
M 1	EPA 418.1 Modified

LW 8-18-98

Notes:
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ND indicates that the analyte was not detected at a concentration greater than the detection limit.
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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 (803) 769-7391.

Reviewed By

9806805-09

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A03S

Matrix: (soil/water) SOIL

Lab Sample ID: 9806805-18

Sample wt/vol: 10.0 (g/mL) G

Lab File ID: 2P2027

Level: (low/med) LOW

Date Received: 06/26/98

% Moisture: not dec. 4

DATA VALIDATION COPY

Date Analyzed: 07/01/98

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	2.1	U
108-88-3	Toluene	23.5	
100-41-4	Ethylbenzene	2.1	U
1330-20-7	Xylenes (total)	6.2	U

LW
8-05-98

FORM I VOA

33

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860421

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A03S

Matrix: (soil/water) SOIL Lab Sample ID: 9806805-18

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7B404

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: 4 decanted: (Y/N) N Date Extracted: 06/29/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/09/98

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	347	U
91-58-7	2-chloronaphthalene	347	U
208-96-8	acenaphthylene	347	U
83-32-9	acenaphthene	347	U
86-73-7	fluorene	347	U
85-01-8	phenanthrene	347	U
120-12-7	anthracene	347	U
206-44-0	fluoranthene	347	U
129-00-0	pyrene	347	U
56-55-3	benzo(a)anthracene	347	U
218-01-9	chrysene	347	U
205-99-2	benzo(b)fluoranthene	347	U
207-08-9	benzo(k)fluoranthene	347	U
50-32-8	benzo(a)pyrene	347	U
193-39-5	indeno(1,2,3-cd)pyrene	347	U
53-70-3	dibenz(a,h)anthracene	347	U
191-24-2	benzo(g,h,i)perylene	347	U

U

LW
8-05-98

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 (Task Order No. 8)

cc: SAIC00598 Report Date: July 09, 1998 Page 1 of 1

Sample ID	: 860421
Lab ID	: 9806805-18
Matrix	: Soil
Date Collected	: 06/25/98
Date Received	: 06/26/98
Priority	: Routine
Collector	: Client

DATA VALIDATION COPY

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		617	10.3	20.8	mg/kg	5.0	JLP	06/30/98	1600	125127	1

FOR

M = Method	Method-Description
M 1	EPA 418.1 Modified

LW
8-18-98

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 (803) 769-7391.

Reviewed By

9806805-18

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DATA VALIDATION COPY

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS4A03S

Method Type: Total Metals

Sample ID: 9806805-18

Client ID: 860421

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

Matrix: SOIL Date Received: 6/26/98 Level: LOW

% Solids: 96.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run	
7439-92-1	Lead	0.95	mg/kg			P	0.15	TJA61 Trace ICPAES	980701-3	U F01,F07

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

CHAIN OF CUSTODY RECORD

COC NO.: GA0006

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
880111	6/24/98	1505	Soil						1	1			2	33618 :1
880211	6/25/98	1020							1	1			2	9806805-01
880123	6/25/98	855							1	1			2	-02
880411	6/24/98	1350							1	1			2	-03
880421	6/24/98	1415							1		1		2	-04
880121	6/25/98	855							1		1		2	-05 :2
880221	6/25/98	1035							1		1		2	-06
860111	6/25/98	1430		1		1							2	-07
860411	6/25/98	1000		1		1							2	-08 :3
810113	6/25/98	1830		1		1							2	-09
810211	6/25/98	1705		1		1							2	-10
800111	6/25/98	1515		1		1							2	-11
800113	6/25/98	1515		1		1							2	-12
													2	-13

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	6/26/98	Diane Mancio	6/26/98
COMPANY NAME: SAIC	12:55	COMPANY NAME: GEL	1640
RECEIVED BY: Raymond Reed	Date/Time 6/26/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	12:55	COMPANY NAME:	
RELINQUISHED BY: Raymond Reed	Date/Time 6/26/98	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	16:40	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #627

Cooler Temperature: 4°C

FEDEX NUMBER:

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800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

c of 4

CHAIN OF CUSTODY RECORD

COC NO.: GA0006

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
810111	6/25/98	1635	Soil	1		1							2	980605-14 33618.3
810221	6/25/98	1715		1			1						2	-15 .4
860121	6/25/98	~~1830~~ 1455		1			1						2	-16
810121	6/25/98	1630		1			1						2	-17
860421	6/25/98	935		1			1						2	-18
800121	6/25/98	1540		1			1						2	-19
880112	6/25/98	925	Water	2									2	980606-01 33619.1
810512	6/25/98	1510		2									2	-02
830512	6/25/98	1655		2									2	-03
810514	6/25/98	1510		2									2	-04
830532	6/25/98	1640		2									2	-05
830522	6/25/98	1755		2									2	-06
810522	6/25/98	1555		2									2	-07

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	6/26/98	Diane Franzel	6/26/98
COMPANY NAME: SAIC	12:55	COMPANY NAME: GEL	1640
RECEIVED BY: Raymond Reed	Date/Time 6/26/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1255	COMPANY NAME:	
RELINQUISHED BY: Raymond Reed	Date/Time 6/26/98	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	16:40	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #627

Cooler Temperature: 4°C

FEDEX NUMBER:

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

1 of 2

CHAIN OF CUSTODY RECORD

COC NO.: GA017

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
				REQUESTED PARAMETERS										33643
840211	6/27/98	1330	Soil	1		1							2	14 9806843-07
830221	6/26/98	1720		1		1							2	-08
840311	6/27/98	920		1		1							2	-09
860311	6/27/98	1645		1		1							2	-10
800411	6/26/98	1105		1		1							2	-11
830111	6/26/98	1610		1		1							2	-12
810411	6/27/98	925		1		1							2	-13
840421	6/27/98	1200		1		1							2	-14
860211	6/26/98	1115		1		1							2	-15
840111	6/27/98	1300		1		1							2	-16
830311	6/26/98	1820		1		1							2	-17
800311	6/26/98	930		1		1							2	-18
830411	6/26/98	1655		1		1							2	-19

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	6/29/98	[illegible]	6/29/98
COMPANY NAME: SAIC	1215	COMPANY NAME:	1645
RECEIVED BY: [illegible]	Date/Time 6-29-98	RELINQUISHED BY:	Date/Time
COMPANY NAME:	1215	COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 6/29/98	RECEIVED BY:	Date/Time
COMPANY NAME:	1645	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: # 1643

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 5

CHAIN OF CUSTODY RECORD

COC NO.: GA018

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
660321	6/27/98	1745	Soil	1			1						2	9806844-13 33644.1
640123	6/27/98	1220		1			1						2	-14
640121	6/27/98	1220		1			1						2	-15
660221	6/26/98	1200		1				1					2	-16 12
810321	6/26/98	945		1				1			1		2	-17 ↓
930111	6/27/98	1635							1	1			2	-18 13
930421	6/27/98	1435	↓						1		1		2	-19 14
940116	6/26/98	1935	water	2									2	9806846-01 33645.1
940522	6/26/98	1205		2									2	-02
940212	6/26/98	1440		2									2	-03
940112	6/26/98	1925		2									2	-04
940512	6/26/98	1030		2									2	-05
930542	6/27/98	1115	↓	2									2	-06

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature: 4°C
Laura Lumley	6/29/98	[illegible]	6/29/98		
COMPANY NAME: SAIC	1215	COMPANY NAME: GEL	1645	Cooler ID: ~~#~~ 560	FEDEX NUMBER:
RECEIVED BY: [illegible]	Date/Time 6/29/98	RELINQUISHED BY:	Date/Time		
COMPANY NAME:	1215	COMPANY NAME:			
RELINQUISHED BY: [illegible]	Date/Time 6/29/98	RECEIVED BY:	Date/Time		
COMPANY NAME:	1645	COMPANY NAME:			

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860611

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-17

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J422

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 10 Date Analyzed: 11/19/98

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	UJUU
108-88-3	toluene	1.2	J	
100-41-4	ethylbenzene	2.2	U	
1330-20-7	xylenes (total)	3.3	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860611

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-17

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V206

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 10 decanted: (Y/N) 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/KG	Q
91-20-3	naphthalene	370	U
91-58-7	2-chloronaphthalene	370	U
209-96-8	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

U

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 04, 1998 Page 1 of 1

Sample ID	: 860611
Lab ID	: 9811470-17
Matrix	: Soil
Date Collected	: 11/12/98
Date Received	: 11/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.84	5.50	11.1	mg/kg	1.0	AAT	11/30/98	1000	136808	1

J

M = Method	Method-Description
M 1	EPA 418.1 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
COPY

9811470-17

322

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860621

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-16

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J421

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: not dec. 9 Date Analyzed: 11/19/98

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 = U
108-88-3	toluene	7.8		
100-41-4	ethylbenzene	2.2	U	
1330-20-7	xylenes (total)	1.5	J	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860621

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6006S

Matrix: (soil/water) SOIL Lab Sample ID: 9811470-16

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 4V205

Level: (low/med) LOW Date Received: 11/13/98

% Moisture: 9 decanted: (Y/N) 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/KG	Q
91-20-3	naphthalene	366	U
91-58-7	2-chloronaphthalene	366	U
209-96-8	acenaphthylene	366	U
83-32-9	acenaphthene	366	U
86-73-7	fluorene	366	U
85-01-8	phenanthrene	366	U
120-12-7	anthracene	366	U
206-44-0	fluoranthene	366	U
129-00-0	pyrene	366	U
56-55-3	benzo(a)anthracene	366	U
218-01-9	chrysene	366	U
205-99-2	benzo(b)fluoranthene	366	U
207-08-9	benzo(k)fluoranthene	366	U
50-32-8	benzo(a)pyrene	366	U
193-39-5	indeno(1,2,3-cd)pyrene	366	U
53-70-3	dibenz(a,h)anthracene	366	U
191-24-2	benzo(g,h,i)perylene	366	U

U

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 04, 1998

Sample ID	: 860621
Lab ID	: 9811470-16
Matrix	: Soil
Date Collected	: 11/12/98
Date Received	: 11/13/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.40	5.45	11.0	mg/kg	1.0	AAT	11/30/98	1000	136808	1

J

M = Method	Method-Description
M 1	EPA 418.1 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
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9811470.16

321

Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6006S

Method Type: Total Metals

Sample ID: 9811470-16

Client ID: 860621

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

Matrix: SOIL Date Received: 11/13/98 Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.5	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981117-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860711

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: 9811477-10

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J530

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

% Moisture: not dec. 17 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
108-88-3	toluene	8.0	
100-41-4	ethylbenzene	2.4	U
1330-20-7	xylenes (total)	1.4	J

FORM I VOA OLM03.0

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860711

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: 9811477-10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V118

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

% Moisture: 17 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	402	U
91-58-7	2-chloronaphthalene	402	U
208-96-8	acenaphthylene	402	U
83-32-9	acenaphthene	402	U
86-73-7	fluorene	402	U
85-01-8	phenanthrene	402	U
120-12-7	anthracene	402	U
206-44-0	fluoranthene	402	U
129-00-0	pyrene	402	U
56-55-3	benzo(a)anthracene	402	U
218-01-9	chrysene	402	U
205-99-2	benzo(b)fluoranthene	402	U
207-08-9	benzo(k)fluoranthene	402	U
50-32-8	benzo(a)pyrene	402	U
193-39-5	indeno(1,2,3-cd)pyrene	402	U
53-70-3	dibenz(a,h)anthracene	402	U
191-24-2	benzo(g,h,i)perylene	402	U

U

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 03, 1998

Sample ID	: 860711
Lab ID	: 9811477-10
Matrix	: Soil
Date Collected	: 11/13/98
Date Received	: 11/14/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.79 U F01, F06	5.96	12.0	mg/kg	1.0	AAT	11/30/98	1000	136808	1

M = Method	Method-Description
M 1	EPA 418.1 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

9811477-10

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860721

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: 9811477-15

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 7J535

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

% Moisture: not dec. 9 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	2.2	U	U = U J
108-88-3	toluene	5.6		
100-41-4	ethylbenzene	2.2	U	
1330-20-7	xylenes (total)	1.5	J	

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860721

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: 9811477-15

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7V123

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

% Moisture: 9 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	366	U
91-58-7	2-chloronaphthalene	366	U
208-96-8	acenaphthylene	366	U
83-32-9	acenaphthene	366	U
86-73-7	fluorene	366	U
85-01-8	phenanthrene	366	U
120-12-7	anthracene	366	U
206-44-0	fluoranthene	366	U
129-00-0	pyrene	366	U
56-55-3	benzo(a)anthracene	366	U
218-01-9	chrysene	366	U
205-99-2	benzo(b)fluoranthene	366	U
207-08-9	benzo(k)fluoranthene	366	U
50-32-8	benzo(a)pyrene	366	U
193-39-5	indeno(1,2,3-cd)pyrene	366	U
53-70-3	dibenz(a,h)anthracene	366	U
191-24-2	benzo(g,h,i)perylene	366	U

U

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 03, 1998

Sample ID	: 860721
Lab ID	: 9811477-15
Matrix	: Soil
Date Collected	: 11/13/98
Date Received	: 11/14/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	6.39 U FD1, FD6	5.45	11.0	mg/kg	1.0	AAT	11/30/98	1000	136808	1

M = Method	Method Description
M 1	EPA 418.1 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

9811477-15

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Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6008S

Method Type: Total Metals

Sample ID: 9811477-15

Client ID: 860721

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

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

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	3.7	mg/kg		=	P	0.16	TJA61 Trace ICPAES	981124-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6016S

Matrix: (soil/water) SOIL Lab Sample ID: 9811576-08

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8K336

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: not dec. 17 Date Analyzed: 11/26/98

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	21.8		
100-41-4	ethylbenzene	2.4	U	U
1330-20-7	xylenes (total)	3.6	U	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860811

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6016S

Matrix: (soil/water) SOIL Lab Sample ID: 9811576-08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7W214

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: 17 decanted: (Y/N) N Date Extracted: 11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 12/01/98

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	401	U
91-58-7	2-chloronaphthalene	401	U
208-96-8	acenaphthylene	401	U
83-32-9	acenaphthene	401	U
86-73-7	fluorene	401	U
85-01-8	phenanthrene	401	U
120-12-7	anthracene	401	U
206-44-0	fluoranthene	401	U
129-00-0	pyrene	401	U
56-55-3	benzo(a)anthracene	401	U
218-01-9	chrysene	401	U
205-99-2	benzo(b)fluoranthene	401	U
207-08-9	benzo(k)fluoranthene	401	U
50-32-8	benzo(a)pyrene	401	U
193-39-5	indeno(1,2,3-cd)pyrene	401	U
53-70-3	dibenz(a,h)anthracene	401	U
191-24-2	benzo(g,h,i)perylene	401	U

U

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 05, 1998

Sample ID	: 860811
Lab ID	: 9811576-08
Matrix	: Soil
Date Collected	: 11/16/98
Date Received	: 11/17/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	8.48	5.96	12.0	mg/kg	1.0	AAT	12/02/98	0900	136981	1

J

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
The qualifiers in this report are defined as follows:
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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

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6016S

Matrix: (soil/water) SOIL Lab Sample ID: 9811576-09

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 8K337

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: not dec. 9 Date Analyzed: 11/26/98

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
108-88-3	toluene	3.0		=
100-41-4	ethylbenzene	2.2	U	U
1330-20-7	xylenes (total)	3.3	U	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860821

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6016S

Matrix: (soil/water) SOIL Lab Sample ID: 9811576-09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7W215

Level: (low/med) LOW Date Received: 11/17/98

% Moisture: 9 decanted: (Y/N) N Date Extracted:11/19/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 12/01/98

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	366	U
91-58-7	2-chloronaphthalene	366	U
208-96-8	acenaphthylene	366	U
83-32-9	acenaphthene	366	U
86-73-7	fluorene	366	U
85-01-8	phenanthrene	366	U
120-12-7	anthracene	366	U
206-44-0	fluoranthene	366	U
129-00-0	pyrene	366	U
56-55-3	benzo(a)anthracene	366	U
218-01-9	chrysene	366	U
205-99-2	benzo(b)fluoranthene	366	U
207-08-9	benzo(k)fluoranthene	366	U
50-32-8	benzo(a)pyrene	366	U
193-39-5	indeno(1,2,3-cd)pyrene	366	U
53-70-3	dibenz(a,h)anthracene	366	U
191-24-2	benzo(g,h,i)perylene	366	U

U

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 04, 1998

Sample ID	: 860821
Lab ID	: 9811576-09
Matrix	: Soil
Date Collected	: 11/16/98
Date Received	: 11/17/98
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons	J	7.85	5.45	11.0	mg/kg	1.0	AAT	12/02/98	0900	136981	1

J

M = Method	Method-Description
M 1	EPA 418.1 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

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Form 1: Inorganic Analyses Data Sheet

SDG No.: FS6013S

Method Type: Total Metals

Sample ID: 9811576-09

Client ID: 860821

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

Matrix: SOIL Date Received: 11/17/98 Level: LOW

% Solids: 91.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.7	mg/kg			P	0.16	TJA61 Trace2 ICPAES	981201-2

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

CHAIN OF CUSTODY RECORD

COC NO.: GA0006

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
760721 XB														
760712	11/12/98	1902	Soil			1			1				2	9811470 - 08 thru 14
940821	11/12/98	1347				1			1				2	-08
920621	11/12/98	1015				1			1				2	-09
880821	11/12/98	1540				1			1				2	-10
860621	11/12/98	1500				1			1				2	-11
870621	11/12/98	1215				1			1				2	-12
840718	11/12/98	1930		1			1						2	-13
840721	11/12/98	1930		1			1						2	-14
860621	11/12/98	1600		1					1				2	-15
860611	11/12/98	1600		1			1						2	-16
														-17

11/13/98

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/13/98 1215	Franco	11/13/98 1530
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY: Rochester	Date/Time 11-13-98 1215	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: Rochester	Date/Time 11-13-98 1530	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 72

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

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 Road, 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
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
840821	11/13/98	1030		1					1				2	-13

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/14/98 1105	[illegible]	11/14/98 1330
COMPANY NAME: SAIC		COMPANY NAME: Gel	
RECEIVED BY: Carol Sandel	Date/Time 11/14/98 1105	RELINQUISHED BY:	Date/Time
COMPANY NAME: General Engineering		COMPANY NAME:	
RELINQUISHED BY: Carol Sandel	Date/Time 11/14/98 1330	RECEIVED BY:	Date/Time
COMPANY NAME: General Engineering		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.

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

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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
840623	11/13/96	915	Soil	1						1			2	9811477-14
860721	11/13/96	1745	↓	1						1			2	-15
800621	11/13/96	1615	↓	1						1			2	-16
680642	11/13/96	1745	water	2									2	9811478-01
680632	11/13/96	1640	↓	2									2	02
860712	11/13/96	1745	↓	2									2	-03
* 160912	11/13/96	1600	↓	2									2	04
680622	11/13/96	1615	↓	2									2	-05
680612	11/13/96	1550	↓	2									2	-06
160442	11/13/96	1500	↓	2									2	-07
920812	11/13/96	950	↓	2									2	-08
800612	11/13/96	1615	↓	2									2	-09
840812	11/13/96	1635	↓	2									2	-10

3666.5 ↓ 3666.10

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature:
Laura Lumley	11/14/96 1105		11/14/98 1330		
COMPANY NAME: SAIC		COMPANY NAME: GE		Cooler ID: #712	FEDEX NUMBER:
RECEIVED BY: Carol Sandel	Date/Time 11/14/98 1105	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		COMPANY NAME:			
RELINQUISHED BY: Carol Sandel	Date/Time 11/14/98 1330	RECEIVED BY:	Date/Time		
COMPANY NAME: General Engineering		COMPANY NAME:			

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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.: 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

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 (SW624)
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 (SW612)
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	Fedex	11/17/98
COMPANY NAME: SAIC	1230	COMPANY NAME:	1615
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	11-17-98 1230	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	11-17-98 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.

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA09S

Matrix: (soil/water) SOIL Lab Sample ID: 9902838-07

Sample wt/vol: 4.7 (g/mL) G Lab File ID: 2Y413

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: not dec. 7 Date Analyzed: 03/04/99

GC Column: DB624 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	2.3	U
108-88-3	toluene	2.3	U
100-41-4	ethylbenzene	2.3	U
1330-20-7	xylenes (total)	3.4	U

U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860911

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA09S

Matrix: (soil/water) SOIL Lab Sample ID: 9902838-07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I504

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: 7 decanted: (Y/N) N Date Extracted: 02/24/99

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 02/26/99

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

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

cc: SAIC00299

Report Date: March 17, 1999

Sample ID	: 860911
Lab ID	: 9902838-07
Matrix	: Soil
Date Collected	: 02/21/99
Date Received	: 02/22/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry											
Total Rec. Petro. Hydrocarbons		568	53.3	108	mg/kg	5.0	AAT	03/16/99	1500	144666	1

M = Method	Method-Description
M 1	EPA 418.1 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

9902838-07

210

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA09S

Matrix: (soil/water) SOIL Lab Sample ID: 9902838-04

Sample wt/vol: 4.7 (g/mL) G Lab File ID: 2Y431

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: not dec. 8 Date Analyzed: 03/04/99

GC Column: DB624 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	2.3	U
108-88-3	toluene	2.3	U
100-41-4	ethylbenzene	2.3	U
1330-20-7	xylenes (total)	3.5	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860921

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA09S

Matrix: (soil/water) SOIL Lab Sample ID: 9902838-04

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I423

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: 8 decanted: (Y/N) N Date Extracted: 02/24/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/26/99

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/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

Form 1: Inorganic Analyses Data Sheet

SDG No.: FSA09S

Method Type: Total Metals

Sample ID: 9902838-04

Client ID: 860921

Contract: SAIC00299 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 2/22/99 Level: LOW

% Solids: 92.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	2.5	mg/kg	=		P	0.14	TJA61 Trace ICPAES	990308-1

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

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

cc: SAIC00299 Report Date: March 17, 1999

Sample ID	: 860921
Lab ID	: 9902838-04
Matrix	: Soil
Date Collected	: 02/21/99
Date Received	: 02/22/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons		26.6	=	10.8	21.7	mg/kg	1.0	AAT	03/16/99	1500	144666	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
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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

9902838-04

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

861011

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA09S

Matrix: (soil/water) SOIL Lab Sample ID: 9902838-08

Sample wt/vol: 4.3 (g/mL) G Lab File ID: 2Y414

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: not dec. 6 Date Analyzed: 03/04/99

GC Column: DB624 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	2.5	U
108-88-3	toluene	2.5	U
100-41-4	ethylbenzene	2.5	U
1330-20-7	xylenes (total)	3.7	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

861011

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA09S

Matrix: (soil/water) SOIL Lab Sample ID: 9902838-08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I505

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: 6 decanted: (Y/N) N Date Extracted: 02/24/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/26/99

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/KG	Q
91-20-3	naphthalene	355	U
91-58-7	2-chloronaphthalene	355	U
208-96-8	acenaphthylene	355	U
83-32-9	acenaphthene	355	U
86-73-7	fluorene	355	U
85-01-8	phenanthrene	355	U
120-12-7	anthracene	355	U
206-44-0	fluoranthene	355	U
129-00-0	pyrene	355	U
56-55-3	benzo(a)anthracene	355	U
218-01-9	chrysene	355	U
205-99-2	benzo(b)fluoranthene	355	U
207-08-9	benzo(k)fluoranthene	355	U
50-32-8	benzo(a)pyrene	355	U
193-39-5	indeno(1,2,3-cd)pyrene	355	U
53-70-3	dibenz(a,h)anthracene	355	U
191-24-2	benzo(g,h,i)perylene	355	U

U

FORM I SV-1 OLM03.0

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

cc: SAIC00299 Report Date: March 17, 1999

Sample ID	: 861011
Lab ID	: 9902838-08
Matrix	: Soil
Date Collected	: 02/21/99
Date Received	: 02/22/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons	U	9.63	U	10.5	21.3	mg/kg	1.0	AAT	03/16/99	1500	144666	1

M = Method	Method-Description
M 1	EPA 418.1 Modified

Notes:
The qualifiers in this report are defined as follows:
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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

9902838-08

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

861021

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA09S

Matrix: (soil/water) SOIL Lab Sample ID: 9902838-05

Sample wt/vol: 4.3 (g/mL) G Lab File ID: 2Y411

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: not dec. 5 Date Analyzed: 03/04/99

GC Column: DB624 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	2.5	U	U
108-88-3	toluene	2.5	U	
100-41-4	ethylbenzene	2.5	U	
1330-20-7	xylenes (total)	0.64	J	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

861021

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA09S

Matrix: (soil/water) SOIL Lab Sample ID: 9902838-05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 7I424

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: 5 decanted: (Y/N) N Date Extracted: 02/24/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 02/26/99

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/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: Inorganic Analyses Data Sheet

SDG No.: FSA09S

Method Type: Total Metals

Sample ID: 9902838-05

Client ID: 861021

Contract: SAIC00299 Lab Code: GEL Case No.: SAS No.:

Matrix: SOIL Date Received: 2/22/99 Level: LOW

% Solids: 95.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7439-92-1	Lead	0.55	mg/kg	=		P	0.14	TJA61 Trace ICPAES	990308-1

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. Leslie Barbour
Project Description: CAP-Part A and B UST Sites

cc: SAIC00299 Report Date: March 17, 1999 Page 1 of 1

Sample ID	: 861021
Lab ID	: 9902838-05
Matrix	: Soil
Date Collected	: 02/21/99
Date Received	: 02/22/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result		DL	RL	Units	DF	Analyst	Date	Time	Batch	M
General Chemistry												
Total Rec. Petro. Hydrocarbons	U	8.17	U	10.4	21.0	mg/kg	1.0	AAT	03/16/99	1500	144666	1

M = Method	Method-Description
M 1	EPA 418.1 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

9902838-05

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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.: D0351Z

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	Ethylene Glycol	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
040311	2/21/99	1545	Soil	1				1					2	99028838-01
602102	2/21/99	1235		1				1					2	-02
600921	2/21/99	1440		1				1					2	-03
860921	2/21/99	1040		1				1					2	-04
861021	2/21/99	915		1				1					2	-05
602 1011	2/21/99	1240		1									2	-06
860911	2/21/99	1020		1									2	-07
861011	2/21/99	920		1									2	-08
600911	2/21/99	1445		1									2	-09
970111	2/22/99	825		1				1					2	-10
841412	2/20/99	14600	Water										2	99028839-01
970112	2/22/99	845		2									4	-02
530512	2/19/99	14800										2	2	-03

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road Charleston, SC 29417

PHONE NO: (803) 556 8171

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	2/22/99	[illegible]	2/22/99
COMPANY NAME: SAIC	1145	COMPANY NAME: GEL	1530
RECEIVED BY: [illegible]	Date/Time 2/22/99	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1145	COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 2/22/99	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	1530	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #244 / 4°C

Cooler Temperature:

FEDEX NUMBER:

V-81

PERMEABILITY TEST ANALYSIS (ASTM D5084)

Project : Fort Stewart

Location of Project : CAP Part A

Description of Soil : Brown Silty Sand

Job # : 98066
Date of Testing: 8/3-4/98
Tested by: BV-CA
Boring # :
Sample # : 860231
Sample Depth : 4-6 ft.

Sample Type (Undisturbed or Remolded)
Standard Proctor:
Maximim Dry Density: _____ pcf
Optimum Molsture Content: _____ %

% Sample Compaction: _____ %
Sample Dry Density: _____ pcf
Sample Moisture Content: _____ %
Sample Wet Density: _____ pcf

Sample Permeation:

De-Aired Water
% Saturation: 100 %
Cell Pressure: 70 psi
Lower Pressure: 66 psi
Upper Pressure: 65 psi
Gradient: 9.91

Sample Dimensions		
	Before	After
Length (cm)	7.10	5.90
Diameter (cm)	4.70	4.90
Water Content (%)	7.4	26.8
Weight (g)	191.6	224.9

Constant Head Calculation:

$$K = [V(t_1,t_2)\ LR_T]/[P_BAt]\ (cm/sec)$$

$V(t_1,t_2)$ = Volume of flow from t_1 to t_2 (cm^2)
L = Length of Sample = 7.10 cm
A = Area of Sample = 17.35 cm^2
t = $t_2 - t_1$ (sec)
P_B = Bias Pressure = 1 psi x 70.37 cm/psi $_{(cm - H2O)}$ 70.37 cm
R_T = Temperature correction = 0.931

t_2 (sec)	t_1 (sec)	$(t_2 - t_1)$ (sec)	V (cm^3)	$[LR_T]/[P_BA]$ (cm^3)	K (cm/sec)
25	20	5	1.1	5.41E-03	1.19E-03
30	25	5	1	5.41E-03	1.08E-03
35	30	5	1	5.41E-03	1.08E-03
40	35	5	1	5.41E-03	1.08E-03

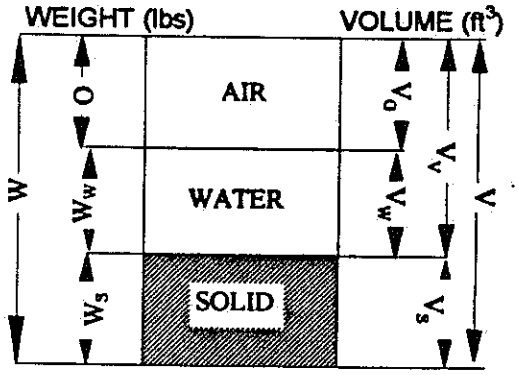
K_{avg} = 1.11E-03 cm/sec

CATLIN Engineers and Scientists
Geotechnical Laboratories

SPECIFIC GRAVITY AND POROSITY

PROJECT: Fort Stewart
LOCATION OF PROJECT: CAP Part A
DESCRIPTION OF SOIL: Brown Silty Sand
TESTED BY: B.J. Vance

JOB NO.: 98066
SAMPLE NO: 860231
DEPTH OF SAMPLE: 4-6 ft.
DATE OF TESTING: 8/3/98



W = 0.62676
$W_W = W - W_S$ = 0.04330
$W_S = Y_d * V$ = 0.5835

V = 0.00613
$V_W = W_W / Y_W$ = 0.0007
$V_S = W_S / G_S * Y_W$ = 0.0035
$V_G = V - (V_S + V_W)$ = 0.00191
$V_V = V_G + V_W$ = 0.0026

MEASUREMENTS OF TUBE/CAN

HEIGHT= 10.0 cm
DIAMETER= 4.7 cm

CALCULATED VOLUME OF TUBE/CAN

V= 173.49 cm^3
0.00613 ft^3

WT. OF TUBE/CAN + WET SOIL= 481.80 g
WEIGHT OF TUBE/CAN= 197.5 g
WEIGHT OF WET SOIL= 284.30 g
W = 0.62676 lb

MOISTURE CONTENT

M_{CWS} =	35.91	g	M_C =	11.16	g
M_{CDS} =	34.20	g	M_S =	23.04	g
M_W =	1.71	g	w =	7.4	%

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= 102.28 lbs/ft^3
Y_d= 95.21 lbs/ft^3	Y_d= 95.21 lbs/ft^3

Void Ratio, $e = V_V / V_S$
e = 0.7375

Porosity, $n = V_V / V$
n = 0.42

Specific Gravity = 2.65

Degree of Saturation, $S = V_W / V_V$
S = 0.2667

CATLIN Engineers and Scientists
Geotechnical Laboratories

GRAIN SIZE ANALYSIS-SIEVE (ASTM D422)

Project FDT Stewart — Job No. 98064

Location of Project Coe Port A — Sample No. # 860231

Description of Soil Brown Silty Sand — Depth of Sample _____ Boring No. _____

Tested By CA — Date of Testing 7/31/98

Sample preparation procedures outlined in ASTM D421 and D2217.

Nominal diameter of largest particle	Approximate minimum Wt. of sample, g
No. 10 sieve	200
No. 4 sieve	500
3/4 in.	1500

Weight of sample used, M_w = _____ g

M_{cw}	M_{ds}	M_c PS2	M_w	M_s	w %	M_m	M_s
		140.93					147.54

Sieve analysis and grain shape

Sieve no.	Diam. (mm)	Wt. retained	% retained	Σ % retained	% passing
3"					
2"					
1 1/2 "					
3/4"					
3/8"					
#4					
#10					
#20		0.34	0.23	0.23	99.77
#40		3.00	2.03	2.26	97.74
#60		15.77	10.69	12.95	87.05
#140		122.31	82.90	95.85	4.15
#200		1.12	0.76	96.61	3.39
pan		0.11	0.07	96.68	—

% retained = (Wt. retained/W_s) · 100

% passing = 100 - Σ % retained.

APPENDIX VI

ALTERNATE THRESHOLD LEVEL (ATL) CALCULATIONS

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The contaminant concentrations in soil did not exceed their respective soil threshold levels, thus no alternate threshold levels were calculated. The maximum benzene concentration in groundwater was 109 µg/L in June 1998 and potential downgradient receptors are located more than 500 feet from the site, thus no alternate concentration limits were calculated.

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APPENDIX VII

MONITORING WELL DETAILS

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Monitoring wells were not installed as part of the CAP-Part A investigation. Temporary piezometers were installed at the UST 71 site to determine the presence of free product. Refer to Figure 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	86-01	86-02	86-03	86-04	86-05	86-05
Sample ID:	Federal	Water	860112	860212	860312	860412	860512	860522
Screened Interval (ft BGS)	SDWA	Quality	4.0 - 14.0	4.0 - 14.0	5.0 - 15.0	5.5 - 15.5	10.5 - 12.5	13.0 - 14.0
Collection Date:	MCLs	Standards	25-Jun-98	26-Jun-98	28-Jun-98	25-Jun-98	28-Jun-98	30-Jun-98
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS								
Benzene	5	71.28	109 =	2 UJ	2 U	2 U	2 U	2 U
Toluene	1000	200000	207 =	2 UJ	2 U	2 U	2 U	2 U
Ethylbenzene	700	28718	87.2 =	2 UJ	2 U	2 U	2 U	2 U
Xylenes, Total	10000	NRC	275 =	6 UJ	6 U	6 U	6 U	6 U
POLYNUCLEAR AROMATIC HYDROCARBONS								
2-Chloronaphthalene	NRC	NRC	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Acenaphthene	NRC	NRC	47.6 U	10 UJ	40 U	50 U	14.1 U	11.9 U
Acenaphthylene	NRC	NRC	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Anthracene	NRC	110000	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Benzo(a)anthracene	NRC	0.0311	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Benzo(a)pyrene	0.2	0.0311	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Benzo(b)fluoranthene	NRC	NRC	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Benzo(g,h,i)perylene	NRC	NRC	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Benzo(k)fluoranthene	NRC	0.0311	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Chrysene	NRC	0.0311	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Dibenzo(a,h)anthracene	NRC	0.0311	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Fluoranthene	NRC	370	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Fluorene	NRC	14000	4.9 J	10 U	40 U	50 U	14.1 U	11.9 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U
Naphthalene	NRC	NRC	80.6 =	10 U	40 U	6 J	14.1 U	11.9 U
Phenanthrene	NRC	NRC	8.8 J	10 U	40 U	50 U	14.1 U	11.9 U
Pyrene	NRC	11000	47.6 U	10 U	40 U	50 U	14.1 U	11.9 U

NOTES:

Contract for June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for QA/QC samples 860514 (duplicate), 860814 (BTEX duplicate, insufficient PAH sample volume), and 860916 (equipment rinsate) are provided in this Appendix VIII, 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] U.S. Environmental Protection Agency 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.

TABLE VIII-A. Summary of Groundwater Analytical Results (continued)

Station:		In Stream	86-06	86-07	86-08	86-09	86-10
Sample ID:	Federal	Water	860612	860712	860812	860912	861012
Screened Interval (ft BGS)	SDWA	Quality	0.0 - 14.7	0.0 - 12.8	0.0 - 13.0	0.0 - 13.3	0.0 - 11.0
Collection Date:	MCLs	Standards	12-Nov-98	13-Nov-98	16-Nov-98	21-Feb-99	21-Feb-99
Units:	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
VOLATILE ORGANIC COMPOUNDS							
Benzene	5	71.28	2 U	**44.5** =	2 U	2 U	2 U
Toluene	1000	200000	2 U	0.98 J	0.52 J	1.6 J	3.5 =
Ethylbenzene	700	28718	2 U	2 U	2 U	0.58 J	1.9 J
Xylenes, Total	10000	NRC	3 U	3 U	3 U	2.3 J	10.1 =
POLYNUCLEAR AROMATIC HYDROCARBONS							
2-Chloronaphthalene	NRC	NRC	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Acenaphthene	NRC	NRC	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Acenaphthylene	NRC	NRC	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Anthracene	NRC	110000	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Benzo(a)anthracene	NRC	0.0311	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Benzo(a)pyrene	0.2	0.0311	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Benzo(b)fluoranthene	NRC	NRC	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Benzo(g,h,i)perylene	NRC	NRC	10.8 U	11.5 U	14.7 UJ	1.3 J	13 U
Benzo(k)fluoranthene	NRC	0.0311	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Chrysene	NRC	0.0311	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Dibenzo(a,h)anthracene	NRC	0.0311	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Fluoranthene	NRC	370	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Fluorene	NRC	14000	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Indeno(1,2,3-cd)pyrene	NRC	0.0311	10.8 U	11.5 U	14.7 UJ	3.9 J	13 U
Naphthalene	NRC	NRC	10.8 U	11.5 U	14.7 UJ	10.8 U	1.2 J
Phenanthrene	NRC	NRC	10.8 U	11.5 U	14.7 UJ	10.8 U	13 U
Pyrene	NRC	11000	10.8 U	11.5 U	14.7 UJ	0.79 J	13 U

NOTES:

Contract for June 1998 sampling was issued prior to the new CAP-A guidance published in May 1998, thus the new SW-846 analytical methods were not used.

Sampling conducted after November 1998 was performed in accordance with the CAP-Part A guidance published in May 1998.

Analytical data for QA/QC samples 860514 (duplicate), 860814 (duplicate), and 860916 (equipment rinsate) are provided in this Appendix VIII, 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] U.S. Environmental Protection Agency 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.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A05W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806807-07

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2P205

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: not dec. _____ Date Analyzed: 06/30/98

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	109	
108-88-3	Toluene	207	
100-41-4	Ethylbenzene	87.2	
1330-20-7	Xylenes (total)	275	

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SEMIVOLATILE ORGANICS 1B ANALYSIS DATA SHEET

EPA SAMPLE NO.

860112

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A02W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806804-02

Sample wt/vol: 840.0 (g/mL) ML Lab File ID: 2B405

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: _____ decanted: (Y/N) DATA VALIDATION Date Extracted: 06/29/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/09/98

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/L	Q
91-20-3	naphthalene	80.6	
91-58-7	2-chloronaphthalene	47.6	U
209-96-8	acenaphthylene	47.6	U
83-32-9	acenaphthene	47.6	U
86-73-7	fluorene	4.9	J
85-01-8	phenanthrene	8.8	J
120-12-7	anthracene	47.6	U
206-44-0	fluoranthene	47.6	U
129-00-0	pyrene	47.6	U
56-55-3	benzo(a)anthracene	47.6	U
218-01-9	chrysene	47.6	U
205-99-2	benzo(b)fluoranthene	47.6	U
207-08-9	benzo(k)fluoranthene	47.6	U
50-32-8	benzo(a)pyrene	47.6	U
193-39-5	indeno(1,2,3-cd)pyrene	47.6	U
53-70-3	dibenz(a,h)anthracene	47.6	U
191-24-2	benzo(g,h,i)perylene	47.6	U

C44 ← C11

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A14W

Matrix: (soil/water) WATER Lab Sample ID: 9806849-15

Sample wt/vol: 10.00 (g/mL) Lab File ID: 2Q1041

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: not dec. _____ Date Analyzed: 07/07/98

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

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

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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)	6.0	U

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860212

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A06W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806839-03

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 1B509

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:06/30/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 07/10/98

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	10.0	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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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A13W

Matrix: (soil/water) WATER Lab Sample ID: 9806848-11

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2P5019

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: not dec. _____ Date Analyzed: 07/03/98

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	2.0	U
100-41-4	Ethylbenzene	2.0	U
1330-20-7	Xylenes (total)	6.0	U

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7-30-98

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860312

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A07W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806840-14

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: 2C517

Level: (low/med) LOW Date Received: 06/29/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:06/30/98

Concentrated Extract Volume: 0.50(mL) Date Analyzed: 07/17/98

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/L	Q
91-20-3	naphthalene	40.0	U
91-58-7	2-chloronaphthalene	40.0	U
209-96-8	acenaphthylene	40.0	U
83-32-9	acenaphthene	40.0	U
86-73-7	fluorene	40.0	U
85-01-8	phenanthrene	40.0	U
120-12-7	anthracene	40.0	U
206-44-0	fluoranthene	40.0	U
129-00-0	pyrene	40.0	U
56-55-3	benzo(a)anthracene	40.0	U
218-01-9	chrysene	40.0	U
205-99-2	benzo(b)fluoranthene	40.0	U
207-08-9	benzo(k)fluoranthene	40.0	U
50-32-8	benzo(a)pyrene	40.0	U
193-39-5	indeno(1,2,3-cd)pyrene	40.0	U
53-70-3	dibenz(a,h)anthracene	40.0	U
191-24-2	benzo(g,h,i)perylene	40.0	U

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A05W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806807-09

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 206016

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: not dec. _____ Date Analyzed: 06/27/98

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	
100-41-4	Ethylbenzene	2.0	U	
1330-20-7	Xylenes (total)	6.0	U	

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860412

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A02W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9806804-01

Sample wt/vol: 800.0 (g/mL) ML Lab File ID: 2B404

Level: (low/med) LOW Date Received: 06/26/98

% Moisture: _____ decanted: (Y/N) Date Extracted: 06/29/98

Concentrated Extract Volume: 1.00 (mL) Date Analyzed: 07/09/98

Injection Volume: 1.0 (uL) Dilution Factor: 4.0

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

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
91-20-3	naphthalene	6.0	J
91-58-7	2-chloronaphthalene	50.0	U
209-96-8	acenaphthylene	50.0	U
83-32-9	acenaphthene	50.0	U
86-73-7	fluorene	50.0	U
85-01-8	phenanthrene	50.0	U
120-12-7	anthracene	50.0	U
206-44-0	fluoranthene	50.0	U
129-00-0	pyrene	50.0	U
56-55-3	benzo(a)anthracene	50.0	U
218-01-9	chrysene	50.0	U
205-99-2	benzo(b)fluoranthene	50.0	U
207-08-9	benzo(k)fluoranthene	50.0	U
50-32-8	benzo(a)pyrene	50.0	U
193-39-5	indeno(1,2,3-cd)pyrene	50.0	U
53-70-3	dibenz(a,h)anthracene	50.0	U
191-24-2	benzo(g,h,i)perylene	50.0	U

LW
8-19-98

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A19W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807048-18

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q4019

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/09/98

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
108-88-3	Toluene	2.0	U
100-41-4	Ethylbenzene	2.0	U
1330-20-7	Xylenes (total)	6.0	U

U ↓

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860512

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A16W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807045-12

Sample wt/vol: 710.0 (g/mL) ML Lab File ID: 13715

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/12/98

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	14.1	U
91-58-7	2-chloronaphthalene	14.1	U
209-96-8	acenaphthylene	14.1	U
83-32-9	acenaphthene	14.1	U
86-73-7	fluorene	14.1	U
85-01-8	phenanthrene	14.1	U
120-12-7	anthracene	14.1	U
206-44-0	fluoranthene	14.1	U
129-00-0	pyrene	14.1	U
56-55-3	benzo(a)anthracene	14.1	U
218-01-9	chrysene	14.1	U
205-99-2	benzo(b)fluoranthene	14.1	U
207-08-9	benzo(k)fluoranthene	14.1	U
50-32-8	benzo(a)pyrene	14.1	U
193-39-5	indeno(1,2,3-cd)pyrene	14.1	U
53-70-3	dibenz(a,h)anthracene	14.1	U
191-24-2	benzo(g,h,i)perylene	14.1	U

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8-14-98

DATA VALIDATION COPY

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

860514

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A19W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807048-12

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q3024

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/08/98

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	UJ C14
100-41-4	Ethylbenzene	2.0	U	
1330-20-7	Xylenes (total)	6.0	U	

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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUPLICATE

EPA SAMPLE NO.

860514

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A16W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807045-13

Sample wt/vol: 910.0 (g/mL) ML Lab File ID: 1B716

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/12/98

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	11.0	U
91-58-7	2-chloronaphthalene	11.0	U
209-96-8	acenaphthylene	11.0	U
83-32-9	acenaphthene	11.0	U
86-73-7	fluorene	11.0	U
85-01-8	phenanthrene	11.0	U
120-12-7	anthracene	11.0	U
206-44-0	fluoranthene	11.0	U
129-00-0	pyrene	11.0	U
56-55-3	benzo(a)anthracene	11.0	U
218-01-9	chrysene	11.0	U
205-99-2	benzo(b)fluoranthene	11.0	U
207-08-9	benzo(k)fluoranthene	11.0	U
50-32-8	benzo(a)pyrene	11.0	U
193-39-5	indeno(1,2,3-cd)pyrene	11.0	U
53-70-3	dibenz(a,h)anthracene	11.0	U
191-24-2	benzo(g,h,i)perylene	11.0	U

J

LW
8-14-98

DATA VALIDATION COPY

FORM I SV-1 OLM03.0

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860522

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A19W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807048-10

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 2Q4010

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: not dec. _____ Date Analyzed: 07/09/98

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
108-88-3	Toluene	2.0	U
100-41-4	Ethylbenzene	2.0	U
1330-20-7	Xylenes (total)	6.0	U

DATA VALIDATION COPY

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860522

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS4A16W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9807045-17

Sample wt/vol: 840.0 (g/mL) ML Lab File ID: 1B720

Level: (low/med) LOW Date Received: 07/01/98

% Moisture: _____ decanted: (Y/N)___ Date Extracted:07/02/98

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 07/12/98

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	11.9	U
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

J

LW
8-14-98

DATA VALIDATION COPY

FORM I SV-1 OLM03.C

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.: GA0004

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
860425	6/25/98	920	water		2	4							4	9806802-20 TPH Unpreserved 33616 '3
860412	6/25/98	1145			2								2	9806804-01 33617 '1
860112	6/25/98	1530			2								2	-02
830522	6/25/98	1755			2								2	-03
810512	6/25/98	1510			2								2	-04
* 810514	6/25/98	1510	↓		1								1	

6/26/98

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	6/26/98	Lionne Francis	6/26/98
COMPANY NAME: SAIC	12:55	COMPANY NAME: GEL	1640
RECEIVED BY: Raymond Reed	Date/Time 6/26/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: G.E.L.	12:55	COMPANY NAME:	
RELINQUISHED BY: Raymond Reed	Date/Time 6/26/98	RECEIVED BY:	Date/Time
COMPANY NAME: G.E.L.	16:40	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler ID: #631

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

3 of 4

CHAIN OF CUSTODY RECORD

COC NO.: GA006

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

Sampler (Signature): [signature] (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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
800112	6/25/98	1715	water	2									2	9806806-08
820522	6/25/98	1200		2									2	-09
860425	6/25/98	920		2									2	-10
820512	6/25/98	1015		2									2	-11
880212	6/25/98	1055		2									2	-12
870522	6/24/98	1755		2									2	-13
880562	6/24/98	1240		2									2	-14
870512	6/24/98	1715		2									2	-15
880572	6/24/98	1315		2									2	-16
880582	6/24/98	1400		2									2	-17
880552	6/24/98	1150		2									2	-18
880532	6/24/98	1050		2									2	-19
880512	6/24/98	905		2									2	-20

33609

RELINQUISHED BY: [signature] Date/Time: 6/26/98 12:55
COMPANY NAME: SAIC

RECEIVED BY: [signature] Date/Time: 6/26/98 1640
COMPANY NAME: GEL

RECEIVED BY: Raynd Reed Date/Time: 6/26/98 12:55
COMPANY NAME: GEL

RELINQUISHED BY: Date/Time:
COMPANY NAME:

RELINQUISHED BY: Raynd Reed Date/Time: 6/26/98 16:40
COMPANY NAME: GEL

RECEIVED BY: Date/Time:
COMPANY NAME:

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #627

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

4 of 4

CHAIN OF CUSTODY RECORD

COC NO.: GA0006

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
880542	6/24/98	1125	water	2									2	980807-01 (336220 #1)
860522	6/24/98	940		2									2	-02
860514	6/24/98	905		2									2	-03
860414	6/24/98	1435		2									2	-04
860412	6/24/98	1435		2									2	-05
810112	6/25/98	1900		2									2	Unpreserved -06
860112	6/25/98	1530		2									2	Unpreserved -07
810212	6/25/98	1755		2									2	Unpreserved -08
860412	6/25/98	1630		2									2	Unpreserved -09
TBA014	6/24/98	745		2									2	-10
TBA015	6/25/98	745		2									2	-11
870516	6/24/98	1705		1									1	-12
860225	6/25/98	1011							2				2	-13 (#2)

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	6/24/98	Dionne Francis	6/26/98
COMPANY NAME: SAIC	12:55	COMPANY NAME: GEL	1640
RECEIVED BY: Raynd Reed	Date/Time 6/26/98	RELINQUISHED BY:	Date/Time
COMPANY NAME: G.E.L.	12:55	COMPANY NAME:	
RELINQUISHED BY: Raynd Reed	Date/Time 6/26/98	RECEIVED BY:	Date/Time
COMPANY NAME: G.E.L.	16:40	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 103

Cooler Temperature: 4°C

Cooler ID: # 627

FEDEX NUMBER:

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CHAIN OF CUSTODY RECORD

COC NO.: GA007

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

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	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
610312	6/26/98	1020	water		2								2	9806839-01 33639 '1
600312	6/26/98	1400			2								2	-02
660212	6/26/98	1230			2								2	-03
600112	6/26/98	1035			2								2	-04
870212	6/26/98	1435			2								2	-05
870295	6/26/98	1350	↓							3			3	-06 '2

6/29/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	6/29/98	A Franco	6/29/98
COMPANY NAME: SAIC	1215	COMPANY NAME: FEL	1645
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:	6/29/98 1215	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:	6/29/98 1645	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler ID: # 4466

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

CHAIN OF CUSTODY RECORD

COC NO.: GA012

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
600425	6/27/98	1115	water			4							4	9806840-13 33640.2
600312	6/26/98	1500			2								2	-14
600512	6/26/98	1110			2								2	-15
600532	6/26/98	1215			2								2	-16
600522	6/26/98	1150			2								2	-17
* 600514	6/26/98	1110	↓		1								1	

RELINQUISHED BY: Laura Lumley | Date/Time: 6/29/98 1215 | RECEIVED BY: Dionne Frances | Date/Time: 6/29/98 1645

COMPANY NAME: SAIC | COMPANY NAME: GEL

RELINQUISHED BY: | Date/Time: | RECEIVED BY: | Date/Time:

COMPANY NAME: | COMPANY NAME:

RELINQUISHED BY: | Date/Time: | RECEIVED BY: | Date/Time:

COMPANY NAME: | COMPANY NAME:

REQUESTED PARAMETERS

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod, Charleston, SC 29417

PHONE NO: (803) 556-8171

TOTAL NUMBER OF CONTAINERS: 13

Cooler Temperature: 4°C

Cooler ID: #635

FEDEX NUMBER:

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

CHAIN OF CUSTODY RECORD

COC NO.: GA018

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

REQUESTED PARAMETERS

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
930212	6/27/98	1355	water	2									2	9806846-20 33645.1
840512	6/27/98	1500		2									2	9806848-01 33646.1
840522	6/27/98	1520		2									2	-02
840312	6/27/98	1100		2									2	-03
840412	6/27/98	1215		2									2	-04
830212	6/26/98	1920		2									2	-05
840112	6/27/98	1330		2									2	-06
840425	6/27/98	1115		2									2	-07
840212	6/27/98	1425		2									2	-08
840532	6/27/98	1555		2									2	-09
840514	6/27/98	1500		2									2	-10
900312	6/26/98	1500		2									2	-11
900552	6/26/98	1320	V	2									2	-12

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	6/29/98 1215	D Mauceri	6/29/98 1645
COMPANY NAME: SAIC		COMPANY NAME: SAIC	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: SAIC	6/29/98 1215	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: SAIC	6/29/98 1645	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

Cooler ID: #580

Cooler Temperature: 4°C

FEDEX NUMBER:

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800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: GA018

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
800212	6/26/98	1300	water	2									2	9806849-06 33547
800532	6/26/98	1215		2									2	-07
800542	6/26/98	1245		2									2	-08
800514	6/26/98	1110		2									2	-09
800522	6/26/98	1150		2									2	-10
800512	6/26/98	1110		2									2	-11
TBA016	6/26/98	745		2									2	-12
TBA017	6/27/98	745		2									2	-13
TBA018	6/24/98	600		2									2	-14
860212	6/26/98	1230		2									2	-15 Unpreserved
810312	6/26/98	1020		2									2	-16 Unpreserved
810412	6/27/98	955		2									2	-17 Unpreserved
870225	6/26/98	1350							2				2	-18 12

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	6/29/98	ANACOM	6/29/98
COMPANY NAME: SAIC	1215	COMPANY NAME:	1645
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME:	6/29/98 1215	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME:	6/29/98 1645	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 130

Cooler ID: #5 580

Cooler Temperature: 4.0 C

FEDEX NUMBER:

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.: GA024

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

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

Sample ID	Date Collected	Time Collected	Matrix	BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
660512	6/28/98	955	water		2								2	9807045 #12
660514	6/28/98	955			2								2	#13
920112	6/30/98	910			2								2	#14
850524	6/29/98	1630			2								2	#15
890312	6/30/98	852			2								2	#16
660522	6/30/98	1040			2								2	#17
* 650522	6/29/98	1630	↓		1								1	

7/1/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98 1200		7/1/98 1620
COMPANY NAME: SAIC		COMPANY NAME: GEL	
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	7/1/98 1200	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	7-1-98 1630	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 13

Cooler ID: # 631

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

Cooler Temperature: 4.0 C

FEDEX NUMBER:

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.: GA027

PROJECT NAME: Fort Stewart CAP Part A UST Investigations (Options)

PROJECT NUMBER: 01-0331-04-9805-210

PROJECT MANAGER: Patty Stoll

Sampler (Signature) (Printed Name): Laura Lumley / 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	REQUESTED PARAMETERS: BTEX	PAH	PAH, TPH	PAH, TPH, Lead	PAH, TPH, Lead, TOC	BTEX, GRO	PAH, DRO	PAH, DRO, Lead	PAH, DRO, Lead, TOC	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
860522	6/30/98	1040	water	2									2	9807048-10
850512	6/29/98	1600		2									2	-11
860514	6/29/98	955		2									2	-12
X 850524	6/29/98	1630		2									2	-13
930612	6/30/98	1215		2									2	-14
890412	6/30/98	925		2									2	-15
890425	6/29/98	1705		2									2	-16
X 850524	6/29/98	1630		2									2	-17
860512	6/29/98	955		2									2	-18
850225	6/29/98	850							2				2	-19
TBA019	6/29/98	745		2									2	-20
TBA020	6/30/98	745		2									2	9807046-05
920112	6/30/98	910	↓	2									2	Unpreserved

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	7/1/98	[illegible]	7/1/98
COMPANY NAME: SAIC	1200	COMPANY NAME: GEL	1620
RECEIVED BY: [illegible]	Date/Time 7-1-98	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	1700	COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 7-1-98	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	1630	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 33

Cooler ID: # 577

Cooler Temperature: 4°C

FEDEX NUMBER:

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6004W

Matrix: (soil/water) WATER Lab Sample ID: 9811468-09

Sample wt/vol: 10.00 (g/ml) ML Lab File ID: 1J507

Level: (low/med) LOW Date Received: 11/13/98

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

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	2.0	U	U
108-88-3	toluene	2.0	U	
100-41-4	ethylbenzene	2.0	U	
78-93-3	xylenes (total)	3.0	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860612

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FS6003W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9811467-15

Sample wt/vol: 930.0 (g/mL) ML Lab File ID: 7U521

Level: (low/med) LOW Date Received: 11/13/98

% 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	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

U

FORM I SV-1 OLM03.0

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860712

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: 9811478-03

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7J706

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	44.5		
108-88-3	toluene	0.98	J	
100-41-4	ethylbenzene	2.0	U	U
1330-20-7	xylenes (total)	3 ~~0.50~~	JB	U F01, F06

MMB
12/23/98

FORM I VOA OLM03.0

57

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860712

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: 9811476-14

Sample wt/vol: 870.0 (g/mL) ML Lab File ID: 8U520

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	11.5	U
91-58-7	2-chloronaphthalene	11.5	U
208-96-8	acenaphthylene	11.5	U
83-32-9	acenaphthene	11.5	U
86-73-7	fluorene	11.5	U
85-01-8	phenanthrene	11.5	U
120-12-7	anthracene	11.5	U
206-44-0	fluoranthene	11.5	U
129-00-0	pyrene	11.5	U
56-55-3	benzo(a)anthracene	11.5	U
218-01-9	chrysene	11.5	U
205-99-2	benzo(b)fluoranthene	11.5	U
207-08-9	benzo(k)fluoranthene	11.5	U
50-32-8	benzo(a)pyrene	11.5	U
193-39-5	indeno(1,2,3-cd)pyrene	11.5	U
53-70-3	dibenz(a,h)anthracene	11.5	U
191-24-2	benzo(g,h,i)perylene	11.5	U

U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860812

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: 9811575-08

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7K128

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	U
108-88-3	toluene	0.52	J	J
100-41-4	ethylbenzene	2.0	U	U
1330-20-7	xylenes (total)	3.0	U	U

DATA VALIDATION COPY

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860812RE

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: 9811575-06

Sample wt/vol: 680.0 (g/mL) ML Lab File ID: 2V315

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	14.7	U
91-58-7	2-chloronaphthalene	14.7	U
209-96-8	acenaphthylene	14.7	U
83-32-9	acenaphthene	14.7	U
86-73-7	fluorene	14.7	U
85-01-8	phenanthrene	14.7	U
120-12-7	anthracene	14.7	U
206-44-0	fluoranthene	14.7	U
129-00-0	pyrene	14.7	U
56-55-3	benzo(a)anthracene	14.7	U
218-01-9	chrysene	14.7	U
205-99-2	benzo(b)fluoranthene	14.7	U
207-08-9	benzo(k)fluoranthene	14.7	U
50-32-8	benzo(a)pyrene	14.7	U
193-39-5	indeno(1,2,3-cd)pyrene	14.7	U
53-70-3	dibenz(a,h)anthracene	14.7	U
191-24-2	benzo(g,h,i)perylene	14.7	U

U5 A01

USE

DUPLICATE

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860814

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: 9811575-09

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 7K129

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	UJC
108-88-3	toluene	0.56	J	
100-41-4	ethylbenzene	2.0	U	
1330-20-7	xylenes (total)	3.0	U	

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CHAIN OF CUSTODY RECORD

COC NO.: GA005

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
760612	11/12/98	1850	water		2								2	9811467-13
840712	11/12/98	1930	↓		2								2	-14
860612	11/12/98	1800	↓		2								2	-15
870711	11/12/98	1315	Soil			1	1						2	9811469-01
920711	11/12/98	1100				1	1						2	-02
860811	11/12/98	1540				1	1						2	-03
920611	11/12/98	1015				1	1						2	-04
940711	11/12/98	1500				1	1						2	-05
870811	11/12/98	1215				1	1						2	-06
870613	11/12/98	1415				1	1						2	-07
880611	11/12/98	1500				1	1						2	-08
940911	11/12/98	1120				1	1						2	-09
880711	11/12/98	1630	↓			1	1						2	-10

RELINQUISHED BY: Laura Lumley	Date/Time 11/13/98 1215	RECEIVED BY: Dionne FRANCIS	Date/Time 11/13/98 1530	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature:
COMPANY NAME: SAIC		COMPANY NAME: GEL		Cooler ID: #711	FEDEX NUMBER:
RECEIVED BY: [illegible]	Date/Time 11-13-98 1215	RELINQUISHED BY:	Date/Time	NOTE: Cooler Receipt Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.	
COMPANY NAME: GEL		COMPANY NAME:			
RELINQUISHED BY: [illegible]	Date/Time 11-13-98 1530	RECEIVED BY:	Date/Time		
COMPANY NAME: GEL		COMPANY NAME:			

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CHAIN OF CUSTODY RECORD

COC NO.: GA006

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
740712	11/12/98	1935	water	2	2								4	9811467-10 A811468-01
940912	11/12/98	1240		2									2	-02
880712	11/12/98	1630		2									2	-03
880612	11/12/98	1500		2									2	-04
870712	11/12/98	1330		2									2	-05
740712	11/12/98	1935		2									2	-06 SF 11/13/98
940022	11/12/98	1005		2									2	-06
880812	11/12/98	1545		2									2	-07
780612	11/12/98	1850		2									2	-08
860612	11/12/98	1800		2									2	-09
940812	11/12/98	1420		2									2	-10
940712	11/12/98	1605		2									2	-17
840712	11/12/98	1930		2									2	-13

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/13/98	DONNE FRANKLIN	11/13/98
COMPANY NAME: SAIC	1215	COMPANY NAME: GEL	1530
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL	11-13-98 1215	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
COMPANY NAME: GEL	11-13-98 1530	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS:

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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CHAIN OF CUSTODY RECORD

COC NO.: GA009

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	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
160814	11/13/98	1500	water		Z								Z	9811476-13
160712	11/13/98	1745			Z								Z	-14
160612	11/13/98	1615			Z								Z	-15
160812	11/13/98	1500			Z								Z	-16
160916	11/13/98	1600			Z								Z	-17
160912	11/13/98	1600			Z								Z	-18

36 VOA

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS:	Cooler Temperature:
Laura Lumley	11/14/98 1105	D Francis	11/14/98 1330	Cooler ID: #715	FEDEX NUMBER:
COMPANY NAME: SAIC		COMPANY NAME: GEL			
RECEIVED BY: Carol Sandel	Date/Time 11/14/98 1105	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		COMPANY NAME:			
RELINQUISHED BY: Carol Sandel	Date/Time 11/14/98 1330	RECEIVED BY:	Date/Time		
COMPANY NAME: General Engineering		COMPANY NAME:			

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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): [signature] (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	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
160812	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	1835	↓	2									2	-10

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
[signature] Laura Lumley; COMPANY NAME: SAIC	11/14/98 1105	[signature]; COMPANY NAME: GEL	11/14/98 1330
RECEIVED BY: Carol Sandel; COMPANY NAME: General Engineering	11/14/98 1105	RELINQUISHED BY: ; COMPANY NAME:	
RELINQUISHED BY: Carol Sandel; COMPANY NAME: General Engineering	11/14/98 1330	RECEIVED BY: ; 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.

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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

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
710812	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

3676211

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time	TOTAL NUMBER OF CONTAINERS: 12	Cooler Temperature:
Laura Lumley	11/17/98	[illegible]	11/17/98		
COMPANY NAME: SAIC	1230	COMPANY NAME:	1615	Cooler ID: #712	FEDEX NUMBER:
RECEIVED BY: [illegible]	Date/Time 11-17-98	RELINQUISHED BY:	Date/Time	Note: Cooler Receipt Checklist indicates a cooler temperature of 4°-5°C upon arrival at the laboratory.	
COMPANY NAME: [illegible]	1230	COMPANY NAME:			
RELINQUISHED BY: [illegible]	Date/Time 11-17-98	RECEIVED BY:	Date/Time		
COMPANY NAME: [illegible]	1615	COMPANY NAME:			

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Raod Charleston, SC 29417

PHONE NO: (803) 556-8171

VIII-39

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2012

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

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
710812	11/16/98	1230	water	2									2	9811575-07
860812	11/16/98	1645	↓	2									2	-08
860814	11/16/98	1645	↓	2									2	-09
710712	11/16/98	950	↓	2									2	-10
TBA035	11/16/98	745	↓	2									2	-11

36782

GW 11/17/98

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	11/17/98 1230	B Francis	11/17/98 1615
COMPANY NAME: SAIC		COMPANY NAME: Gel	
RECEIVED BY: [signature]	11-17-98 1230	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: [signature]	11-17-98 1615	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 36

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.

860912

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA10W

Matrix: (soil/water) WATER Lab Sample ID: 9902839-13

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8Y414

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: not dec. _____ Date Analyzed: 03/04/99

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	1.6	J	J
100-41-4	ethylbenzene	0.58	J	
1330-20-7	xylenes (total)	2.3	J	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860912

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA10W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902839-06

Sample wt/vol: 930.0 (g/mL) ML Lab File ID: 7I713

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/24/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 03/01/99

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	10.8	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	0.79	J
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	3.9	J
53-70-3	dibenz(a,h)anthracene	10.8	U
191-24-2	benzo(g,h,i)perylene	1.3	J

RINSATE

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860916

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA10W

Matrix: (soil/water) WATER Lab Sample ID: 9902839-14

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8Y415

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: not dec. _____ Date Analyzed: 03/04/99

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	1.2	J
100-41-4	ethylbenzene	0.41	J
1330-20-7	xylenes (total)	1.9	J

UJ

RINSATE

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

860916

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA10W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902839-07

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 7I714

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/24/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 03/01/99

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	10.0	U
91-58-7	2-chloronaphthalene	10.0	U
208-96-8	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

U

FORM I SV-1 OLM03.0

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

861012

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA10W

Matrix: (soil/water) WATER Lab Sample ID: 9902839-15

Sample wt/vol: 5.000 (g/ml) ML Lab File ID: 8Y416

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: not dec. _____ Date Analyzed: 03/04/99

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	3.5		
100-41-4	ethylbenzene	1.9	J	J
1330-20-7	xylenes (total)	10.1		

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

861012

Lab Name: GENERAL ENGINEERING LABOR Contract: NA

Lab Code: NA Case No.: NA SAS No.: NA SDG No.: FSA10W

Matrix: (soil/water) GROUNDH2O Lab Sample ID: 9902839-08

Sample wt/vol: 770.0 (g/mL) ML Lab File ID: 7I715

Level: (low/med) LOW Date Received: 02/22/99

% Moisture: _____ decanted: (Y/N)___ Date Extracted:02/24/99

Concentrated Extract Volume: 1.00(mL) Date Analyzed: 03/01/99

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	1.2	J
91-58-7	2-chloronaphthalene	13.0	U
208-96-8	acenaphthylene	13.0	U
83-32-9	acenaphthene	13.0	U
86-73-7	fluorene	13.0	U
85-01-8	phenanthrene	13.0	U
120-12-7	anthracene	13.0	U
206-44-0	fluoranthene	13.0	U
129-00-0	pyrene	13.0	U
56-55-3	benzo(a)anthracene	13.0	U
218-01-9	chrysene	13.0	U
205-99-2	benzo(b)fluoranthene	13.0	U
207-08-9	benzo(k)fluoranthene	13.0	U
50-32-8	benzo(a)pyrene	13.0	U
193-39-5	indeno(1,2,3-cd)pyrene	13.0	U
53-70-3	dibenz(a,h)anthracene	13.0	U
191-24-2	benzo(g,h,i)perylene	13.0	U

J U

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

2 of 2

CHAIN OF CUSTODY RECORD

COC NO.: D0351Z

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

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	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
DH031Z	2/21/99	1610	water	Z								Z	9902889-10
1621012	2/21/99	1315		Z								Z	-11
800912	2/21/99	1510		Z								Z	-12
860912	2/21/99	1105		Z								Z	-13
8609116	2/21/99	1045		Z								Z	-14
861012	2/21/99	955		Z								Z	-15
TB0005	2/21/99	745		Z								Z	-16
TB0006	2/22/99	745		Z								Z	-17

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	2/22/99		2/22/99
COMPANY NAME: SAIC	1145	COMPANY NAME:	1530
RECEIVED BY:	Date/Time	RELINQUISHED BY:	Date/Time
	2/22/99		
COMPANY NAME:	1145	COMPANY NAME:	
RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
	2/22/99		
COMPANY NAME:	1530	COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 44

Cooler ID: #1,2,3,4 / 4°C

Cooler Temperature:

FEDEX NUMBER:

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800 Oak Ridge Turnpike, Oak Ridge, TN 37831 (423) 481-4600

CHAIN OF CUSTODY RECORD

COC NO.: D03511

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

LABORATORY NAME: General Engineering Laboratory

LABORATORY ADDRESS: 2040 Savage Road, 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	No. of Bottles/ Vials:	OBSERVATIONS, COMMENTS, SPECIAL INSTRUCTIONS
040312	2/21/99	1610	water									2	9902839-04
602012	2/21/99	1315										2	05
860912	2/21/99	1105										2	06
8609116	2/21/99	1055										2	07
861012	2/21/99	955										2	08
860912	2/21/99	1510	↓									2	09

REQUESTED PARAMETERS

RELINQUISHED BY:	Date/Time	RECEIVED BY:	Date/Time
Laura Lumley	2/22/99 1145	[illegible]	2/22/99 1530
COMPANY NAME: SAIC		COMPANY NAME:	
RECEIVED BY: [illegible]	Date/Time 2/22/99 1145	RELINQUISHED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	
RELINQUISHED BY: [illegible]	Date/Time 2/22/99 1530	RECEIVED BY:	Date/Time
COMPANY NAME: GEL		COMPANY NAME:	

TOTAL NUMBER OF CONTAINERS: 12

Cooler ID: # 2846 / 4°C

Cooler Temperature:

FEDEX NUMBER:

APPENDIX IX

CONTAMINATED SOIL DISPOSAL MANIFESTS

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No contaminated soil was removed during the closure activities conducted in 1996.

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APPENDIX X

SITE RANKING FORM

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SITE RANKING FORM

Facility Name: UST 71, Building 1203 **Ranked by:** S. Stoller

County: Liberty **Facility ID #:** 9-089022 **Date Ranked:** 5/18/99

SOIL CONTAMINATION

A. Total PAHs -
Maximum Concentration found on the site
(assume <0.660 mg/kg if only gasoline was stored on the site)

* ☒	≤0.660 mg/kg	=	0
☐	>0.66 - 1 mg/kg	=	10
☐	>1 - 10 mg/kg	=	25
☐	>10 mg/kg	=	50

* *Elevated PAH reporting limit for one sample; however, no estimated concentrations below that limit.*

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. 0) + (B. 0) = (0) x (C. 5) = (D. 0)**

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" - 1 ft. =	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: UST 71, Building 1203 **County:** Liberty **Facility ID #:** 9-089022

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

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

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.

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

* The invert of the industrial wastewater line is >5 feet above the water table

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. 1) + (K. 0) = L. 1

(G. 50) x (L. 1) = M. 50

(M. 50) + (D. 0) = N. 50

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. 50) x (P. 1) = (50) + (Q. 0)

= 50 (based on Closure soil data and CAP-Part A groundwater data)

ENVIRONMENTAL SENSITIVITY SCORE

OTHER 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 4200 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, limestone, and siliceous, and dolomitic and less calcareous.

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, Lynnette Tuck, to me known, who being sworn, deposes and says:

That he is the Class. Inside Sales Mgr. 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 6-27, 1999, 7-4, 1999, _____, 1999, _____, 1999, and finds that the following Advertisement, to-wit:

015 Miscellaneous Notices

PUBLIC NOTICE

Notification of Corrective Action Plan, Underground Storage Tank Releases, Fort Stewart Garrison Area, Fort Stewart, Ga.

The Georgia EPD (GEPD) has required Fort Stewart Directorate of Public Works to prepare a Corrective Action Plans Part-A to investigate and/or clean up contamination at the underground storage tank sites listed at the end of this notification. These plans will be submitted to the GEPD on or before September 30, 1999. If you want to examine a copy of one or more of the plans, please contact Commander, 3rd Infantry Division (Mechanized) and Fort Stewart, attn: DPW ENRD ENV. Br. (T. Rutland), 1557 Frank Cochran, Fort Stewart, Ga. 31314-4928.

A copy will be mailed at a nominal fee.

Comments to the plan will be accepted until October 31, 1999, and should be directed to GEPD at 404-362-2687. Following is the mailing address:

GEPD USTMP, 4244 International Parkway, Suite 104, Atlanta, Ga. 30354

Fort Stewart CAP - Part A and Part B Underground Storage Tank Sites

UST; Building; Facility ID#
2 & 3, 1840, 0-089065
5 & 6, 1824, 0-089066
28B, 1720, 9-089011
36 & 37m 1510, 9-089016
38, 1510/13, 9-089109
63 & 64, 1128, 9-089051
71, 1203, 9-089022
79, 1224, 9-089026
87 & 88, 1245, 9-089073
100B, 1350, 9-089081
122, 7705, 9-089083
123, 933, 9-089092
214, 1503, 9-089015
225, 4529, 9-089090
242 & 244, 241, 9-089041
248 & 249, 15016, 9-054006
4 & 5 NGTC, 9395, 0-890028
6 & 7 NGTC, 9795, 0-890028

appeared in each of said editions.

Lynnette Tuck
(Deponent)

Sworn to and subscribed before me this 7 day of July, 1999.

Zillie D. Ray
Notary Public, Chatham County, Georgia

Form 121 rev.

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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, 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 ensuring 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 of 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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